

Groundwater Monitoring and Investigation Report December 2016 to November 2017

**Snohomish Square Cleaners
Avenue D and 13th Street SE
Snohomish, WA**

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ABBREVIATIONS AND ACRONYMS

Abbreviation/ Acronym	Definition
bgs	Below ground surface
COC	Contaminant of concern
CUL	Cleanup level
cVOCs	Chlorinated volatile organic compounds
DO	Dissolved oxygen
EPA	U.S. Environmental Protection Agency
EPI	Environmental Partners, Inc.
ERD	Enhanced reductive dechlorination
HSA	Hollow-stem auger
µg/L	Micrograms per liter
mg/L	Milligrams per liter
MTCA	Model Toxics Control Act
ORP	Oxidation-reduction potential
PCE	Tetrachloroethene
PDB	Passive diffusion bag
PID	Photoionization detector
psi	Pounds per square inch
PVC	Polyvinyl chloride
Skotdal	Skotdal Enterprises, Inc.
TOC	Total organic carbon

1.0 INTRODUCTION

Environmental Partners, Inc. (EPI) is pleased to submit this *Groundwater Monitoring and Investigation Report – December 2016 to November 2017* to address groundwater impacted by tetrachloroethene (PCE) at the former Snohomish Square Cleaners property located at Avenue D and 13th Street SE in Snohomish, Washington (subject property). Skotdal Enterprises, Inc. (Skotdal) currently owns the subject property. The location of the subject property is indicated on Figure 1.

PCE was released as a result of historical operations of a former dry cleaning business at the subject property, which has resulted in impacts to soil and groundwater. The daughter products of PCE, including trichloroethene (TCE), cis-1,2-dichloroethene, trans-1,2-dichloroethene, and vinyl chloride, have been detected in samples from the subject property. However, based on site-specific data, the sole remaining contaminant of concern (COC) is PCE in groundwater. As the sequential reductive dechlorination of PCE occurs, the less chlorinated daughter products might become future COCs. Impacted groundwater has migrated downgradient (to the southwest) to a property owned by Snohomish County. The “Site,” as defined by the Model Toxics Control Act (MTCA), includes portions of the subject property as well as the “upper terrace” of the downgradient property to the southwest owned by Snohomish County (Snohomish County property). The locations of the subject property and Snohomish County property are depicted on Figure 2.

Enhanced reductive dechlorination (ERD), which is an *in situ* bioaugmentation remediation technology, was selected as the remediation technology to bring groundwater at the Site into regulatory compliance. A pilot study performed at the Site showed ERD to be an effective remediation technology in consideration of the Site-specific goals and current and future Site uses.

EPI completed an *Interim Remedial Action Report* (IRA) dated January 30, 2017 that established baseline groundwater conditions, documented the first round of ERD treatment, and discussed results of two groundwater monitoring events. The purpose of this implementation of ERD is to reduce PCE mass and concentrations in shallow groundwater at the subject property in order to obtain a “No Further Action” (NFA) determination for the Site.

This report describes quarterly groundwater monitoring events and additional remediation activities that occurred from December 2016 through November 2017.

2.0 GROUNDWATER SAMPLING PROCEDURES

Unless otherwise noted, the groundwater sampling procedures presented in the following paragraphs were followed during each monitoring event.

Prior to sampling, static water levels were measured and recorded to the nearest 0.01-foot using a Solinst electronic water level meter (or equivalent). To ensure consistency, all static water level measurements were taken to consistent measuring points, which are marked on the north side of the top edge of the polyvinyl chloride (PVC) casing. EPI surveyed measuring point elevations for all monitoring wells and used those data, along with measured static water level data, to calculate groundwater elevations, elevation contours, and inferred groundwater flow directions at the Site.

Wells selected for groundwater sampling were purged using a peristaltic pump and low-flow purging techniques. Pump tubing was new, single-use tubing that was changed between each well. During low-flow purging, the groundwater field parameters listed below were measured and recorded approximately every 3 minutes until they met the stabilization criteria noted for each field parameter for three successive readings. Turbidity will be measured and recorded as part of the low-flow purging procedures in subsequent monitoring events.

- pH
- Temperature
- Oxidation-reduction potential (ORP)
- Specific conductivity
- Dissolved oxygen (DO)

After stabilization, groundwater sample containers were labeled and samples were collected into appropriate laboratory-supplied sample containers using low-flow sampling techniques to limit potential contaminant volatilization. Immediately upon collection, filled sample containers were placed in a cooler containing sufficient ice to maintain an internal temperature of 4° Celsius or less for submittal to the analytical laboratory. All samples were transported under standard chain-of-custody protocols to Friedman and Bruya, Inc. (FBI) an analytical laboratory located in Seattle, Washington.

Selected wells were sampled for chlorinated volatile organic compounds (cVOCs) using passive diffusion bags (PDBs). PDBs were tested side-by-side with low-flow sampling methods in 2016 and it was determined that PDB sampling was a feasible option. PDB sampling requires less time and generates less waste when compared to low-flow purging and sampling methods. During the December 2016 baseline monitoring event described below, PDBs were installed in selected wells immediately following the completion of low-flow sampling at each well. The PDBs remained in the wells for a minimum of 2 weeks to achieve equilibrium conditions with groundwater before being retrieved and sampled.

All groundwater samples were submitted for cVOC analysis by U.S. Environmental Protection Agency (EPA) Method 8260B. Selected groundwater samples were also analyzed for total organic carbon (TOC) by EPA Method 415.1; chemical oxygen demand (COD) by EPA Method 410.4; biological oxygen demand (BOD; 5-Day) by EPA Method 5210B; total and dissolved iron and manganese by EPA Method 6010B; chloride by EPA Method 325.1; sulfate/sulfide and nitrate/nitrite by EPA Method 300.0; and the dissolved gases methane, ethane, ethane, and carbon dioxide by Method RSK-175.

Copies of the original laboratory results are included in Attachment A.

3.0 GROUNDWATER MONITORING – DECEMBER 2016

3.1 Groundwater Sampling

From December 1 through December 2, 2016, EPI sampled groundwater at 24 well locations. Procedures in Section 2.0 were followed for sampling. Fifteen of the 24 wells were sampled using PDBs on December 2, 2016. The remaining nine wells were sampled using low-flow purging and sampling procedures.

3.2 Piezometric Conditions

Measured depth-to-water data ranged from 2.08 to 20.94 feet below the top of casing. Depth-to-water measurements are presented in Tables 1 and 2. The resulting groundwater elevation data indicate that groundwater flow direction at the subject property is generally in a south-southwest direction with a horizontal hydraulic gradient of 0.012 feet/foot. Figure 3 depicts groundwater flow directions and elevations from the December 2016 monitoring event.

3.3 Geochemical Conditions

Geochemical analytical data for this monitoring event are presented in Tables 1 and 2. Geochemical parameters were analyzed in samples from wells MW-1, MW-2, MW-3, MW-4, MW-7, MW-8, MW-9, MW-15, GW-4, and GW-11.

TOC was detected in groundwater samples from three wells, MW-1, MW-3, and MW-7, at concentrations of 5,200 micrograms per liter ($\mu\text{g/L}$), 34,000 $\mu\text{g/L}$, and 1,300 $\mu\text{g/L}$, respectively (Table 1). These numbers indicate a sharp decrease in TOC concentrations across the Site. This decrease in TOC indicates that bacteria are consuming carbon from the remediation substrate that was injected into the subsurface to promote ERD.

Redox conditions in groundwater can be evaluated by measuring concentrations of iron and manganese in groundwater and using those data as a qualitative guide to the redox status of the aquifer. Metals analysis for iron and manganese are also used to indicate if enhanced reducing geochemical conditions have produced unacceptable metals concentrations. Field-filtered (dissolved) and unfiltered (total) groundwater samples were analyzed for iron and manganese. Total iron was detected in eight groundwater samples at concentrations ranging from 50.2 $\mu\text{g/L}$ to 11,700 $\mu\text{g/L}$. Total iron concentrations in MW-6 and MW-7 decreased significantly during this monitoring event. Total manganese was detected in all eight unfiltered groundwater samples at concentrations ranging from 1.2 $\mu\text{g/L}$ to 2,440 $\mu\text{g/L}$ (Table 2).

The comparison of sulfate/sulfide and nitrate/nitrite concentrations provide a measure of reducing conditions produced by remediation substrate injection. These analyses indicate the effects of increased biological activity and provide evidence that reducing conditions are present. Sulfate was detected at concentrations ranging from 640 $\mu\text{g/L}$ to 19,100 $\mu\text{g/L}$. Nitrate was detected at concentrations ranging from less than 25 $\mu\text{g/L}$ to 16,300 $\mu\text{g/L}$ (Table 1). These baseline concentrations were low and support prior conclusions that geochemical conditions that support significant biological degradation of PCE were

not naturally present at the Site. As reducing conditions are created by the substrate injections, sulfate should reduce to sulfide and nitrate should reduce to nitrite, nitrogen gas, or ammonia.

Field parameter data for the December 2016 monitoring event are presented in Table 3. DO ranged from 1.02 mg/L to 7.46 mg/L. ORP values ranged from -3.9 millivolts (mV) to 114.7 mV. Geochemical conditions generally are considered aerobic when DO concentrations are approximately 1 mg/L or greater and ORP values are positive, or anaerobic, which is necessary to promote ERD, when DO concentrations are less than 1 mg/L and ORP values are negative. Temperature, pH, and other field-measured parameters were within acceptable ranges for bioremediation to occur. EPI will consider adding a pH buffer in the future to maintain acceptable ranges for pH.

3.4 Analytical Results

PCE concentrations were detected at concentrations ranging from 1.2 µg/L to 190 µg/L. Nine of the 24 sample results were greater than the MTCA Method A Groundwater Cleanup Level (MTCA Method A GW CUL) of 5 µg/L, with the greatest concentration in the sample from MW-15. PCE was detected at concentrations less than the MTCA Method A GW CUL for PCE in seven other monitoring wells (Table 2). PCE was not detected in the other eight samples at a concentration greater than the analytical detection limit. Figure 4 shows the PCE concentrations in groundwater and the horizontal extent of the PCE plume based on data obtained during the December 2016 baseline monitoring event.

The breakdown products of PCE include TCE, cis-1,2-dichloroethene, trans-1,2-dichloroethene, and vinyl chloride. The analytical results for the breakdown products are as follows:

- TCE was detected in three samples at concentrations ranging from 1.1 µg/L to 85 µg/L. One of the sample results was greater than the MTCA Method A GW CUL of 5 µg/L.
- cis-1,2-Dichloroethene was detected in three samples at concentrations ranging from 1.3 µg/L to 62 µg/L. Two of the sample results were greater than the MTCA Method B GW CUL of 16 µg/L.
- trans-1,2-Dichloroethene was not detected in any samples at a concentration exceeding the detection limit of the analytical method.
- Vinyl chloride was detected in two samples at concentrations of 6.4 µg/L in MW-10 and 5.7 µg/L in MW-11, both of which are greater than the MTCA Method A GW CUL of 0.2 µg/L.

4.0 GROUNDWATER MONITORING – FEBRUARY 2017

4.1 Groundwater Sampling

From February 20 through February 21, 2017, EPI sampled groundwater at 25 well locations. Procedures in Section 2.0 were followed for during this monitoring event. Sixteen of the 25 wells were sampled using PDBs on February 21, 2017. The remaining nine wells were sampled using low-flow purging and sampling procedures.

4.2 Piezometric Conditions

Depth-to-water measurements in wells ranged from approximately 1.31 to 20.89 feet below top of casing. Depth-to-water measurements are provided in Tables 1 and 2. Figure 5 depicts groundwater elevations and the groundwater flow direction at the Site as measured during the February 2017 monitoring event.

Groundwater elevations based on water level data collected in February 2017 indicated that the groundwater flow direction at the Site is generally to the south-southwest with a horizontal hydraulic gradient of 0.011 feet/foot. Both the groundwater direction and horizontal gradient are consistent with the baseline monitoring event.

4.3 Geochemical Conditions

Geochemical analytical data for this monitoring event are presented in Tables 1 and 2. Geochemical parameters were analyzed in samples from wells MW-1, MW-2, MW-3, MW-4, MW-7, MW-8, MW-9, MW-15, GW-4, and GW-11.

TOC was detected in all groundwater samples, except in the sample from MW-9, at concentrations ranging from 510 µg/L to 76,000 µg/L (Table 1). These data indicate an increase in TOC concentrations across the Site. In general, the wells farther away from the injection wells did not show as much increase in TOC as the source area wells, which are closer to the injection wells. This increase in TOC was the basis for performing the additional injection event described in Section 5.0.

Total iron was detected in eight groundwater samples at concentrations ranging from 56 µg/L to 37,500 µg/L. Total manganese was detected in eight groundwater samples at concentrations ranging from 3 µg/L to 5,170 µg/L (Table 2). Iron and manganese concentrations in source area well MW-3 significantly increased during this monitoring event and will be monitored over the upcoming monitoring events.

Anions (i.e., chloride, sulfate, and nitrate) were analyzed to provide a measure of geochemical conditions produced by substrate injections. Chloride was detected in eight wells at concentrations ranging from 1,240 µg/L to 134,000 µg/L. Chloride concentrations significantly increased in all wells except in the sample from MW-15. Sulfate was detected at concentrations ranging from 780 µg/L to 21,400 µg/L. Sulfate concentrations significantly increased in wells MW-8 and GW-11 but remained at relatively consistent concentrations in the remaining wells. Nitrate was detected at concentrations ranging from 399 µg/L to 11,200 µg/L (Table 1). Generally, nitrate concentrations decreased during this monitoring event.

Field parameter data for the February 2017 monitoring event are presented in Table 3. DO ranged from 0.36 mg/L to 9.97 mg/L. ORP ranged from -34.1mV to 231.4 mV.

4.4 Analytical Results

PCE was detected at concentrations ranging from 1.1 µg/L to 140 µg/L. Seven of the 25 sample results were greater than the MTCA Method A GW CUL of 5 µg/L, with the greatest concentration in the sample from MW-15. PCE was detected at concentrations less than the MTCA Method A GW CUL for PCE in eight other monitoring wells (Table 2). The remaining 10 samples were not detected at concentrations greater than the analytical detection limits for PCE. Figure 6 shows the PCE groundwater concentrations and the horizontal extent of the plume based on data obtained during the February 2017 monitoring event.

The analytical results for the breakdown products are as follows:

- TCE was detected in three wells at concentrations ranging from 1.2 µg/L to 8.0 µg/L with one of the sample results, from well MW-11, was greater than the MTCA Method A GW CUL of 5 µg/L.
- cis-1,2-Dichloroethene was detected in samples from five wells at concentrations ranging from 3.3 µg/L to 25 µg/L. Two of the sample results were greater than the MTCA Method B GW CUL of 16 µg/L.
- trans-1,2-Dichloroethene was not detected in any samples at a concentration exceeding the detection limit of the analytical method used.
- Vinyl chloride was detected in samples from three wells at concentrations ranging from 1.1 µg/L to 7.4 µg/L. All three detected vinyl chloride concentrations were greater than the MTCA Method A GW CUL of 0.2 µg/L.

5.0 ADDITIONAL TREATMENT – FEBRUARY 2017

As discussed in the IRAR, EPI conducted another round of injections to continue promoting ERD at the Site. EPI continued the use of the proprietary product called 3-D Microemulsion[®] by Regenesis.

The additional injection event began on February 22, 2017 and were completed on February 24, 2017. The injections were performed using a pressurized injection method into the three treatment areas described in the IAWP, shown on Figure 2. Potable water was mixed in a 275-gallon water tote with the two-ingredient 3-D Microemulsion[®] solution (three parts 3-D Microemulsion[®] and one part chemical reducer) at a ratio of 10 parts water to 1 part 3-D Microemulsion[®] mixture. The tote was then mixed until homogeneous using the circulating valve on the injection pump.

Valves and gauges located on the injection pump allowed for the operator to manage flow and document pressures and volumes within the injection wells. Flow rate was controlled by a gate valve located on the discharge side of the injection pump.

Details of well injections are noted in Table 4, displaying dates and total volumes injected into each well. In some of the wells, leakage at the surface around the well annulus was noted and was caused by

location-specific geologic conditions that limited infiltration rates. If leakage occurred at the surface, pressurized injections were stopped and gravity-flow methods were used to reduce the potential for leakage at the surface. Wells that were partially gravity fed are noted in Table 4. In general, each well took approximately 42 pounds per square inch (psi) to overcome the piezometric head of the water column within the well. When the static piezometric head pressure was overcome, injection pressures dropped to approximately 15 to 20 psi for the duration of injection. A total volume of 10,830 gallons of the nutrient substrate mixture has been injected into the subsurface.

6.0 GROUNDWATER MONITORING – MAY 2017

6.1 Groundwater Sampling

From May 24 through May 30, 2017, EPI sampled groundwater at 25 well locations. Procedures in Section 2.0 were followed for sampling. Sixteen of the 25 wells were sampled using PDBs on May 25 and 26, 2017. The remaining nine wells were sampled using low-flow purging and sampling procedures.

6.2 Piezometric Conditions

Depth-to-water measurements in wells ranged from approximately 1.30 to 22.07 feet below top of casing. Depth-to-water measurements are provided in Tables 1 and 2. Figure 7 depicts groundwater elevations and the groundwater flow direction at the Site as measured during the May 2017 monitoring event.

Water level data collected in May 2017 indicate that groundwater flow direction at the property is generally in the south-southwest direction with a horizontal hydraulic gradient of 0.012 feet/foot. Both the groundwater direction and horizontal gradient are consistent with previous monitoring events.

6.3 Geochemical Conditions

Geochemical analytical data for this monitoring event are presented in Tables 1 and 2. Geochemical parameters were analyzed in samples from wells MW-1, MW-2, MW-3, MW-4, MW-7, MW-8, MW-9, MW-15, GW-4, and GW-11.

TOC was detected in all groundwater samples, except in the sample from MW-9, at concentrations ranging from 600 µg/L to 72,000 µg/L (Table 1). These data indicate continuation of a general increase in TOC concentrations across the Site. The increase in TOC concentrations indicates that the substrate injections distributed 3-D Microemulsion® throughout the subsurface as intended. In general, the wells farther away from the injection wells did not show as much increase in TOC as the source area wells.

Total iron was detected in eight groundwater samples at concentrations ranging from 60 µg/L to 30,200 µg/L. Total manganese was detected in nine groundwater samples at concentrations ranging from 1 µg/L to 4,530 µg/L (Table 2). Iron and manganese concentrations in source area wells MW-1 and MW-3 significantly increased during this monitoring event. Concentrations of iron and manganese in samples from these monitoring wells will be monitored in future monitoring events to evaluate if metals concentrations continue to exceed MTCA Method A GW CULs.

Anions (i.e., chloride, sulfate, and nitrate) were analyzed to provide a measure of geochemical conditions produced by substrate injections. Chloride was detected in samples from eight wells at concentrations ranging from 2,600 µg/L to 617,000 µg/L. Chloride concentrations significantly increased in well MW-7. Sulfate was detected in samples from nine wells at concentrations ranging from 780 µg/L to 25,400 µg/L. Sulfate concentrations significantly increased in wells MW-3, MW-7, and GW-11, and increased slightly or remained relatively the same in the remaining wells. Nitrate was detected in samples from nine wells at concentrations ranging from 753 µg/L to 7,700 µg/L (Table 1). Generally, nitrate concentrations remained consistent with previous monitoring events.

Field parameter data for the May 2017 monitoring event are presented in Table 3. DO ranged from 0.22 mg/L to 8.18 mg/L. ORP ranged from 3.1 mV to 187.4 mV.

6.4 Analytical Results

PCE was detected at concentrations ranging from 1.0 µg/L to 120 µg/L (Table 1). Seven of the 25 sample results were greater than the MTCA Method A GW CUL of 5 µg/L, with the greatest concentration in the sample from MW-15. PCE was detected at concentrations less than the MTCA Method A GW CUL for PCE in five other monitoring wells. PCE was not detected at concentrations greater than the analytical detection limit in samples from the remaining 13 wells. Figure 8 shows the PCE groundwater concentrations and plume as identified during the May 2017 monitoring event.

The analytical results for the breakdown products are as follows:

- TCE was detected in three wells at concentrations ranging from 1.5 µg/L to 2.7 µg/L. None of the sample results were greater than the MTCA Method A GW CUL of 5 µg/L.
- Cis-1,2-dichloroethene was detected in samples from seven wells at concentrations ranging from 1.1 µg/L to 26 µg/L. Two of the sample results were greater than the MTCA Method B GW CUL of 16 µg/L.
- Trans-1,2-dichloroethene was not detected in any samples at a concentration exceeding the detection limit of the analytical method used.
- Vinyl chloride was detected in samples from three wells at concentrations ranging from 2.1 µg/L to 4.1 µg/L (Table 1). All three samples were at concentrations greater than the MTCA Method A GW CUL of 0.2 µg/L.

7.0 MW-5 INVESTIGATION – JUNE 2017

PCE was detected in groundwater samples from MW-5 during EPI's 2015 baseline monitoring event, which was performed prior to implementing remedial actions. Since quarterly groundwater monitoring began in February 2016, PCE concentrations in samples from MW-5 have been consistently greater than the MTCA Method A GW CULs despite its upgradient location from the assumed source area plume at the former Snohomish Square Cleaners.

On June 26 and 27, 2017, EPI installed three monitoring wells, identified as MW-16 through MW-18, in the gravel area north of the shopping center, as shown on Figure 9. The purpose of these wells was to provide repeatable and defensible data from monitoring points installed between MW-5 and the former Snohomish Square Cleaner source area to determine if the impacts observed in MW-5 are separate and distinct from the PCE plume associated with the Site.

The borehole for each well was advanced to the bottom depth of 25 feet below ground surface (bgs) using a standard truck mounted hollow-stem-auger (HSA) drilling rig equipped with 10-inch outside diameter auger flights. Flush-threaded 2-inch diameter PVC casing with 10 feet of machine-cut 10-slot (0.010-inch) well screen was then installed and backfilled with 10-20 silica sand filter pack from the bottom of the boring to 1 foot above the top of the screened interval. The remainder of the well annulus was sealed with hydrated bentonite chips and a flush completion steel monument set in concrete.

On June 27 and 28, 2017, EPI installed three temporary soil borings in the gravel area north of the shopping center within 10 feet of MW-5. The purpose of these borings was to investigate soil impacts in the vicinity of MW-5. These borings were completed using standard HSA techniques with 10-inch outside diameter auger flights. Boring DPT-1 was completed to 20 feet bgs and borings DPT-2 and DPT-3 were completed to 15 feet bgs. Depth to groundwater varied among the borings from approximately 15 to 17 feet bgs.

Soil collected from the three new monitoring wells and three temporary borings was field screened for the presence of VOCs with a PID. Lithologic characteristics, PID readings, and other field observations were recorded on a field log for each location. The boring logs for MW-16 through MW-18 and DPT-1 through DPT-3 are included in Attachment B.

A total of nine soil samples were submitted for laboratory analysis from the three temporary borings. All samples collected from the borings were submitted for cVOC analysis using the EPA Method 8260C.

A total of three water samples were submitted for laboratory analysis from the three monitoring wells. Wells were purged and sampled following low-flow procedures described in Section 2.0. All samples collected from the monitoring wells and borings were submitted for cVOC analysis using EPA Method 8260C.

7.1 Piezometric Conditions

Depth-to-water measurements in wells ranged from approximately 2.48 to 22.82 feet below top of casing. A new survey was performed to provide a consistent set of measuring point elevations for wells at the Site, including the newly installed groundwater monitoring wells downgradient of MW-5. A summary of the surveyed measuring point elevations, depth-to-water measurements, and groundwater elevations is provided in Table 5. Figure 10 depicts groundwater elevations and the groundwater flow direction at the Site as measured during the June 2017 monitoring event.

According to the bore logs from the newly installed MW-17 and MW-18, these wells are in an area of increased silt, which differs from the soil types observed at other areas at the Site. Groundwater elevations measured at these two wells are significantly lower than other wells at the Site. This increased

silt with the addition of historically low precipitation may have created a localized anomalous area where groundwater elevations are lower than normal and may not be indicative of regional static groundwater conditions.

Data collected in June 2017 indicate that groundwater flow direction at the property is generally in the south-southwest direction with a horizontal hydraulic gradient of 0.01 feet/foot. This gradient confirms that MW-5 is the most upgradient well at the Site and is upgradient from the Snohomish Square Cleaners source area.

7.2 Analytical Results

No cVOCs were detected in soil or groundwater at concentrations exceeding an applicable analytical detection limit from any of the samples collected. These data indicate that PCE-impacted groundwater at MW-5 is distinct and separate from the PCE impacts associated with the former Snohomish Square Cleaners and; therefore, groundwater impacts at MW-5 are not part of the Site.

8.0 GROUNDWATER MONITORING – AUGUST 2017

8.1 Groundwater Sampling

From August 8 through August 10, 2017, EPI sampled groundwater at 28 well locations. Procedures in Section 2.0 were followed for sampling. Fourteen of the 28 wells were sampled using PDBs on August 8, 2017. The remaining 14 wells were sampled using low-flow purging and sampling procedures.

8.2 Piezometric Conditions

Measured depth-to-water data ranged from 2.83 to 23.95 feet below the top of casing. Depth-to-water measurements are presented in Tables 1 and 2. The resulting groundwater elevation data indicate that groundwater flow direction at the subject property is generally in a south-southwest direction with a horizontal hydraulic gradient of 0.011 feet/foot. Both the groundwater flow direction and the magnitude of the horizontal hydraulic gradient are influenced to some degree by seasonal conditions. Figure 10 depicts groundwater flow directions and elevations from the August 2017 monitoring event.

8.3 Geochemical Conditions

Geochemical analytical data for this monitoring event are presented in Tables 1 and 2. Geochemical parameters were analyzed from wells MW-1, MW-2, MW-3, MW-7, MW-8, MW-9, MW-15, GW-4, and GW-11.

TOC was detected in all nine groundwater samples, at concentrations ranging from 580 µg/L to 36,000 µg/L (Table 1). These numbers indicate an increase in TOC concentrations in some wells, and a decrease in TOC concentrations in other wells across the Site. A decrease in TOC indicates that bacteria are consuming carbon in the subsurface.

Field-filtered (dissolved) groundwater samples were analyzed for iron and manganese. Iron was detected in seven groundwater samples at concentrations ranging from 59.2 µg/L to 25,100 µg/L. Manganese was detected in all nine groundwater samples at concentrations ranging from 2.41 µg/L to 3,630 µg/L (Table 2).

The comparison of sulfate/sulfide and nitrate/nitrite concentrations provide a measure of reducing conditions produced by substrate injection. These analyses indicate the effects of increased biological activity and provide evidence that reducing conditions are present. Sulfate was detected at concentrations ranging from 8,900 µg/L to 24,000 µg/L. Nitrate was detected at concentrations ranging from 90 µg/L to 5,400 µg/L (Table 1). As reducing conditions are created by the substrate injections, sulfate should reduce to sulfide and nitrate should reduce to nitrogen gas or ammonia.

Field parameter data for the August 2017 monitoring event are presented in Table 3. DO ranged from 0.32 mg/L to 4.63 mg/L. ORP values ranged from -114.9 mV to 305.4 mV. Geochemical conditions generally are considered aerobic when DO concentrations are approximately 1 mg/L or greater and ORP values are positive, or anaerobic, and when DO concentrations are less than 1 mg/L and ORP values are negative. Temperature, pH, and other field-measured parameters were within acceptable ranges for bioremediation to occur. EPI will consider adding a pH buffer in the future to maintain acceptable ranges for pH.

8.4 Analytical Results

PCE was detected in samples from 14 wells at concentrations ranging from 2.0 µg/L to 120 µg/L. Nine of the 14 sample results were greater than the MTCA Method A GW CUL of 5 µg/L, with the greatest concentration in the sample from MW-15. PCE was detected at concentrations less than the MTCA Method A GW CUL in five other monitoring wells (Table 2). PCE concentrations were not detected at concentrations greater than the analytical detection limit in the remaining 14 wells. Figure 11 shows the PCE concentrations in groundwater and the horizontal extent of the PCE plume based on data obtained during the August 2017 monitoring event.

The analytical results for the breakdown products are as follows:

- TCE was detected in three samples at concentrations ranging from 1.2 µg/L to 60 µg/L. One of the sample results (MW-10) was greater than the MTCA Method A GW CUL of 5 µg/L.
- cis-1,2-Dichloroethene was detected in seven samples at concentrations ranging from 1.4 µg/L to 22 µg/L. Two of the sample results (MW-10 and GW-10) were greater than the MTCA Method B GW CUL of 16 µg/L.
- trans-1,2-Dichloroethene was not detected in any samples at a concentration exceeding the detection limit of the analytical method used.
- Vinyl chloride was detected in four samples at concentrations of ranging from 0.23 µg/L to 1.7 µg/L. All four sample results are greater than the MTCA Method A GW CUL of 0.2 µg/L.

9.0 ADDITIONAL WELL INSTALLATION AND TREATMENT FOR MW-15 – NOVEMBER 2017

Although the data support that ERD remediation technology is reducing PCE concentrations across the Site, one area represented by well MW-15 is not showing equivalent decreases in PCE concentrations. MW-15 was installed prior to the substrate injection treatments at the Site to address a data gap of PCE concentrations in groundwater in this area downgradient of the former dry cleaner.

Injection wells were not installed in this area for the initial round of substrate injections because PCE concentrations in the area were unknown at the time. Since its installation, groundwater monitoring data consistently demonstrate that the highest concentrations of PCE at the Site are found in samples collected from MW-15. The consistent high PCE concentrations may be due to a preferential flow pathway that is preventing the treatment compound from contacting impacted groundwater in the vicinity of MW-15. Therefore, to address the PCE impacts at MW-15, two additional injection wells were installed immediately upgradient of MW-15 on November 13, 2017.

The borehole for each injection well was advanced to a bottom depth of 30 feet below ground surface (bgs) using a standard truck-mounted HSA drilling rig equipped with 12-inch diameter auger flights. Flush threaded 4-inch diameter PVC casing with 15 feet of machine-cut 20-slot (0.020 inch) well screen was installed and backfilled with a Colorado silica sand filter pack from the bottom of the boring to 2 feet above the top of the screened interval.

Soil was sampled from the injection wells and screened for the presence of VOCs with a PID. Lithologic characteristics, PID readings, and other field observations were recorded on a field log for each location. The boring logs for IJ-13 and IJ-14 are included in Attachment B.

A total of five soil samples were submitted for laboratory analysis from the two injection wells. All samples were submitted for cVOC analysis using the EPA Method 8260C.

PCE was detected in one sample, IJ-13:30, at a concentration of 0.028 milligrams per kilogram (mg/kg), less than the MTCA Method A CUL for PCE in soil of 0.050 mg/kg. No other cVOCs were detected in soil at concentrations exceeding an applicable analytical detection limit from any of the other samples. Copies of analytical laboratory reports are included in Attachment A.

After the injection wells were installed, EPI performed two injection events, one in December 2017 and one in January 2018. During the first event on December 4 and 5, 2017, EPI injected a total volume of 1,675 gallons of substrate. During the second event on January 15 and 16, 2017 EPI injected a total volume of 2,475 gallons of substrate. Details of injection events are noted in Table 4, displaying the dates and total volumes injected into each well.

In some of the wells, leakage at the surface around the well annulus was noted and was caused by location-specific geologic conditions that limited infiltration rates. If leakage occurred at the surface, pressurized injections were stopped and gravity-flow methods were used to reduce the potential for leakage at the surface. Wells that were partially gravity fed are noted in Table 4. In general, each well took approximately 40 psi to overcome the piezometric head of the water column within the well. When

the static piezometric head pressure was overcome, injection pressures dropped to approximately 2 to 0 psi for the duration of injection.

Progress of these recent injections will be evaluated with data from the February 2018 Quarterly Monitoring Event.

10.0 GROUNDWATER MONITORING – NOVEMBER 2017

10.1 Groundwater Sampling

From November 20 through November 21, 2017, EPI sampled groundwater at 25 well locations. Procedures in Section 2.0 were followed for sampling. Fourteen of the 25 wells were sampled using PDBs on November 21, 2017. The remaining 11 wells were sampled using low-flow purging and sampling procedures.

10.2 Piezometric Conditions

Depth-to-water measurements in wells ranged from approximately 1.64 to 22.79 feet below top of casing. Depth-to-water measurements are provided in Tables 1 and 2. Figure 12 depicts groundwater elevations and the groundwater flow direction at the Site as measured during the November 2017 monitoring event.

Water level data collected in November 2017 indicated that groundwater flow direction at the Site is generally in the south-southwest direction with a horizontal hydraulic gradient of 0.012 feet/foot. Both the groundwater direction and horizontal gradient are consistent with the baseline monitoring event.

10.3 Geochemical Results

Geochemical analytical data for this monitoring event are presented in Tables 1 and 2. Geochemical parameters were analyzed from wells MW-3, MW-7, and MW-15.

TOC was detected in MW-3, MW-7, and MW-15 at concentrations of 35,000 µg/L, 2,400 µg/L, and 3,100 µg/L, respectively (Table 1). These data indicate relatively stable TOC concentrations across the Site. These stable TOC concentrations indicate that additional injections may be warranted.

Field-filtered (dissolved) groundwater samples were analyzed for iron and manganese. Iron was detected in MW-3 and MW-7, at concentrations of 19,500 µg/L and 236 µg/L. Manganese was detected in all three samples at concentrations ranging from 11.1 µg/L to 3,480 µg/L (Table 2). Iron and manganese concentrations in these three wells remained relatively consistent compared to previous concentrations.

Anions (i.e., chloride, sulfate, and nitrate) were analyzed to provide a measure of geochemical conditions produced by substrate injection. Chloride was detected in the three analyzed wells at concentrations ranging from 9,100 µg/L to 12,600 µg/L. Sulfate was detected at concentrations ranging from 5,700 µg/L to 425,000 µg/L. The sulfate concentration significantly increased in MW-7, and remained relatively the same in the remaining wells. Nitrate was detected at concentrations ranging from 86 µg/L to 2,900 µg/L (Table 1). Generally, nitrate concentrations remained relatively stable during this monitoring event.

Field parameter data collected from nine wells during the November 2017 monitoring event are presented in Table 3. DO ranged from 0.83 mg/L to 8.79 mg/L. ORP ranged from 7.3 mv to 281.0 mv.

10.4 Analytical Results

PCE concentrations were detected at concentrations ranging from 1.3 µg/L to 270 µg/L. Eight of the 25 sample results were greater than the MTCA Method A GW CUL of 5 µg/L, with the greatest concentration in the sample from MW-10. PCE was detected at concentrations less than the MTCA Method A GW CUL for PCE in five other monitoring wells (Table 2). PCE was not detected at concentrations greater than the analytical detection limit in the samples from the remaining 12 wells. Figure 13 shows the PCE groundwater concentrations and plume as identified during the November 2017 monitoring event.

The analytical results for the breakdown products are as follows:

- TCE was detected in three samples at concentrations ranging from 1.5 µg/L to 110 µg/L. One of the sample results (MW-10) was greater than the MTCA Method A GW CUL of 5 µg/L.
- cis-1,2-Dichloroethene was detected in samples from five wells at concentrations ranging from 2.2 µg/L to 54 µg/L. Two of the sample results (MW-10 and GW-10) were greater than the MTCA Method B GW CUL of 16 µg/L.
- trans-1,2-Dichloroethene was not detected in any sample at a concentration exceeding the detection limit of the analytical method used.
- Vinyl chloride was detected in samples from MW-4 and MW-10 at concentrations of 0.24 µg/L and 6.4 µg/L, respectively. Both detected vinyl chloride concentrations were greater than the MTCA Method A GW CUL of 0.2 µg/L (Table 2).

11.0 DATA EVALUATION

The geochemical data indicate that nutrient substrate injections have created or enhanced reducing geochemical conditions in some parts of the uppermost aquifer. The TOC data collected in December 2016 indicate sharp decreases in TOC concentrations across the Site indicating that bacteria are consuming the available carbon in the subsurface. The February 2017 geochemical data indicated that TOC concentrations remained relatively low; therefore, nutrient substrate was injected into the aquifer to provide the additional carbon necessary to maintain bacteria populations and promote ERD.

Tables 1 and 2 summarize the groundwater analytical data. Due to the large number of wells and volume of data, the data are most clearly presented graphically. PCE concentrations are shown in a graphical representation of the analytical data on Figures 14A through 14E. Figures 4, 6, 8, 11, and 13 illustrate, on a quarter-by-quarter basis, the estimated extent of PCE in groundwater at concentrations exceeding the MTCA Method A GW CUL.

In November 2017, the PCE concentration at MW-10 was 270 µg/L, which represents an all-time high concentration at the Site. It is EPI's current opinion that this result is suspect as the PCE concentration observed is far outside the typical range observed at the Site and the subsequent sample result at MW-10 collected in February 2018 was within the typical range previously observed. The February 2018 results will be presented in a future report. Due to the uncertainty regarding this result, the concentration observed at MW-10 from the November 2017 monitoring event is included in all tables, graphs, and figures, but the validity of this result will be evaluated during future monitoring events.

Figures 14A through 14E present time series graphs of PCE concentrations in samples from five individual monitoring wells at the Site. These time series graphs provide a visual depiction of PCE concentration trends at specific locations on the Site, which can be evaluated to determine if specific areas require additional remediation substrate injections. Observations from these graphs are as follows:

- Figure 14A presents trend data for MW-15. This well was installed by EPI prior to any injection event to investigate a data gap in the area. The PCE concentrations at MW-15 have been greater than the applicable cleanup level and relatively stable during the seven monitored events. EPI installed injection wells near MW-15 and began performing injections in December 2017 to attempt to reduce these concentrations.
- Figure 14B presents trend data for MW-10. This well is in the source area and is discussed above. Prior to the November 2017 concentration, the PCE concentrations decreased sharply after injections began and then have rebounded back to greater than applicable cleanup levels. This well will be monitored to further investigate the November 2017 concentration.
- Figure 14C presents trend data for MW-11. MW-11 is located slightly downgradient of the source area. PCE concentrations in this well have decreased to less than cleanup levels since the injections began.
- Figure 14D presents trend data for GW-10. GW-10 is located just north of Avenue D to the south of the subject property. PCE concentrations in this well have decreased to less than cleanup levels since the injections began.
- Figure 14E presents trend data for GW-8. GW-8 is located on the Snohomish property. PCE concentrations are still greater than applicable cleanup level but have shown a steady decline since the injections began.

While concentrations remain elevated relative to MTCA Method A CULs, a decreasing trend represents a clear improvement in groundwater quality at the Site and demonstrates the effectiveness of ERD as a remediation technology for the Site. With the successful distribution of the 3-D Microemulsion[®] this improving trend in PCE concentrations is expected to continue.

The declining trend in PCE concentrations in samples from wells on the subject property is evidence of effective treatment at the source. Continued application of the ERD remediation technology is expected to result in a reduction of PCE concentrations in groundwater on the Snohomish County property to less

than MTCA Method A CULs as remediated groundwater from the subject property flows to the downgradient Snohomish property; resulting in a quicker restoration time frame than without the ERD treatment. PCE breakdown products (i.e., trichloroethylene cis-1,2-dichloroethene, and vinyl chloride) have exceeded their respective MTCA Method A CULs in samples from four wells (MW-10, MW-11, MW-4, and GW-10). This is further evidence that injection of 3-D Microemulsion® has initiated reductive dechlorination of PCE. Continued application of the ERD remediation technology is anticipated to continue the reductive dechlorination process and degrade PCE, and its breakdown products, to ethane and ethene. EPI will continue to monitor the occurrence and concentrations of PCE breakdown products as the quarterly monitoring progresses.

Figures 4, 6, 8, 11, and 13 represent the interpolated lateral extent of PCE-impacted groundwater, which extends off-property to the southwest beneath Avenue D and onto the Snohomish County property. The lateral extent of impacts to the aquifer, as indicated by PCE concentrations, is well-characterized and is adequately delineated by the existing monitoring well network.

12.0 SUMMARY OF FINDINGS AND CONCLUSIONS

The declining trend in PCE concentrations in samples from the wells at the Site is evidence of effective treatment at the source. Continued application of the ERD remediation technology is expected to result in a reduction of PCE concentrations in the groundwater at the Snohomish County property to less than MTCA Method A CULs as remediated groundwater from the subject property flows to the downgradient Snohomish County property, resulting in a quicker restoration time frame than without the ERD treatment. This decreasing trend demonstrates the effectiveness of ERD as a remediation technology for the Site.

The following summary of findings and conclusions are supported by the findings of the December 2016 monitoring event, the substrate injection events, and four follow-up quarterly groundwater monitoring events.

- Groundwater elevation data from five monitoring events indicate that the predominant groundwater flow direction at the Site is generally in a south-southwest direction with a horizontal hydraulic gradient of approximately 0.01 feet/foot.
- The current monitoring network and monitoring frequency are appropriate for the observed Site-specific conditions.
- Additional 3-D Microemulsion® injections began on February 22, 2017 using a combination of pressurized injection and gravity-flow methods. Over the duration of the injection period, 3,900 gallons of the nutrient substrate mixture were injected into the subsurface at eight injection well locations. Two additional injection wells were installed upgradient of MW-15 and two injection events were performed in December 2017 and January 2018, injecting a total of 1,675 and 2,475 gallons, respectively. The results of the February 2018 monitoring event will be used to measure the effect of these injections.
- There is a demonstrable trend of decreased total concentration of PCE in groundwater since the first injection events, which were performed in March and April of 2016. The total

concentration of PCE in groundwater has decreased since the baseline monitoring event conducted in February 2016.

- Based on data from the November 2017 monitoring event, 79.7 percent of the remaining concentrations of PCE in groundwater is represented by groundwater at MW-5, MW-10, and MW-15. This declining PCE concentration trend on the subject property is the result of effective treatment at the source and can be expected to result in a lowering of concentrations on the Snohomish property to less than MTCA Method A CULs.
- In November 2017, the PCE concentration at MW-10 was 270 µg/L, which represents an all-time high concentration at the Site. It is EPI's current opinion that this result is suspect as the PCE concentration observed is far outside the typical range observed at the Site. The subsequent PCE concentration measured in a sample collected from MW-10 February 2018 was within the typical range previously observed. The February 2018 results will be presented in a future report. Future monitoring events will evaluate the validity of this result.
- EPI will continue to monitor groundwater at MW-5 and the three new monitoring wells (MW-16, MW-17, and MW-18), which were installed downgradient of MW-5 to evaluate potential connectivity to the PCE plume. No cVOCs were detected in groundwater samples collected from these newly installed wells. Additionally, three soil borings were advanced near MW-5. No cVOCs were detected in soil at concentrations exceeding an analytical detection limit from any of the samples collected.

The presence of PCE in groundwater at MW-5 does not appear to be related to the source area at the Site due to its upgradient location and the documented lack of PCE in groundwater at the three well locations between the source area and MW-5. The impacted groundwater at MW-5 appears to be related to a separate and distinct upgradient source not associated with the former Snohomish Square Cleaners release associated with the Site.

- As the sequential reductive dechlorination of PCE occurs, some of the lesser chlorinated daughter products have been detected at concentrations greater than their respective MTCA CULs and therefore, might become COCs for the Site. The presence of these compounds will continue to be monitored and evaluated throughout the remediation process.
- EPI completed a February 2018 monitoring event and will determine the time frame for a potential additional substrate injection event based on the results from that event.

Tables

Table 1
Groundwater Geochemical Analytical Data (µg/L)
Groundwater Monitoring and Investigation Report – December 2016 to November 2017
Snohomish Square Cleaners
1419 Avenue D and 13th Street SE, Snohomish, Washington

Sample ID	Sample Date	Depth to Water (feet)	Conventionals	Demand			Minerals		Nutrients		Dissolved Gasses ^f			
			Total Sulfide ^a	BOD ^b	TOC ^c	COD ^d	Chloride ^e	Sulfate ^e	Nitrite ^e	Nitrate ^e	Carbon Dioxide	Methane	Ethane	Ethene
MW-1	2/9/2016	6.68	--	<2,000	3,900	16,000	24,300	7,450	<5	10,500	120,000	31	<10	<10
	5/17/2016	8.96	<50	<2,000	7,500	13,000	43,300	7,820	--	2,300 ^g	110,000	26	<10	<10
	8/30/2016	11.17	<50	<2,000	86,000	<10,000	29,400	11,500	<5	3,380	120,000	<5	<10	<10
	12/1/2016	6.32	<50	<2,000	5,200	11,000	18,500	4,490	<5	4,900	70,000	29	<10	<10
	2/21/2017	6.18	<50	<2,000	8,400	18,000	26,200	4,300	<5	995	130,000	<5	<10	<10
	5/25/2017	7.73	<50	<2,000	9,600	<10,000	36,200	5,500	<5	901	370,000	9.0	<10	<10
	8/8/2017	10.54	<50	<2,000	4,000	11,000	18,000	9,700	<5	2,600	--	<5	<10	<10
MW-2	2/9/2016	7.67	--	<2,000	4,200	<10,000	1,560	2,260	<5	17,200	13,000	<5	<10	<10
	5/17/2016	11.02	80	<2,000	700	<10,000	4,500	9,410	<5	10,200	61,000	<5	<10	<10
	8/29/2016	13.31	<50	<2,000	15,000	<10,000	4,640	13,800	<5	6,380	72,000	<5	<10	<10
	12/2/2016	7.12	<50	<2,000	<500	<10,000	1,240	640	<5	16,300	14,000	<5	<10	<10
	2/20/2017	6.89	<50	<2,000	2,700	<10,000	1,240	1,130	<5	11,200	--	<5	<10	<10
	5/30/2017	9.39	<50	98,000	72,000	270,000	27,300	770	<5	<25	35,100	<5	<10	<10
	8/8/2017	12.65	<50	<2,000	610	<10,000	6,300	10,700	<5	5,400	--	<5	<10	<10
MW-3	2/9/2016	4.49	--	<2,000	520	<10,000	22,300	11,900	<5	2,180	79,000	<5	<10	<10
	5/17/2016	8.35	<50	14,000	120,000	1,300,000	10,400	6,540	--	<10 ^g	100,000	<5	<10	<10
	8/29/2016	10.82	<50	55,000	300,000	1,100,000	9,880	510	<5	<25	200,000	620 ve (640)	<10 (<100)	<10 (<100)
	12/2/2016	4.72	<50	19,000	34,000	110,000	7,590	700	<5	<25	79,000	1,500 ve (1,800)	<10	<10
	2/20/2017	4.09	<50	83,000	76,000	430,000	34,500	780	<5	<25	130,000	6,100 ve (8,000)	<10	<10
	5/30/2017	6.37	<50	<2,000	9,300	<10,000	4,100	22,400	<5	7,700	445,000	3,300 ve (3,300)	<10	<10
	8/8/2017	10.13	<50	56,000	36,000	160,000	13,600	3,800	<5	90	--	4,500 ve	<10	<10
	11/21/2017	9.68	<50	12,000	35,000	38,000	9,100	5,700	<5	86	120,000	3400 ve (3,800)	<10	<10
MW-4	5/20/2016	8.93	<50	<2,000	790	18,000	11,300	13,800	<5	1,230	--	--	--	--
MW-7	2/9/2016	9.82	--	<2,000	2,600	13,000	191,000	15,700	<5	4,400	86,000	<5	<10	<10
	5/17/2016	11.07	<50	<2,000	1,300	<10,000	172,000	10,800	--	2,600 ^g	75,000	<5	<10	<10
	8/30/2016	13.46	<50	15,000	2,200	34,000	267,000	26,100	<5	3,020	96,000	<5	<10	<10
	12/1/2016	9.67	<50	<2,000	1,300	<10,000	275,000	7,770	<5	4,090	78,000	<5	<10	<10
	2/21/2017	9.77	<50	<2,000	5,700	<10,000	134,000	12,300	<5	5,300	82,000	<5	<10	<10
	5/25/2017	10.36	<50	<2,000	1,200	<10,000	617,000	17,600	<5	4,400	137,000	<5	<10	<10
	8/8/2017	12.17	<50	<2,000	920	<10,000	482,000	8,900	<5	3,000	--	<5	<10	<10
	11/21/2017	12.07	<50	<2,000	2,400	<10,000	10,600	425,000	<5	2,900	23,000	<5	<10	<10
MW-8	2/9/2016	9.45	--	<2,000	570	<10,000	2,620	24,400	<5	1,150	91,000	<5	<10	<10
	5/17/2016	11.03	<50	<2,000	3,200	<10,000	4,530	26,600	--	380 ^g	130,000	17	<10	<10
	8/29/2016	12.89	60	<2,000	11,000	<10,000	3,760	9,570	<5	2,000	110,000	<5	<10	<10
	12/2/2016	9.54	<50	<2,000	<500	<10,000	2,380	19,100	<5	1,180	52,000	<5	<10	<10
	2/21/2017	9.50	<50	<2,000	510	<10,000	2,100	21,400	<5	1,300	59,000	<5	<10	<10
	5/24/2017	10.21	<50	<2,000	650	<10,000	2,600	21,600	<5	1,000	145,000	<5	<10	<10
	8/8/2017	12.29	<50	<2,000	1,000	200,000	3,400	24,000	<5	777	--	<5	<10	<10
MW-9	2/9/2016	6.00	--	<2,000	<500	<10,000	4,360	8,230	<5	1,050	76,000	<5	<10	<10
	5/17/2016	9.27	<50	<2,000	<500	<10,000	17,000	43,100	<5	<25	67,000	<5	<10	<10
	8/29/2016	11.78	<50	<2,000	12,000	<10,000	3,770	9,570	<5	2,000	110,000	<5	<10	<10
	12/2/2016	6.43	<50	<2,000	<500	<10,000	4,110	6,790	<5	943	60,000	<5	<10	<10
	2/21/2017	6.06	<50	<2,000	<500	<10,000	4,000	6,800	<5	713	69,000	<5	<10	<10
	5/25/2017	7.71	<50	<2,000	<500	<10,000	5,080	8,100	<5	753	92,800	<5	<10	<10
	8/8/2017	NM	<50	<2,000	580	<10,000	2,900	12,900	<5	2,000	--	<5	<10	<10

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Snohomish Square Cleaners
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Sample ID	Sample Date	Depth to Water (feet)	Conventionals	Demand			Minerals		Nutrients		Dissolved Gasses ^f			
			Total Sulfide ^a	BOD ^b	TOC ^c	COD ^d	Chloride ^e	Sulfate ^e	Nitrite ^e	Nitrate ^e	Carbon Dioxide	Methane	Ethane	Ethene
MW-15	5/17/2016	8.42	<50	<2,000	700	<10,000	12,600	11,800	--	2,200^g	67,000	<5	<10	<10
	8/30/2016	10.42	<50	<2,000	20,000	<10,000	12,400	11,800	<5	1,280	87,000	<5	<10	<10
	12/1/2016	6.48	<50	<2,000	<500	<10,000	6,940	8,420	<5	7,290	54,000	<5	<10	<10
	2/21/2017	6.36	<50	<2,000	690	<10,000	<50	10,400	<5	4,700	67,000	<5	<10	<10
	5/25/2017	7.51	<50	<2,000	1,000	<10,000	10,400	12,400	<5	1,900	116,000	<5	<10	<10
	8/8/2017	12.50	<50	<2,000	810	<10,000	11,800	17,200	<5	612	--	<5	<10	<10
	11/21/2017	9.47	<50	<2,000	3,100	<10,000	12,600	15,300	<5	758	41,000	<5	<10	<10
MW-16	8/8/2017	15.72	--	--	--	--	--	--	--	--	--	--	--	--
MW-17	8/8/2017	18.54	--	--	--	--	--	--	--	--	--	--	--	--
MW-18	8/8/2017	19.20	--	--	--	--	--	--	--	--	--	--	--	--
GW-4	2/10/2016	2.78	--	<2,000	<500	<10,000	2,500	6,960	<5	323	29,000	<5	<10	<10
	5/17/2016	3.40	<50	<2,000	790	18,000	11,300	13,800	<5	1,230	76,000	<5	<10	<10
	8/29/2016	3.39	<50	<2,000	67,000	<10,000	11,400	19,600	<5	1,720	96,000	<5	<10	<10
	12/2/2016	3.28	<50	<2,000	<500	<10,000	1,940	7,120	<5	192	33,000	<5	<10	<10
	2/20/2017	2.86	<50	<2,000	580	<10,000	3,680	7,760	<5	399	46,000	<5	<10	<10
	5/26/2017	3.08	<50	<2,000	600	<10,000	8,100	6,000	<5	599	135,000	<5	<10	<10
	8/8/2017	3.40	<50	<2,000	1,100	<10,000	13,900	23,400	<5	2,500	--	<5	<10	<10
GW-11	2/9/2016	18.52	--	<2,000	740	<10,000	20,500	15,700	<5	971	130,000	<5	<10	<10
	5/17/2016	19.92	<50	<2,000	790	<10,000	30,800	19,500	<5	2,670	90,000	<5	<10	<10
	8/30/2016	20.68	<50	<2,000	28,000	<10,000	24,600	17,900	<5	3,800	110,000	<5	<10	<10
	12/2/2016	18.54	<50	<2,000	<500	<10,000	13,400	9,340	<5	1,710	150,000	<5	<10	<10
	2/20/2017	18.02	<50	<2,000	1,100	<10,000	53,800	14,200	<5	2,600	130,000	<5	<10	<10
	5/24/2017	19.18	<50	<2,000	1,200	<10,000	41,300	25,400	<5	3,100	148,000	<5	<10	<10
	8/8/2017	20.58	<50	<2,000	920	<10,000	45,100	14,300	<5	3,300	--	<5	<10	<10
MTCA Method B Groundwater Cleanup Level^h			NVE	NVE	NVE	NVE	NVE	NVE	1,600	25,600	NVE	NA	NA	NA

Groundwater Cleanup Level^h

All results presented in milligrams/kilogram (µg/L).

Bold Bold results indicate that the compound was detected.

a Analyzed by Method SM 4500-S2-D.

b Analyzed by Method SM 5210B.

c Analyzed by Method SM 5310B.

d Analyzed by EPA Method 410.4.

e Analyzed by EPA Method 300.0 unless otherwise indicated.

f Analyzed by Method RSK 175.

g Analyzed as Nitrate + Nitrite by EPA 353.2

h Model Toxics Control Act (MTCA) Method B Groundwater Cleanup Level used, Cleanup Levels and Risk Calculations (CLARC) guidance.

-- Not analyzed.

() Value from re-analyzed sample after ve qualifiers were indicated during initial analysis.

NVE No value established.

NM Not measured.

NA Not applicable.

Qualifier:

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

Compounds:

BOD Biochemical oxygen demand

TOC Total organic carbon

COD Chemical oxygen demand

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Sample ID	Depth to Water (feet)	Sample Date	Metals ^a						Detected VOCs ^b					Detected VOCs ^c				
			Iron (filtered)	Iron (unfiltered)	Lead (filtered)	Lead (unfiltered)	Manganese (filtered)	Manganese (unfiltered)	PCE	TCE	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	Vinyl Chloride	PCE	TCE	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	Vinyl Chloride
MW-1	6.68	2/9/2016	202	808	--	--	1,990	2,080	8.9	<1	<1	<1	<0.2	--	--	--	--	--
	8.96	5/17/2016	1,070	960	<1	<1	--	--	4.7	<1	<1	<1	<0.2	--	--	--	--	--
	11.17	8/30/2016	72.2	263	--	--	1,870	1,960	18	<1	<1	<1	<0.2	--	--	--	--	--
	6.32	12/1/2016	385	1,340	--	--	2,190	2,440	11	<1	<1	<1	<0.2	--	--	--	--	--
	6.18	2/21/2017	494	991	--	--	2,650	2,660	1.4	<1	<1	<1	<0.2	--	--	--	--	--
	7.73	5/25/2017	1,880	2,740	--	--	3,820	3,490	2.4	<1	<1	<1	<0.2	--	--	--	--	--
	10.54	8/8/2017	153	672	--	--	1,870	1,720	14	<1	<1	<1	<0.2	--	--	--	--	--
	10.25	11/21/2017	--	--	--	--	--	--	19	<1	<1	<1	<0.2	--	--	--	--	--
MW-2	7.67	2/9/2016	52.8	213	--	--	3.41	8.09	<1	<1	<1	<1	<0.2	--	--	--	--	--
	11.02	5/17/2016	365	12,600 ve J (16,700)	<1	6.07	--	--	<1	<1	<1	<1	<0.2	--	--	--	--	--
	13.31	8/29/2016	<50	3,910	--	--	6.41	115	<1	<1	<1	<1	<0.2	--	--	--	--	--
	7.12	12/2/2016	<50	67.9	--	--	3.98	5.12	<1	<1	<1	<1	<0.2	--	--	--	--	--
	6.89	2/20/2017	<50	170	--	--	2.54	6.35	<1	<1	<1	<1	<0.2	--	--	--	--	--
	9.39	5/30/2017	<50	59.6	--	--	3.76	4.30	<1	<1	<1	<1	<0.2	--	--	--	--	--
	12.65	8/8/2017	59.2	144	--	--	3.39	5.54	<1	<1	<1	<1	<0.2	--	--	--	--	--
	11.44	11/21/2017	--	--	--	--	--	--	<1	<1	<1	<1	<0.2	--	--	--	--	--
MW-3	4.49	2/9/2016	<50	270	--	--	2.76	8.74	12	<1	<1	<1	<0.2	--	--	--	--	--
	8.35	5/17/2016	12,400 ve J (15,700)	16,600 ve J (26,400)	<1	2.51	--	--	<1	<1	<1	<1	<0.2	--	--	--	--	--
	10.82	8/29/2016	79,300	75,600	--	--	9,620	10,000	<5	<5	<5	<5	<0.2	--	--	--	--	--
	4.72	12/2/2016	10,700	11,700	--	--	2,150	1,410	2.0	<1	<1	<1	<0.2	--	--	--	--	--
	4.09	2/21/2017	33,900	37,500	--	--	5,000	5,170	4.2	<1	3.3	<1	<0.2	--	--	--	--	--
	6.37	5/30/2017	28,100	30,200	--	--	4,530	4,490	2.1	<1	9.4	<1	<0.2	--	--	--	--	--
	10.13	8/8/2017	25,100	32,500	--	--	3,630	3,770	<1	<1	16	<1	<0.2	--	--	--	--	--
	9.68	11/21/2017	19,500	25,100	--	--	3,480	3,920	<1	<1	5.6	<1	<0.2	--	--	--	--	--
MW-4	4.54	2/12/2016	--	--	--	--	--	--	26	1.1	<1	<1	<0.2	--	--	--	--	--
	NA	2/29/2016	--	--	--	--	--	--	--	--	--	--	--	28	<1	<1	<1	<0.2
	8.93	5/20/2016	--	--	--	--	--	--	5.6	<1	1.3	<1	<0.2	1.6	<1	<1	<1	<0.2
	10.29	8/30/2016	--	--	--	--	--	--	--	--	--	--	--	<1	<1	4.7	<1	0.45
	4.58	2/21/2017	--	--	--	--	--	--	--	--	--	--	--	1.1	<1	22	<1	2.3
	5.98	5/25/2017	--	--	--	--	--	--	--	--	--	--	--	<1	<1	9.8	<1	2.1
	8.24	8/8/2017	--	--	--	--	--	--	--	--	--	--	--	<1	<1	6.2	<1	0.51
	8.17	11/21/2017	--	--	--	--	--	--	--	--	--	--	--	<1	<1	2.2	<1	0.24
MW-5	9.18	2/11/2016	--	--	--	--	--	--	70	1.4	<1	<1	<0.2	--	--	--	--	--
	NA	2/29/2016	--	--	--	--	--	--	--	--	--	--	--	50	<1	<1	<1	<0.2
	10.89	5/19/2016	--	--	--	--	--	--	26	1.2	<1	<1	<0.2	8.6	1.0	<1	<1	<0.2
	12.06	8/30/2016	--	--	--	--	--	--	16	<1	<1	<1	<0.2	9.5	<1	<1	<1	<0.2
	8.48	12/2/2016	--	--	--	--	--	--	--	--	--	--	--	23	<1	<1	<1	<0.2
	7.74	2/21/2017	--	--	--	--	--	--	--	--	--	--	--	44	<1	<1	<1	<0.2
	9.36	5/25/2017	--	--	--	--	--	--	--	--	--	--	--	51	1.5	<1	<1	<0.2
	11.39	8/8/2017	--	--	--	--	--	--	--	--	--	--	--	21	1.2	<1	<1	<0.2
11.13	11/21/2017	--	--	--	--	--	--	--	--	--	--	--	25	1.5	<1	<1	<0.2	
MW-6	13.39	2/11/2016	--	--	--	--	--	--	<1	<1	<1	<1	<0.2	--	--	--	--	--
	NA	2/29/2016	--	--	--	--	--	--	--	--	--	--	--	<1	<1	<1	<1	<0.2
	14.63	5/19/2016	--	--	--	--	--	--	<1	<1	<1	<1	<0.2	<1	<1	<1	<1	<0.2
	16.21	8/30/2016	--	--	--	--	--	--	--	--	--	--	--	<1	<1	<1	<1	<0.2
	13.71	12/2/2016	--	--	--	--	--	--	--	--	--	--	--	<1	<1	<1	<1	<0.2
	13.18	2/21/2017	--	--	--	--	--	--	--	--	--	--	--	<1	<1	<1	<1	<0.2
	13.32	5/25/2017	--	--	--	--	--	--	--	--	--	--	--	<1	<1	<1	<1	<0.2

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Sample ID	Depth to Water (feet)	Sample Date	Metals ^a						Detected VOCs ^b					Detected VOCs ^c				
			Iron (filtered)	Iron (unfiltered)	Lead (filtered)	Lead (unfiltered)	Manganese (filtered)	Manganese (unfiltered)	PCE	TCE	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	Vinyl Chloride	PCE	TCE	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	Vinyl Chloride
MW-6	NM	8/8/2017	--	--	--	--	--	--	--	--	--	--	--	<1	<1	<1	<1	<0.2
	16.42	11/21/2017	--	--	--	--	--	--	--	--	--	--	--	<1	<1	<1	<1	<0.2
MW-7	9.82	2/9/2016	194	296	--	--	6.49	10.3	4.8	<1	<1	<1	<1	<0.2	--	--	--	--
	11.07	5/17/2016	196	9,690	<1	2.45	--	--	25	<1	<1	<1	<1	<0.2	--	--	--	--
	13.46	8/30/2016	187	42,000	--	--	15.4	1,330	16	<1	<1	<1	<1	<0.2	--	--	--	--
	9.67	12/1/2016	172	212	--	--	3.05	2.84	4.5	<1	<1	<1	<1	<0.2	--	--	--	--
	9.77	2/21/2017	101	295	--	--	3.11	10.6	8.0	<1	<1	<1	<1	<0.2	--	--	--	--
	10.36	5/25/2017	303	323	--	--	10.4	10.9	11	<1	<1	<1	<1	<0.2	--	--	--	--
	12.17	8/8/2017	323	482	--	--	25.5	29.0	15	<1	<1	<1	<1	<0.2	--	--	--	--
	12.07	11/21/2017	236	322	--	--	30.6	31.4	20	<1	<1	<1	<1	<0.2	--	--	--	--
MW-8	9.45	2/9/2016	73.9	231	--	--	70.5	99.7	<1	<1	<1	<1	<0.2	--	--	--	--	--
	11.03	5/17/2016	171	117	<1	<1	--	--	<1	<1	<1	<1	<0.2	--	--	--	--	--
	12.89	8/29/2016	72.1	69,200	--	--	203	3,640	<1	<1	<1	<1	<0.2	--	--	--	--	--
	9.54	12/2/2016	<50	101	--	--	57.7	120	<1	<1	<1	<1	<0.2	--	--	--	--	--
	9.50	2/21/2017	55.7	364	--	--	10.1	52.4	<1	<1	<1	<1	<0.2	--	--	--	--	--
	10.21	5/24/2017	<50	324	--	--	13.6	186	<1	<1	<1	<1	<0.2	--	--	--	--	--
	12.29	8/8/2017	66.6	181	--	--	476	454	<1	<1	<1	<1	<0.2	--	--	--	--	--
	11.71	11/21/2017	--	--	--	--	--	--	<1	<1	<1	<1	<0.2	--	--	--	--	--
MW-9	6.00	2/9/2016	<50	2,570	--	--	1.27	55.1	7.9	<1	<1	<1	<0.2	--	--	--	--	--
	9.27	5/17/2016	78.1	7,120 ve J (7,990)	<1	2.25	--	--	6.5	<1	<1	<1	<0.2	--	--	--	--	--
	11.78	8/29/2016	<50	<500	--	--	4.57	13.5	<1	<1	<1	<1	<0.2	--	--	--	--	--
	6.43	12/2/2016	<50	<50	--	--	1.99	1.2	9.0	<1	<1	<1	<0.2	--	--	--	--	--
	6.06	2/21/2017	<50	<50	--	--	<1	<1	8.0	<1	<1	<1	<0.2	--	--	--	--	--
	7.71	5/25/2017	<50	<50	--	--	<1	1.02	5.4	<1	<1	<1	<0.2	--	--	--	--	--
	NM	8/8/2017	<50	<50	--	--	2.41	2.49	<1	<1	<1	<1	<0.2	--	--	--	--	--
	10.67	11/21/2017	--	--	--	--	--	--	1.3	<1	<1	<1	<0.2	--	--	--	--	--
MW-10	4.02	2/12/2016	--	--	--	--	--	--	38	2.7	2.4	<1	<0.2	--	--	--	--	--
	NA	2/29/2016	--	--	--	--	--	--	--	--	--	--	--	38	1.8	1.5	<1	<0.2
	7.56	5/19/2016	--	--	--	--	--	--	7.0	73	5.5	<1	<0.2	10	12	<1	<1	<0.2
	10.08	8/30/2016	--	--	--	--	--	--	--	--	--	--	--	99 (97)	170 ve (170)	95 (97)	1.1 (<10)	<0.2 (<2)
	4.19	12/2/2016	--	--	--	--	--	--	--	--	--	--	--	75	85	62	<1	6.4
	3.74	2/21/2017	--	--	--	--	--	--	--	--	--	--	--	5.2	1.2	15	<1	1.1
	5.80	5/25/2017	--	--	--	--	--	--	--	--	--	--	--	2.0	1.3	16	<1	3.2
	9.41	8/8/2017	--	--	--	--	--	--	--	--	--	--	--	22	60	19	<1	1.3
9.03	11/21/2017	--	--	--	--	--	--	--	--	--	--	--	270	110	54	<1	6.4	
MW-11	5.23	2/12/2016	--	--	--	--	--	--	48	2.5	1.2	<1	<0.2	--	--	--	--	--
	NA	2/29/2016	--	--	--	--	--	--	--	--	--	--	--	57	2.2	1.1	<1	<0.2
	7.55	5/19/2016	--	--	--	--	--	--	62	2.8	1.0	<1	<0.2	36	2.4	<1	<1	<0.2
	10.28	8/30/2016	--	--	--	--	--	--	<1	<1	30	<1	0.7	<1	<1	32	<1	1.1
	5.56	12/2/2016	--	--	--	--	--	--	--	--	--	--	--	<1	1.1	59	<1	5.7
	5.03	2/21/2017	--	--	--	--	--	--	--	--	--	--	--	2.7	8.0	25	<1	7.4
	6.36	5/25/2017	--	--	--	--	--	--	--	--	--	--	--	<1	<1	26	<1	4.1
	9.13	8/8/2017	--	--	--	--	--	--	--	--	--	--	--	<1	<1	3.6	<1	1.7
NA	11/21/2017	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
MW-12	9.67	2/12/2016	--	--	--	--	--	--	<1	<1	<1	<1	<0.2	--	--	--	--	--
	NA	2/29/2016	--	--	--	--	--	--	--	--	--	--	--	<1	<1	<1	<1	<0.2
	11.09	5/19/2016	--	--	--	--	--	--	1.7	<1	<1	<1	<0.2	1.7	<1	<1	<1	<0.2
	13.34	8/30/2016	--	--	--	--	--	--	--	--	--	--	--	3.5	<1	<1	<1	<0.2
	9.51	12/2/2016	--	--	--	--	--	--	--	--	--	--	--	2.8	<1	<1	<1	<0.2

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			Iron (filtered)	Iron (unfiltered)	Lead (filtered)	Lead (unfiltered)	Manganese (filtered)	Manganese (unfiltered)	PCE	TCE	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	Vinyl Chloride	PCE	TCE	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	Vinyl Chloride
MW-12	9.46	2/21/2017	--	--	--	--	--	--	--	--	--	--	--	1.2	<1	<1	<1	<0.2
	10.05	5/25/2017	--	--	--	--	--	--	--	--	--	--	--	<1	<1	<1	<1	<0.2
	15.55	8/8/2017	--	--	--	--	--	--	--	--	--	--	--	2.5	<1	<1	<1	<0.2
	12.36	11/21/2017	--	--	--	--	--	--	--	--	--	--	--	3.8	<1	<1	<1	<0.2
MW-13	18.09	2/11/2016	--	--	--	--	--	--	3.2	<1	<1	<1	<0.2	--	--	--	--	--
	NA	2/29/2016	--	--	--	--	--	--	--	--	--	--	--	3.3	<1	<1	<1	<0.2
	18.92	5/20/2016	--	--	--	--	--	--	2.6	<1	<1	<1	<0.2	1.5	<1	<1	<1	<0.2
	19.85	8/30/2016	--	--	--	--	--	--	--	--	--	--	--	<1	<1	<1	<1	<0.2
	18.10	12/2/2016	--	--	--	--	--	--	--	--	--	--	--	2.3	<1	<1	<1	<0.2
	18.02	2/21/2017	--	--	--	--	--	--	--	--	--	--	--	3.0	<1	<1	<1	<0.2
	18.38	5/25/2017	--	--	--	--	--	--	--	--	--	--	--	3.0	<1	<1	<1	<0.2
	19.66	8/8/2017	--	--	--	--	--	--	2.5	<1	<1	<1	<0.2	--	--	--	--	--
19.78	11/21/2017	--	--	--	--	--	--	2.4	<1	<1	<1	<0.2	--	--	--	--	--	
MW-14	11.29	2/11/2016	--	--	--	--	--	--	<1	<1	<1	<1	<0.2	<1	<1	<1	<1	<0.2
	NA	2/29/2016	--	--	--	--	--	--	--	--	--	--	--	<1	<1	<1	<1	<0.2
	11.95	5/19/2016	--	--	--	--	--	--	<1	<1	<1	<1	<0.2	<1	<1	<1	<1	<0.2
	13.34	8/30/2016	--	--	--	--	--	--	--	--	--	--	--	<1	<1	<1	<1	<0.2
	11.14	12/2/2016	--	--	--	--	--	--	--	--	--	--	--	<1	<1	<1	<1	<0.2
	11.24	2/21/2017	--	--	--	--	--	--	--	--	--	--	--	<1	<1	<1	<1	<0.2
	11.64	5/25/2017	--	--	--	--	--	--	--	--	--	--	--	<1	<1	<1	<1	<0.2
	12.78	8/8/2017	--	--	--	--	--	--	--	--	--	--	--	<1	<1	<1	<1	<0.2
12.21	11/21/2017	--	--	--	--	--	--	--	--	--	--	--	<1	<1	<1	<1	<0.2	
MW-15	8.42	5/17/2016	78.7	214	<1	<1	--	--	140	2.8	1.1	<1	<0.2	--	--	--	--	--
	10.42	8/30/2016	<50	289	--	--	22.7	28.0	94	2.3	1.5	<1	<0.2	--	--	--	--	--
	6.48	12/1/2016	57.5	338	--	--	13.5	19	190 ve (180)	3.4	1.2	<1	<0.2	--	--	--	--	--
	6.36	2/21/2017	58.6	241	--	--	4.17	8.16	140	2.6	<1	<1	<0.2	--	--	--	--	--
	7.51	5/25/2017	<50	62.5	--	--	3.37	3.31	120	2.7	1.1	<1	<0.2	--	--	--	--	--
	12.50	8/8/2017	<50	50.0	--	--	3.97	3.91	120	3.0	1.8	<1	<0.2	--	--	--	--	--
	9.47	11/21/2017	<50	66.1	--	--	11.1	11.3	96	2.6	2.4	<1	<0.2	--	--	--	--	--
MW-16	14.45	6/27/2017	--	--	--	--	--	--	<1	<1	<1	<1	<0.2	--	--	--	--	--
	15.72	8/8/2017	--	--	--	--	--	--	<1	<1	<1	<1	<0.2	--	--	--	--	--
	15.36	11/21/2017	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-17	22.15	6/27/2017	--	--	--	--	--	--	<1	<1	<1	<1	<0.2	--	--	--	--	--
	18.54	8/8/2017	--	--	--	--	--	--	<1	<1	<1	<1	<0.2	--	--	--	--	--
	22.02	11/21/2017	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-18	20.25	6/27/2017	--	--	--	--	--	--	<1	<1	<1	<1	<0.2	--	--	--	--	--
	19.20	8/8/2017	--	--	--	--	--	--	<1	<1	<1	<1	<0.2	--	--	--	--	--
	22.03	11/21/2017	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GW-1	1.64	2/10/2016	--	--	--	--	--	--	<1	<1	<1	<1	<0.2	--	--	--	--	--
	NA	2/29/2016	--	--	--	--	--	--	--	--	--	--	--	<1	<1	<1	<1	<0.2
	2.46	5/18/2016	--	--	--	--	--	--	<1	<1	<1	<1	<0.2	<1	<1	<1	<1	<0.2
	2.71	8/30/2016	--	--	--	--	--	--	--	--	--	--	--	<1	<1	<1	<1	<0.2
	2.08	12/2/2016	--	--	--	--	--	--	--	--	--	--	--	<1	<1	<1	<1	<0.2
	1.31	2/21/2017	--	--	--	--	--	--	--	--	--	--	--	<1	<1	<1	<1	<0.2
	1.30	5/26/2017	--	--	--	--	--	--	--	--	--	--	--	<1	<1	<1	<1	<0.2
	2.83	8/8/2017	--	--	--	--	--	--	--	--	--	--	--	<1	<1	<1	<1	<0.2
1.64	11/21/2017	--	--	--	--	--	--	--	--	--	--	--	<1	<1	<1	<1	<0.2	
GW-3	3.13	2/10/2016	--	--	--	--	--	--	1.6	<1	<1	<1	<0.2	--	--	--	--	--
	NA	2/29/2016	--	--	--	--	--	--	--	--	--	--	--	<1	<1	<1	<1	<0.2
	3.15	5/18/2016	--	--	--	--	--	--	2.0	<1	<1	<1	<0.2	1.6	<1	<1	<1	<0.2

Table 2
 Additional Groundwater Analytical Data (µg/L)
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 Snohomish Square Cleaners
 1419 Avenue D and 13th Street SE, Snohomish, Washington

Sample ID	Depth to Water (feet)	Sample Date	Metals ^a						Detected VOCs ^b					Detected VOCs ^c				
			Iron (filtered)	Iron (unfiltered)	Lead (filtered)	Lead (unfiltered)	Manganese (filtered)	Manganese (unfiltered)	PCE	TCE	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	Vinyl Chloride	PCE	TCE	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	Vinyl Chloride
GW-3	3.34	8/30/2016	--	--	--	--	--	--	--	--	--	--	--	2.4	<1	<1	<1	<0.2
	2.93	12/2/2016	--	--	--	--	--	--	--	--	--	--	--	1.2	<1	<1	<1	<0.2
	3.02	2/21/2017	--	--	--	--	--	--	--	--	--	--	--	<1	<1	<1	<1	<0.2
	3.17	5/26/2017	--	--	--	--	--	--	--	--	--	--	--	<1	<1	<1	<1	<0.2
	3.41	8/8/2017	--	--	--	--	--	--	--	--	--	--	--	2.9	<1	<1	<1	<0.2
	2.91	11/21/2017	--	--	--	--	--	--	--	--	--	--	--	1.3	<1	<1	<1	<0.2
GW-4	2.78	2/10/2016	<50	188	--	--	1.42	133	4.8	<1	<1	<1	<0.2	--	--	--	--	--
	3.40	5/17/2016	91.7	3,250	<1	<1	--	--	9.6	<1	<1	<1	<0.2	--	--	--	--	--
	3.39	8/29/2016	62.8	<500	--	--	44.1	332	11	<1	<1	<1	<0.2	--	--	--	--	--
	3.28	12/2/2016	<50	50.2	--	--	8.51	279	5.7	<1	<1	<1	<0.2	--	--	--	--	--
	2.86	2/20/2017	<50	123	--	--	8.2	149	4.5	<1	<1	<1	<0.2	--	--	--	--	--
	3.08	5/26/2017	<50	73.3	--	--	1.81	118	4.1	<1	<1	<1	<0.2	--	--	--	--	--
	3.40	8/8/2017	81.6	99.9	--	--	48.6	91.7	10	<1	<1	<1	<0.2	--	--	--	--	--
	2.85	11/21/2017	--	--	--	--	--	--	6.8	<1	<1	<1	<0.2	--	--	--	--	--
GW-5	4.60	2/10/2016	--	--	--	--	--	--	2.5	<1	<1	<1	<0.2	--	--	--	--	--
	NA	2/29/2016	--	--	--	--	--	--	--	--	--	--	--	2.5	<1	<1	<1	<0.2
	5.04	5/18/2016	--	--	--	--	--	--	3.1	<1	<1	<1	<0.2	1.8	<1	<1	<1	<0.2
	5.42	8/30/2016	--	--	--	--	--	--	--	--	--	--	--	2.9	<1	<1	<1	<0.2
	4.07	12/2/2016	--	--	--	--	--	--	--	--	--	--	--	3.9	<1	<1	<1	<0.2
	4.19	2/21/2017	--	--	--	--	--	--	--	--	--	--	--	2.5	<1	<1	<1	<0.2
	4.76	5/26/2017	--	--	--	--	--	--	--	--	--	--	--	2.3	<1	<1	<1	<0.2
	5.44	8/8/2017	--	--	--	--	--	--	--	--	--	--	--	3.2	<1	<1	<1	<0.2
NA	11/21/2017	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
GW-6	3.92	2/10/2016	--	--	--	--	--	--	6.4	<1	<1	<1	<0.2	--	--	--	--	--
	NA	2/29/2016	--	--	--	--	--	--	--	--	--	--	--	6.1	<1	<1	<1	<0.2
	4.08	5/18/2016	--	--	--	--	--	--	6.6	<1	<1	<1	<0.2	5.1	<1	<1	<1	<0.2
	4.21	8/30/2016	--	--	--	--	--	--	7.3	<1	<1	<1	<0.2	7.0	<1	<1	<1	<0.2
	3.66	12/2/2016	--	--	--	--	--	--	--	--	--	--	--	8.6	<1	<1	<1	<0.2
	3.67	2/21/2017	--	--	--	--	--	--	--	--	--	--	--	6.0	<1	<1	<1	<0.2
	3.95	5/26/2017	--	--	--	--	--	--	--	--	--	--	--	5.6	<1	<1	<1	<0.2
	4.25	8/8/2017	--	--	--	--	--	--	--	--	--	--	--	9.2	<1	<1	<1	<0.2
NA	11/21/2017	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
GW-7	2.67	2/11/2016	--	--	--	--	--	--	1.2	<1	<1	<1	<0.2	--	--	--	--	--
	NA	2/29/2016	--	--	--	--	--	--	--	--	--	--	--	<1	<1	<1	<1	<0.2
	3.99	5/20/2016	--	--	--	--	--	--	2.0	<1	<1	<1	<0.2	1.1	<1	<1	<1	<0.2
	4.56	8/30/2016	--	--	--	--	--	--	--	--	--	--	--	1.1	<1	<1	<1	<0.2
	2.19	12/2/2016	--	--	--	--	--	--	--	--	--	--	--	1.1	<1	<1	<1	<0.2
	2.11	2/21/2017	--	--	--	--	--	--	--	--	--	--	--	<1	<1	<1	<1	<0.2
	3.26	5/26/2017	--	--	--	--	--	--	--	--	--	--	--	1.0	<1	<1	<1	<0.2
	4.53	8/8/2017	--	--	--	--	--	--	--	--	--	--	--	2.0	<1	<1	<1	<0.2
3.15	11/21/2017	--	--	--	--	--	--	--	--	--	--	--	1.3	<1	<1	<1	<0.2	
GW-8	2.39	2/11/2016	--	--	--	--	--	--	22	<1	<1	<1	<0.2	--	--	--	--	--
	NA	2/29/2016	--	--	--	--	--	--	--	--	--	--	--	21	<1	<1	<1	<0.2
	3.04	5/20/2016	--	--	--	--	--	--	25	<1	<1	<1	<0.2	21	<1	<1	<1	<0.2
	3.57	8/30/2016	--	--	--	--	--	--	--	--	--	--	--	20	<1	<1	<1	<0.2
	2.50	12/2/2016	--	--	--	--	--	--	--	--	--	--	--	18	<1	<1	<1	<0.2
	2.07	2/21/2017	--	--	--	--	--	--	--	--	--	--	--	16	<1	<1	<1	<0.2
	2.71	5/26/2017	--	--	--	--	--	--	--	--	--	--	--	14	<1	<1	<1	<0.2
3.55	8/8/2017	--	--	--	--	--	--	--	--	--	--	--	26	<1	<1	<1	<0.2	

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Sample ID	Depth to Water (feet)	Sample Date	Metals ^a						Detected VOCs ^b					Detected VOCs ^c				
			Iron (filtered)	Iron (unfiltered)	Lead (filtered)	Lead (unfiltered)	Manganese (filtered)	Manganese (unfiltered)	PCE	TCE	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	Vinyl Chloride	PCE	TCE	cis-1,2-Dichloro-ethene	trans-1,2-Dichloro-ethene	Vinyl Chloride
GW-8	2.51	11/21/2017	--	--	--	--	--	--	--	--	--	--	--	13	<1	<1	<1	<0.2
GW-9	2.66	2/11/2016	--	--	--	--	--	--	<1	<1	1.7	<1	<0.2	--	--	--	--	--
	NA	2/29/2016	--	--	--	--	--	--	--	--	--	--	--	<1	<1	1.3	<1	<0.2
	2.84	5/20/2016	--	--	--	--	--	--	<1	<1	1.7	<1	<0.2	<1	<1	1.4	<1	<0.2
	4.30	8/30/2016	--	--	--	--	--	--	--	--	--	--	--	<1	<1	1.1	<1	<0.2
	2.34	12/2/2016	--	--	--	--	--	--	--	--	--	--	--	<1	<1	<1	<1	<0.2
	4.53	2/21/2017	--	--	--	--	--	--	--	--	--	--	--	<1	<1	<1	<1	<0.2
	2.70	5/26/2017	--	--	--	--	--	--	--	--	--	--	--	<1	<1	1.1	<1	<0.2
	4.22	8/8/2017	--	--	--	--	--	--	--	--	--	--	--	<1	<1	1.4	<1	<0.2
2.30	11/21/2017	--	--	--	--	--	--	--	--	--	--	--	<1	<1	<1	<1	<0.2	
GW-10	21.39	2/11/2016	--	--	--	--	--	--	19	1.2	<1	<1	<0.2	--	--	--	--	--
	NA	2/29/2016	--	--	--	--	--	--	--	--	--	--	--	27	1.2	<1	<1	<0.2
	23.21	5/20/2016	--	--	--	--	--	--	8.5	1.3	<1	<1	<0.2	5.8	1.1	<1	<1	<0.2
	23.86	8/30/2016	--	--	--	--	--	--	19	1.3	2.7	<1	<0.2	18	1.1	<1	<1	<0.2
	20.94	12/2/2016	--	--	--	--	--	--	--	--	--	--	--	16	1.3	1.3	<1	<0.2
	20.89	2/21/2017	--	--	--	--	--	--	--	--	--	--	--	<1	<1	14	<1	<0.2
	22.07	5/25/2017	--	--	--	--	--	--	--	--	--	--	--	1.9	<1	18	<1	<0.2
	23.95	8/8/2017	--	--	--	--	--	--	<1	<1	22	<1	0.23	--	--	--	--	--
22.79	11/21/2017	--	--	--	--	--	--	--	--	--	--	--	<1	<1	32	<1	<0.2	
GW-11	18.52	2/9/2016	91.2	85.8	--	--	2.09	2.7	8.4	<1	<1	<1	<0.2	--	--	--	--	--
	19.92	5/17/2016	127	95	<1	<1	--	--	25	<1	<1	<1	<0.2	--	--	--	--	--
	20.68	8/30/2016	90.4	1,210	--	--	5.27	29.4	19	<1	<1	<1	<0.2	--	--	--	--	--
	18.54	12/2/2016	<50	77.8	--	--	2.31	2.81	<1	<1	<1	<1	<0.2	--	--	--	--	--
	18.02	2/20/2017	108	147	--	--	3.0	3.99	4.7	<1	<1	<1	<0.2	--	--	--	--	--
	19.18	5/24/2017	83.0	106	--	--	3.19	3.73	15	<1	<1	<1	<0.2	--	--	--	--	--
	20.58	8/8/2017	154	4,310	--	--	3.74	125	19	<1	<1	<1	<0.2	--	--	--	--	--
	19.34	11/21/2017	--	--	--	--	--	--	21	<1	<1	<1	<0.2	--	--	--	--	--
MTCA Method A Groundwater Cleanup Level^d			11,200^e		15		2,240^e		5	5	16^e	160^e	0.2	5	5	16^e	160^e	0.2

Notes:
All results presented in milligrams/kilogram (µg/L).
Bold Bold results indicate that the compound was detected.
 Shaded cells indicate that the compound was detected at a concentration greater than the cleanup level.
a Analyzed by EPA Method 200.8.
b Analyzed by EPA Method 8260; sampled 2/09/16-2/11/16, 5/18/16, 12/1/16-12/2/16, 8/29/16, 2/21/17, 5/30/17, and 6/27/17.
c Analyzed by EPA Method 8260; sampled with passive diffusion bag (PDB)
d MTCA Method A Groundwater Cleanup Level from Table 720-1 in Washington Administration Code (WAC) Chapter 173-340-900.
e MTCA Method B Groundwater Cleanup Level used, Cleanup Levels and Risk Calculations (CLARC) guidance.
-- Not analyzed.
() Value from re-analyzed sample after ve J qualifiers were indicated during initial analysis.
NA Well not accessible.
NM Not measured.

Qualifiers:
j The analyte concentration is reported below the lowest calibration standard. The value is reported as an estimate.
ve The analyte response exceeded the valid instrument calibration range. 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.

Compounds:
VOCs Volatile organic compounds
PCE Tetrachloroethene
TCE Trichloroethene

Table 3
Field Parameters
Groundwater Monitoring and Investigation Report – December 2016 to November 2017
Snohomish Square Cleaners
1419 Avenue D and 13th Street SE, Snohomish, Washington

Sample ID	Sample Date	Depth to Water (feet)	pH	Conductivity (ms/cm ²)	DO (mg/L)	Temperature (°C)	ORP (mv)
MW-1	2/9/2016	6.68	6.20	0.420	2.24	12.90	190.1
	5/17/2016	8.96	6.04	0.347	1.20	14.87	114.6
	8/30/2016	11.17	5.82	0.381	1.01	18.14	257.6
	12/1/2016	6.32	6.16	0.345	0.95	16.06	84.6
	2/21/2017	6.18	6.26	0.382	0.36	11.4	110.0
	5/25/2017	7.73	6.06	0.406	0.80	14.1	57.4
	8/8/2017	10.54	5.84	0.238	2.48	17.60	159.2
	11/21/2017	10.25	5.89	0.238	1.57	15.90	219.1
MW-2	2/9/2016	7.67	5.54	0.139	9.51	12.66	326.7
	5/17/2016	11.02	5.20	0.124	7.82	13.37	263.1
	8/30/2016	13.31	5.07	0.151	2.89	15.67	258.6
	12/2/2016	7.12	5.43	0.178	7.46	12.68	77.4
	2/21/2017	6.89	5.55	0.128	9.97	8.9	231.4
	5/30/2017	9.39	5.48	0.151	8.18	12.1	157.4
	8/9/2017	12.65	5.77	0.144	1.79	17.96	-114.9
	11/21/2017	11.44	5.63	0.077	8.79	11.9	281.0
MW-3	2/9/2016	4.49	5.82	0.187	6.88	10.50	305.4
	5/17/2016	8.35	5.92	0.461	0.48	14.14	6.5
	8/30/2016	10.82	5.37	0.684	1.50	17.89	46.8
	12/2/2016	4.72	6.04	0.516	3.28	11.68	-3.9
	2/20/2017	4.09	6.28	0.571	4.41	10.3	-34.1
	5/30/2017	6.37	5.81	0.488	0.22	13.9	3.1
	8/8/17*	10.13	5.86	0.529	1.93	18.41	-87.3
	11/21/2017	9.68	5.97	0.296	0.88	14.4	7.3
MW-4	2/12/2016	4.54	5.85	0.129	7.15	12.80	183.3
	5/20/2016	8.93	5.66	0.397	0.49	13.79	28.8
	8/30/2016	10.29	--	--	--	--	--
	12/2/2016	NM ^a	--	--	--	--	--
	2/21/2017	4.58	--	--	--	--	--
	5/25/2017	5.98	--	--	--	--	--
	8/10/2017	8.24	--	--	--	--	--
	11/21/2017	8.17	--	--	--	--	--
MW-5	2/11/2016	9.18	5.85	0.361	0.31	12.56	303.1
	5/19/2016	10.89	5.68	0.280	1.41	12.86	198.9
	8/30/2016	12.06	5.74	0.328	0.87	16.29	145.2
	12/2/2016	8.48	--	--	--	--	--
	2/21/2017	7.74	--	--	--	--	--
	5/25/2017	9.36	--	--	--	--	--
	8/8/2017	11.39	--	--	--	--	--
	11/21/2017	11.13	--	--	--	--	--
MW-6	2/11/2016	13.39	5.81	0.424	0.40	14.58	237.1
	5/19/2016	14.63	5.57	0.366	0.51	14.25	167.4
	8/30/2016	16.21	--	--	--	--	--
	12/2/2016	13.71	--	--	--	--	--
	2/20/2017	13.18	--	--	--	--	--
	5/25/2017	13.32	--	--	--	--	--
	8/10/2017	NM	--	--	--	--	--
	11/21/2017	16.42	--	--	--	--	--
MW-7	2/9/2016	9.82	6.37	0.987	5.65	12.49	325.6
	5/17/2016	11.07	5.57	0.725	2.2	14.96	206.3
	8/30/2016	13.46	5.54	0.974	3.09	18.41	272.8
	12/1/2016	9.67	6.13	1.207	4.37	15.8	114.7
	2/21/2017	9.77	6.37	0.760	5.53	11.0	174.9
	5/25/2017	10.36	5.81	2.460	4.53	14.5	135.8
	8/9/2017	12.17	5.50	1.453	1.90	18.47	253.5
	11/21/2017	12.07	5.60	1.40	3.77	16.3	158.7
MW-8	2/9/2016	9.45	6.02	0.185	1.69	13.55	284.7
	5/17/2016	11.03	5.65	0.209	0.44	14.30	213.2
	8/30/2016	12.89	5.87	0.250	0.91	18.00	158.8
	12/2/2016	9.54	5.90	0.160	2.80	15.08	102.8
	2/21/2017	9.50	6.06	0.153	2.96	12.7	204.9
	5/24/2017	10.21	5.92	0.160	3.71	14.1	163.7
	8/9/2017	12.29	6.27	0.367	1.63	16.15	236.8
	11/21/2017	11.71	5.80	0.217	1.19	15.6	239.6
MW-9	2/9/2016	6.00	5.87	0.108	7.03	12.88	326.5
	5/17/2016	9.27	5.46	0.097	6.77	15.22	243.0
	8/30/2016	11.78	5.34	0.108	3.90	19.05	136.0
	12/2/2016	6.43	5.77	0.111	5.42	14.94	46.0
	2/21/2017	6.06	5.88	0.105	6.79	12.0	226.3
	5/25/2017	7.71	5.75	0.103	7.82	13.9	180.9
	8/9/2017	NM	5.02	0.265	4.63	17.56	305.4
	11/21/2017	10.67	5.41	0.096	6.00	14.5	270.0
MW-10	2/12/2016	4.02	5.88	0.125	7.79	11.56	340.2
	5/19/2016	7.56	6.08	0.238	1.76	13.31	23.8
	8/30/2016	10.08	--	--	--	--	--
	12/2/2016	4.19	--	--	--	--	--
	2/21/2017	3.74	--	--	--	--	--
	5/25/2017	5.80	--	--	--	--	--
	8/10/2017	9.41	--	--	--	--	--
	11/21/2017	9.03	--	--	--	--	--

Table 3
Field Parameters
Groundwater Monitoring and Investigation Report – December 2016 to November 2017
Snohomish Square Cleaners
1419 Avenue D and 13th Street SE, Snohomish, Washington

Sample ID	Sample Date	Depth to Water (feet)	pH	Conductivity (ms/cm ²)	DO (mg/L)	Temperature (°C)	ORP (mv)
MW-11	2/12/2016	5.23	5.89	0.133	6.40	13.62	337.7
	5/19/2016	7.55	5.71	0.248	0.34	14.02	27.7
	8/30/2016	10.28	6.09	0.663	0.45	17.63	-1.9
	12/2/2016	5.56	--	--	--	--	--
	2/20/2017	5.03	--	--	--	--	--
	5/25/2017	6.36	--	--	--	--	--
	8/10/2017	9.13	--	--	--	--	--
	11/21/2017	NA	--	--	--	--	--
MW-12	2/12/2016	9.67	5.47	0.329	4.90	12.53	265.9
	5/19/2016	11.09	5.30	0.260	4.35	14.07	157.2
	8/30/2016	13.34	--	--	--	--	--
	12/2/2016	9.51	--	--	--	--	--
	2/20/2017	9.46	--	--	--	--	--
	5/25/2017	10.05	--	--	--	--	--
	8/10/2017	15.55	--	--	--	--	--
	11/21/2017	12.36	--	--	--	--	--
MW-13	2/11/2016	18.09	5.69	0.290	1.25	13.48	364.4
	5/20/2016	18.92	5.44	0.270	2.92	15.24	150.6
	8/30/2016	19.85	--	--	--	--	--
	12/2/2016	18.10	--	--	--	--	--
	2/20/2017	18.02	--	--	--	--	--
	5/25/2017	18.38	--	--	--	--	--
	8/10/2017	19.66	5.01	0.255	3.04	16.18	226.0
	11/21/2017	19.78	5.67	0.160	3.08	14.9	278.0
MW-14	2/11/2016	11.29	6.00	0.117	4.40	12.82	303.4
	5/19/2016	11.95	5.62	0.088	5.97	13.31	194.9
	8/30/2016	13.34	--	--	--	--	--
	12/2/2016	11.14	--	--	--	--	--
	2/20/2017	11.24	--	--	--	--	--
	5/25/2017	11.64	--	--	--	--	--
	8/10/2017	12.78	--	--	--	--	--
	11/21/2017	12.21	--	--	--	--	--
MW-15	5/17/2016	8.42	5.74	0.143	3.56	14.71	188.2
	8/30/2016	10.42	5.56	0.185	0.95	17.13	274.4
	12/1/2016	6.48	5.79	0.182	2.98	15.06	91.2
	2/21/2017	6.36	5.93	0.168	3.69	12.6	195.2
	5/25/2017	7.51	5.78	0.154	3.32	14.8	144.5
	8/9/2017	12.50	4.42	0.143	0.32	18.43	294.9
	11/21/2017	9.47	5.81	0.155	0.83	14.9	65.9
	MW-16	8/8/2017	15.72	6.76	0.168	0.81	16.06
11/21/2017		15.36	--	--	--	--	--
MW-17	8/8/2017	18.54	6.78	0.365	1.60	15.20	74.7
	11/21/2017	22.02	7.03	0.480	1.10	11.8	249.7
MW-18	8/10/2017	19.20	7.51	0.487	0.30	16.46	-442.5
	11/21/2017	22.03	--	--	--	--	--
GW-1	2/10/2016	1.64	6.10	0.144	6.79	10.26	295.3
	5/18/2016	2.46	5.83	0.155	5.41	15.41	156.8
	8/30/2016	2.71	--	--	--	--	--
	12/2/2016	2.08	--	--	--	--	--
	2/20/2017	1.31	--	--	--	--	--
	5/26/2017	1.30	--	--	--	--	--
	8/10/2017	2.83	--	--	--	--	--
	11/21/2017	1.64	--	--	--	--	--
GW-3	2/10/2016	3.13	6.68	0.169	7.62	9.22	298.5
	5/18/2016	3.15	6.30	0.178	5.75	16.65	169.5
	8/30/2016	3.34	--	--	--	--	--
	12/2/2016	2.93	--	--	--	--	--
	2/20/2017	3.02	--	--	--	--	--
	5/26/2017	3.17	--	--	--	--	--
	8/10/2017	3.41	--	--	--	--	--
	11/21/2017	2.91	--	--	--	--	--
GW-4	2/10/2016	2.78	6.39	0.110	1.03	9.26	283.7
	5/17/2016	3.40	5.74	0.169	1.46	14.08	237.9
	8/30/2016	3.39	5.76	0.243	0.76	18.58	227.9
	12/2/2016	3.28	6.14	0.105	1.02	11.70	47.0
	2/20/2017	2.86	6.25	0.131	1.68	8.1	107.2
	5/25/2017	3.08	6.10	0.150	0.47	12.5	145.9
	8/8/2017	3.40	5.71	0.250	0.36	18.95	199.5
	11/21/2017	2.85	6.05	0.158	1.16	11.5	268.2
GW-5	2/10/2016	4.60	6.36	0.363	1.62	10.89	281.0
	5/18/2016	5.04	6.06	0.283	1.41	13.49	151.3
	8/30/2016	5.42	--	--	--	--	--
	12/2/2016	4.07	--	--	--	--	--
	2/20/2017	4.19	--	--	--	--	--
	5/26/2017	4.76	--	--	--	--	--
	8/10/2017	5.44	--	--	--	--	--
	11/21/2017	NA	--	--	--	--	--

Table 3
Field Parameters
Groundwater Monitoring and Investigation Report – December 2016 to November 2017
Snohomish Square Cleaners
1419 Avenue D and 13th Street SE, Snohomish, Washington

Sample ID	Sample Date	Depth to Water (feet)	pH	Conductivity (ms/cm ²)	DO (mg/L)	Temperature (°C)	ORP (mv)
GW-6	2/10/2016	3.92	6.36	0.168	2.63	10.17	298.0
	5/18/2016	4.08	6.09	0.151	1.30	15.91	164.6
	8/30/2016	4.21	6.06	0.219	0.61	20.23	166.9
	12/2/2016	3.66	--	--	--	--	--
	2/20/2017	3.67	--	--	--	--	--
	5/26/2017	3.95	--	--	--	--	--
	8/10/2017	4.25	--	--	--	--	--
	11/21/2017	NA	--	--	--	--	--
GW-7	2/11/2016	2.67	6.20	0.185	8.92	9.41	283.9
	5/20/2016	3.99	5.62	0.171	7.95	15.42	196.3
	8/30/2016	4.56	--	--	--	--	--
	12/2/2016	2.19	--	--	--	--	--
	2/20/2017	2.11	--	--	--	--	--
	5/26/2017	3.26	--	--	--	--	--
	8/10/2017	4.53	--	--	--	--	--
	11/21/2017	3.15	--	--	--	--	--
GW-8	2/11/2016	2.39	6.01	0.213	3.05	9.71	318.3
	5/20/2016	3.04	5.65	0.200	1.13	15.51	198.7
	8/30/2016	3.57	--	--	--	--	--
	12/2/2016	2.50	--	--	--	--	--
	2/20/2017	2.07	--	--	--	--	--
	5/26/2017	2.71	--	--	--	--	--
	8/10/2017	3.55	--	--	--	--	--
	11/21/2017	2.51	--	--	--	--	--
GW-9	2/11/2016	2.66	6.38	0.247	0.29	9.38	216.0
	5/20/2016	2.84	6.11	0.230	0.33	16.89	33.0
	8/30/2016	4.30	--	--	--	--	--
	12/2/2016	2.34	--	--	--	--	--
	2/20/2017	4.53	--	--	--	--	--
	5/26/2017	2.70	--	--	--	--	--
	8/10/2017	4.22	--	--	--	--	--
	11/21/2017	2.30	--	--	--	--	--
GW-10	2/11/2016	21.39	5.89	0.248	3.11	12.71	347.7
	5/20/2016	23.21	6.19	0.341	0.53	13.69	-20.2
	8/30/2016	23.86	6.15	0.440	0.69	15.97	-13.4
	12/2/2016	20.94	--	--	--	--	--
	2/20/2017	20.89	--	--	--	--	--
	5/25/2017	22.07	--	--	--	--	--
	8/10/2017	23.95	5.71	0.383	1.05	17.55	-42.3
	11/21/2017	22.79	--	--	--	--	--
GW-11	2/9/2016	18.52	5.83	0.214	2.79	14.87	319.4
	5/17/2016	19.92	5.56	0.227	2.13	14.01	255.3
	8/30/2016	20.68	5.34	0.260	2.40	15.76	282.5
	12/2/2016	18.54	5.58	0.226	1.55	13.55	105.6
	2/20/2017	18.02	5.75	0.355	2.89	13.3	186.2
	5/24/2017	19.18	5.76	0.321	2.07	14.6	187.4
	8/9/2017	20.58	5.81	0.374	1.57	17.25	100.9
	11/21/2017	19.34	5.89	0.303	2.36	13.9	200.2

Notes:

- a Could not open well.
- * Well went dry while purging
- NA Well not accessible.
- NM Not measured.

Compounds:

- DO Dissolved oxygen
- ORP Oxidation-reduction potential

Table 4
Substrate Injection Amounts
Groundwater Monitoring and Investigation Report – December 2016 to November 2017
Snohomish Square Cleaners
1419 Avenue D and 13th Street SE, Snohomish, Washington

Well	3/29/2016	3/30/2016	3/31/2016	4/5/2016	4/6/2016	4/7/2016	4/8/2016	4/12/2016	4/13/2016	2/22/2017	2/23/2017	2/24/2017	12/4/2017	12/5/2017	1/15/2018	1/16/2018	Total
IJ-1	--	--	245	--	155	--	--	--	--	--	550	--	--	--	--	--	950 *
IJ-2	--	--	--	400	--	--	--	--	--	--	180	--	--	--	--	--	580 *
IJ-3	--	--	--	175	225	--	--	--	--	--	625	--	--	--	--	--	1,025 *
IJ-4	--	--	--	400	--	--	--	--	--	105	295	--	--	300	--	--	1,100 *
IJ-5	--	--	400	--	--	--	--	--	--	400	--	--	--	300	--	--	1,100
IJ-6	--	--	400	--	--	--	--	--	--	400	--	--	--	--	--	--	800
IJ-7	--	--	400	--	--	--	--	--	--	195	--	--	--	--	--	--	595
IJ-8	--	--	--	--	400	--	--	--	--	--	--	550	--	--	--	--	950
IJ-9	--	35	30	--	--	--	120	90	100	--	--	--	--	--	--	--	375
IJ-10	--	--	--	--	--	--	25	85	90	--	--	--	--	--	--	--	200 *
IJ-11	--	375	--	--	--	--	--	--	--	--	--	--	--	--	--	--	375 *
IJ-12	40	335	--	--	--	--	--	--	--	--	--	--	--	--	--	--	375
IJ-13	--	--	--	--	--	--	--	--	--	--	--	--	140	--	275	--	415
IJ-14	--	--	--	--	--	--	--	--	--	--	--	--	935	600	1,100	1,100	3,735
MW-3	--	--	--	--	--	140	100	--	--	--	--	--	--	--	--	--	240 *
MW-4	--	--	--	--	--	--	230	150	--	--	--	--	--	--	--	--	380
GW-10	--	--	--	165	235	--	--	--	--	--	--	--	--	--	--	--	400
MW-11	--	--	--	--	--	--	375	--	--	--	--	--	--	--	--	--	375
EIW-E	--	--	--	--	--	1,080	--	--	--	--	--	--	--	--	--	--	1,080
EIW-W	--	--	--	--	650	430	--	--	--	--	--	--	--	--	--	--	1,080
Total Injected Amount:																	16,130

Notes:
Injection amounts in gallons.
Method: Pressurized injection using injection pump.
* Part of injection was gravity fed.
-- No injection at this well.

Table 5
Survey and Depth to Groundwater Data
Groundwater Monitoring and Investigation Report – December 2016 to November 2017
Snohomish Square Cleaners
1419 Avenue D and 13th Street SE, Snohomish, Washington

Monitoring Well ID	Top of Casing Elevation ^a (feet)	Depth to Groundwater ^b (feet below TOC)	Groundwater Elevation (feet)
GW-1	144.8	2.48	142.32
GW-2	144.99	NM	NM
GW-3	144.34	3.28	141.06
GW-4	144.24	3.25	140.99
GW-5	144.78	5.20	139.58
GW-6	144.78	4.11	140.67
GW-7	147.53	4.18	143.35
GW-8	146.30	3.30	143.00
GW-9	146.37	3.44	142.93
GW-10	168.38	22.82	145.56
GW-11	164.24	20.22	144.02
MW-1	162.20	9.62	152.58
MW-2	164.41	11.68	152.73
MW-3	161.57	9.05	152.52
MW-4	161.09	8.15	152.94
MW-5	169.51	10.98	158.53
MW-6	165.61	14.76	150.85
MW-7	163.64	11.41	152.23
MW-8	163.75	11.43	152.32
MW-9	163	9.90	153.10
MW-10*	161.18	8.29	152.89
MW-11*	160.85	8.19	152.66
MW-12*	163.34	11.61	151.73
MW-13*	167.24	19.19	148.05
MW-14*	163.83	12.20	151.63
MW-15*	161.30	8.96	152.34
MW-16*	167.67	14.96	152.71
MW-17*	166.24	17.89	148.35
MW-18*	166.14	18.54	147.60

Notes:

All results presented in feet using North American Vertical Datum 1988 (NAVD88).

Survey data provided from *Remedial Investigation and Focused Feasibility Study, Snohomish County Shop Upper Terrace, 1200 Block of Avenue D, Snohomish, Washington.*

* Pace Survey 7/11/17.

a Surveyed by Snohomish County surveyors using State Plane Coordinate System. Benchmark for survey: brass plug in concrete on west side of Bickford Rd at SE corner of building. Snohomish County Point ID#248 Designation #5501. NAVD88, Elevation = 136.31'.

b Depth to water measured by EPI on July 11, 2017.

TOC Top of casing.

NM Not measured.

Figures

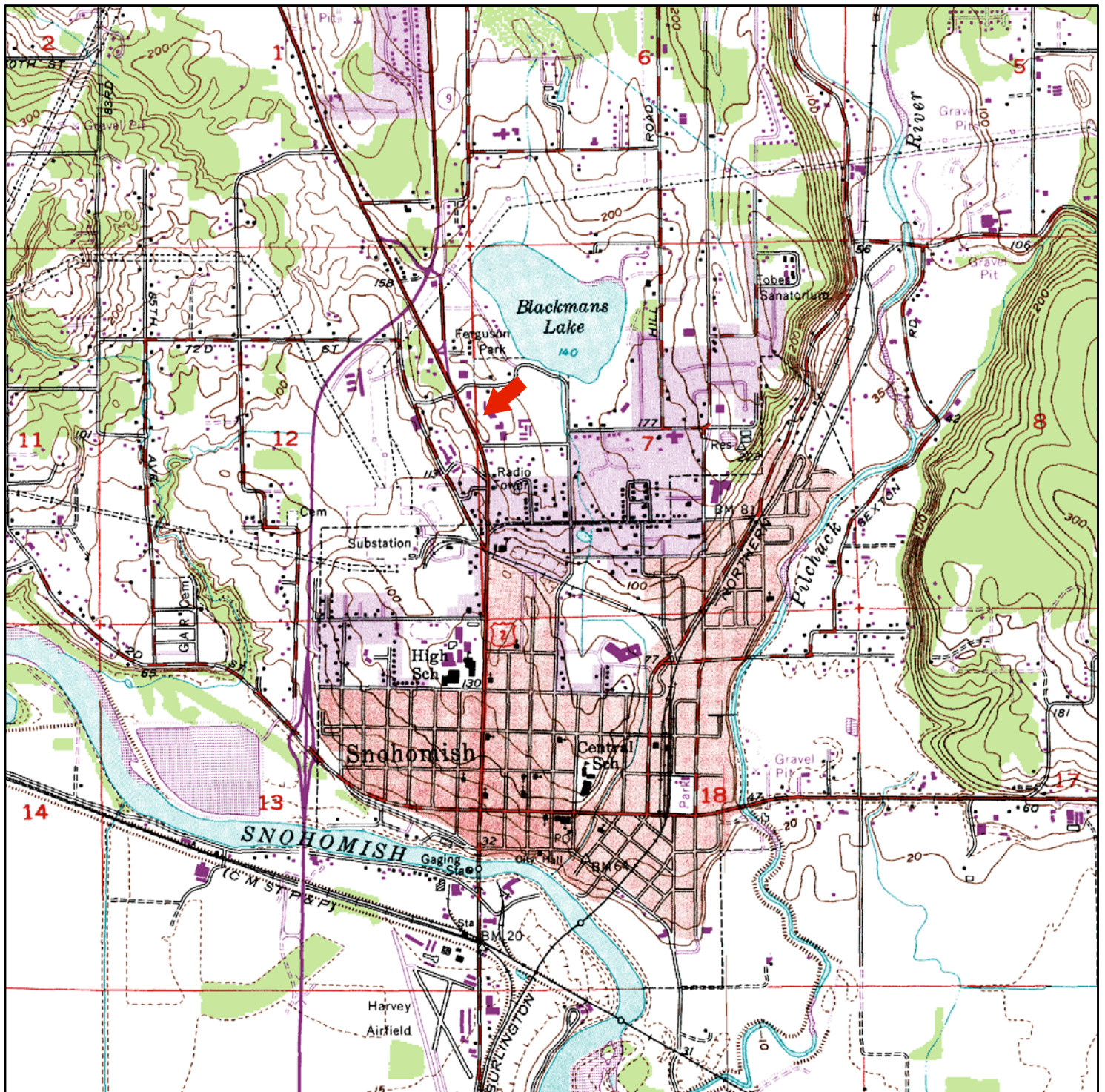
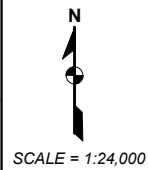

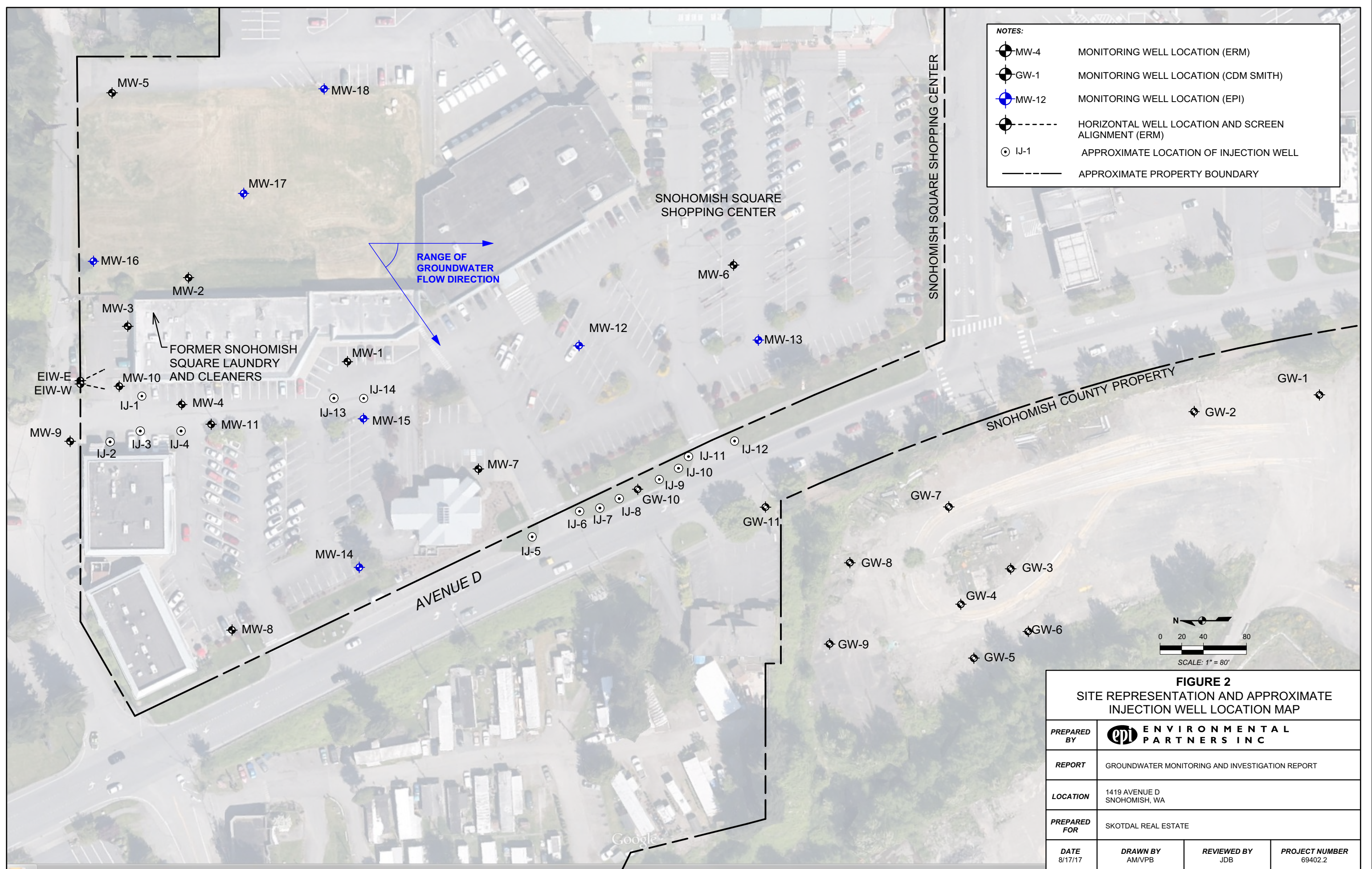


FIGURE 1
GENERAL VICINITY MAP

NOTES:
SOURCE: USGS 7.5 MINUTE QUADRANGLE (TOPOGRAPHIC)
SNOHOMISH, WA
1953
REVISED 1968 AND 1973



PREPARED BY	 ENVIRONMENTAL PARTNERS INC		
REPORT	GROUNDWATER MONITORING AND INVESTIGATION REPORT		
LOCATION	1419 AVENUE D SNOHOMISH, WA		
PREPARED FOR	SKOTDAL REAL ESTATE		
DATE	DRAWN BY	REVIEWED BY	PROJECT NUMBER
3/14/18	AM	JDB	69402.2



- NOTES:**
- MW-4 MONITORING WELL LOCATION (ERM)
 - GW-1 MONITORING WELL LOCATION (CDM SMITH)
 - MW-12 MONITORING WELL LOCATION (EPI)
 - HORIZONTAL WELL LOCATION AND SCREEN ALIGNMENT (ERM)
 - IJ-1 APPROXIMATE LOCATION OF INJECTION WELL
 - APPROXIMATE PROPERTY BOUNDARY

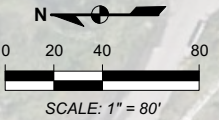
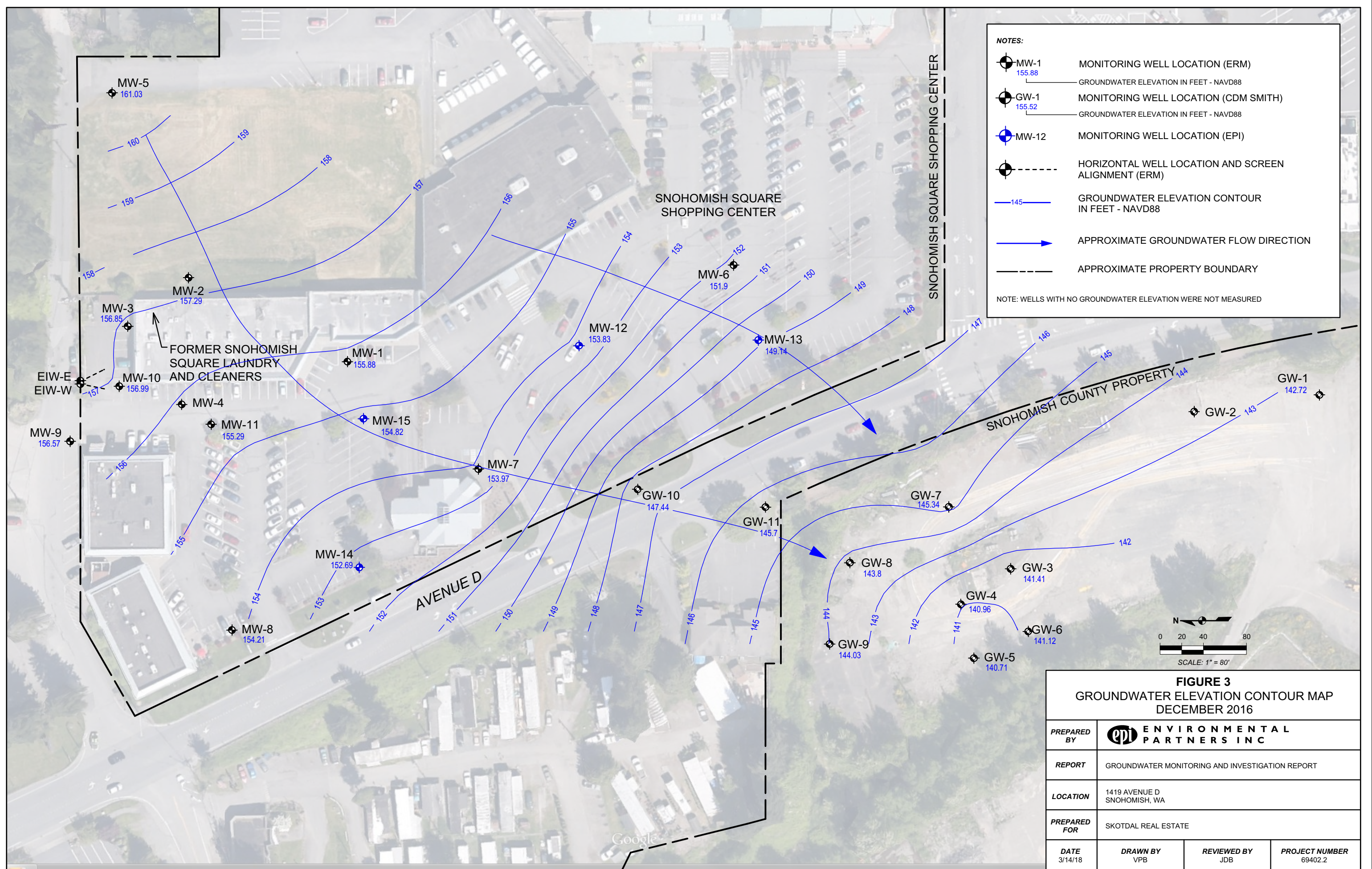


FIGURE 2 SITE REPRESENTATION AND APPROXIMATE INJECTION WELL LOCATION MAP			
PREPARED BY	ENVIRONMENTAL PARTNERS INC		
REPORT	GROUNDWATER MONITORING AND INVESTIGATION REPORT		
LOCATION	1419 AVENUE D SNOHOMISH, WA		
PREPARED FOR	SKOTDAL REAL ESTATE		
DATE	DRAWN BY	REVIEWED BY	PROJECT NUMBER
8/17/17	AM/VPB	JDB	69402.2



- NOTES:**
- MW-1 155.88 MONITORING WELL LOCATION (ERM)
GROUNDWATER ELEVATION IN FEET - NAVD88
 - GW-1 155.52 MONITORING WELL LOCATION (CDM SMITH)
GROUNDWATER ELEVATION IN FEET - NAVD88
 - MW-12 MONITORING WELL LOCATION (EPI)
 - HORIZONTAL WELL LOCATION AND SCREEN ALIGNMENT (ERM)
 - 145 GROUNDWATER ELEVATION CONTOUR IN FEET - NAVD88
 - APPROXIMATE GROUNDWATER FLOW DIRECTION
 - APPROXIMATE PROPERTY BOUNDARY
- NOTE: WELLS WITH NO GROUNDWATER ELEVATION WERE NOT MEASURED

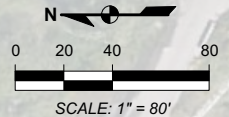
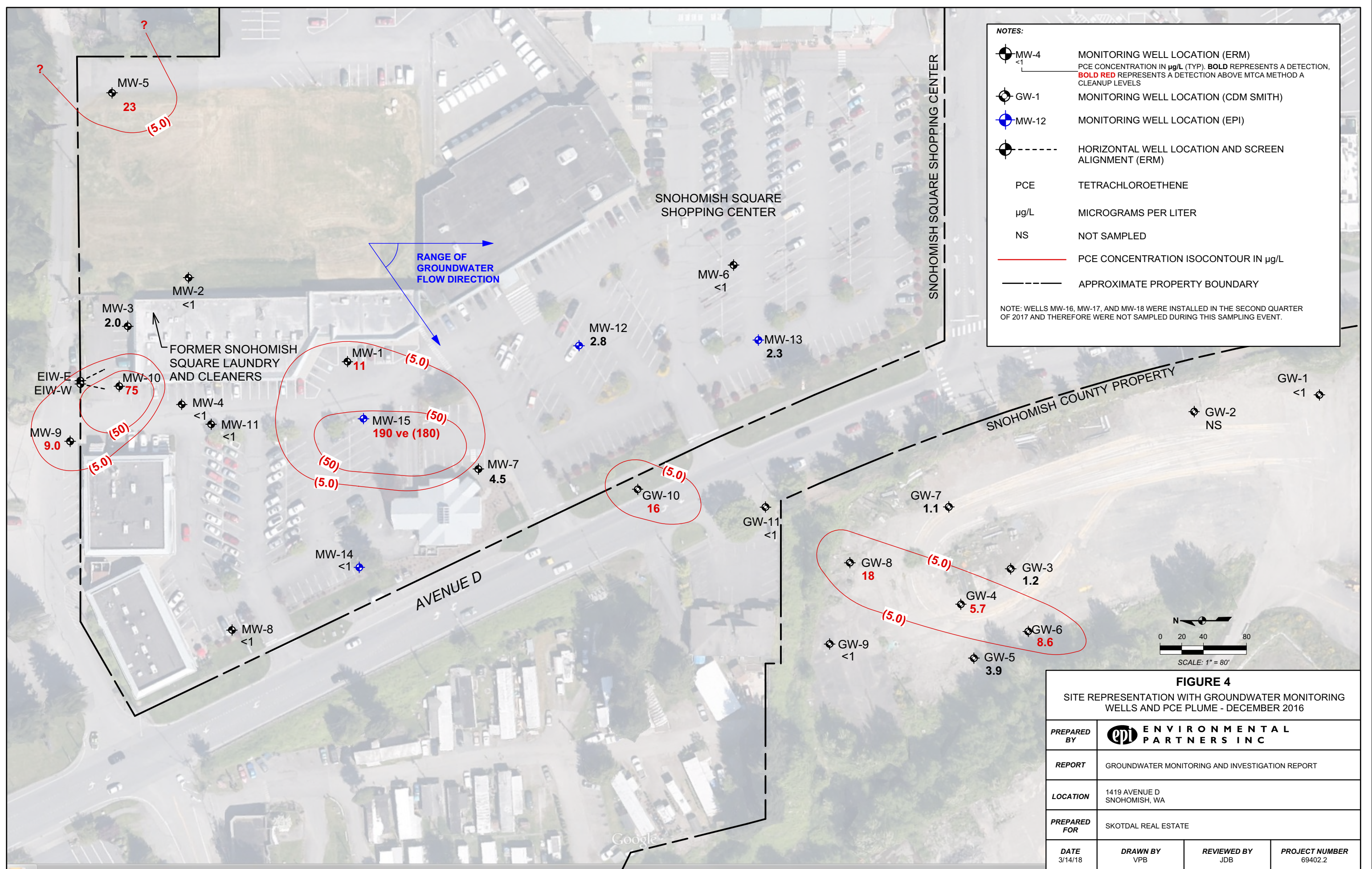


FIGURE 3
GROUNDWATER ELEVATION CONTOUR MAP
DECEMBER 2016

PREPARED BY	ENVIRONMENTAL PARTNERS INC		
REPORT	GROUNDWATER MONITORING AND INVESTIGATION REPORT		
LOCATION	1419 AVENUE D SNOHOMISH, WA		
PREPARED FOR	SKOTDAL REAL ESTATE		
DATE 3/14/18	DRAWN BY VPB	REVIEWED BY JDB	PROJECT NUMBER 69402.2



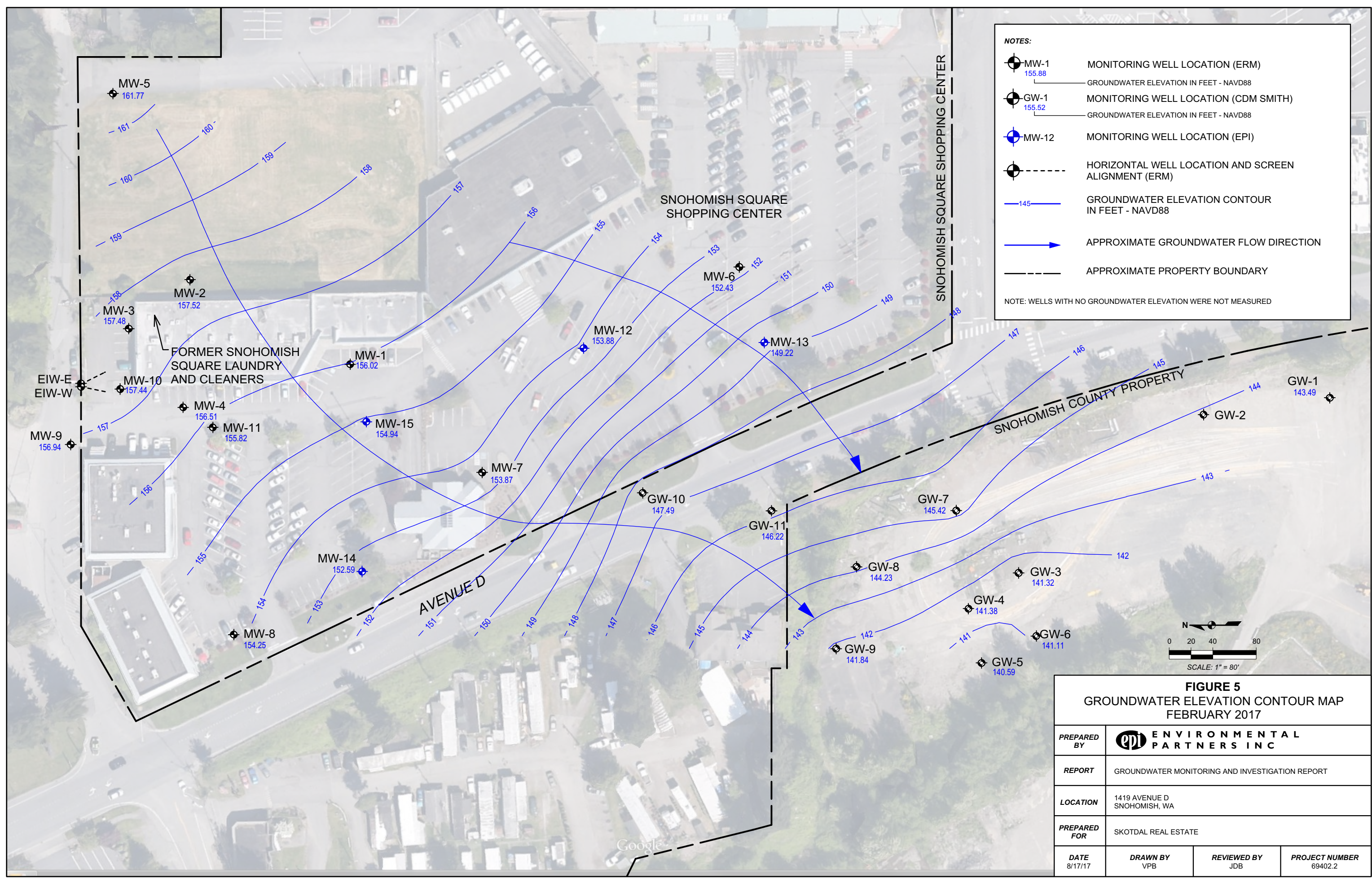
NOTES:

- MW-4 MONITORING WELL LOCATION (ERM)
PCE CONCENTRATION IN $\mu\text{g/L}$ (TYP). **BOLD** REPRESENTS A DETECTION, **BOLD RED** REPRESENTS A DETECTION ABOVE MTCA METHOD A CLEANUP LEVELS
- GW-1 MONITORING WELL LOCATION (CDM SMITH)
- MW-12 MONITORING WELL LOCATION (EPI)
- HORIZONTAL WELL LOCATION AND SCREEN ALIGNMENT (ERM)
- PCE TETRACHLOROETHENE
- $\mu\text{g/L}$ MICROGRAMS PER LITER
- NS NOT SAMPLED
- PCE CONCENTRATION ISOCONTOUR IN $\mu\text{g/L}$
- APPROXIMATE PROPERTY BOUNDARY

NOTE: WELLS MW-16, MW-17, AND MW-18 WERE INSTALLED IN THE SECOND QUARTER OF 2017 AND THEREFORE WERE NOT SAMPLED DURING THIS SAMPLING EVENT.

FIGURE 4
SITE REPRESENTATION WITH GROUNDWATER MONITORING WELLS AND PCE PLUME - DECEMBER 2016

PREPARED BY	ENVIRONMENTAL PARTNERS INC		
REPORT	GROUNDWATER MONITORING AND INVESTIGATION REPORT		
LOCATION	1419 AVENUE D SNOHOMISH, WA		
PREPARED FOR	SKOTDAL REAL ESTATE		
DATE	DRAWN BY	REVIEWED BY	PROJECT NUMBER
3/14/18	VPB	JDB	69402.2



- NOTES:**
- MW-1 155.88 MONITORING WELL LOCATION (ERM)
 - GW-1 155.52 MONITORING WELL LOCATION (CDM SMITH)
 - MW-12 MONITORING WELL LOCATION (EPI)
 - HORIZONTAL WELL LOCATION AND SCREEN ALIGNMENT (ERM)
 - 145 GROUNDWATER ELEVATION CONTOUR IN FEET - NAVD88
 - APPROXIMATE GROUNDWATER FLOW DIRECTION
 - APPROXIMATE PROPERTY BOUNDARY
- NOTE: WELLS WITH NO GROUNDWATER ELEVATION WERE NOT MEASURED

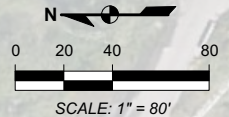
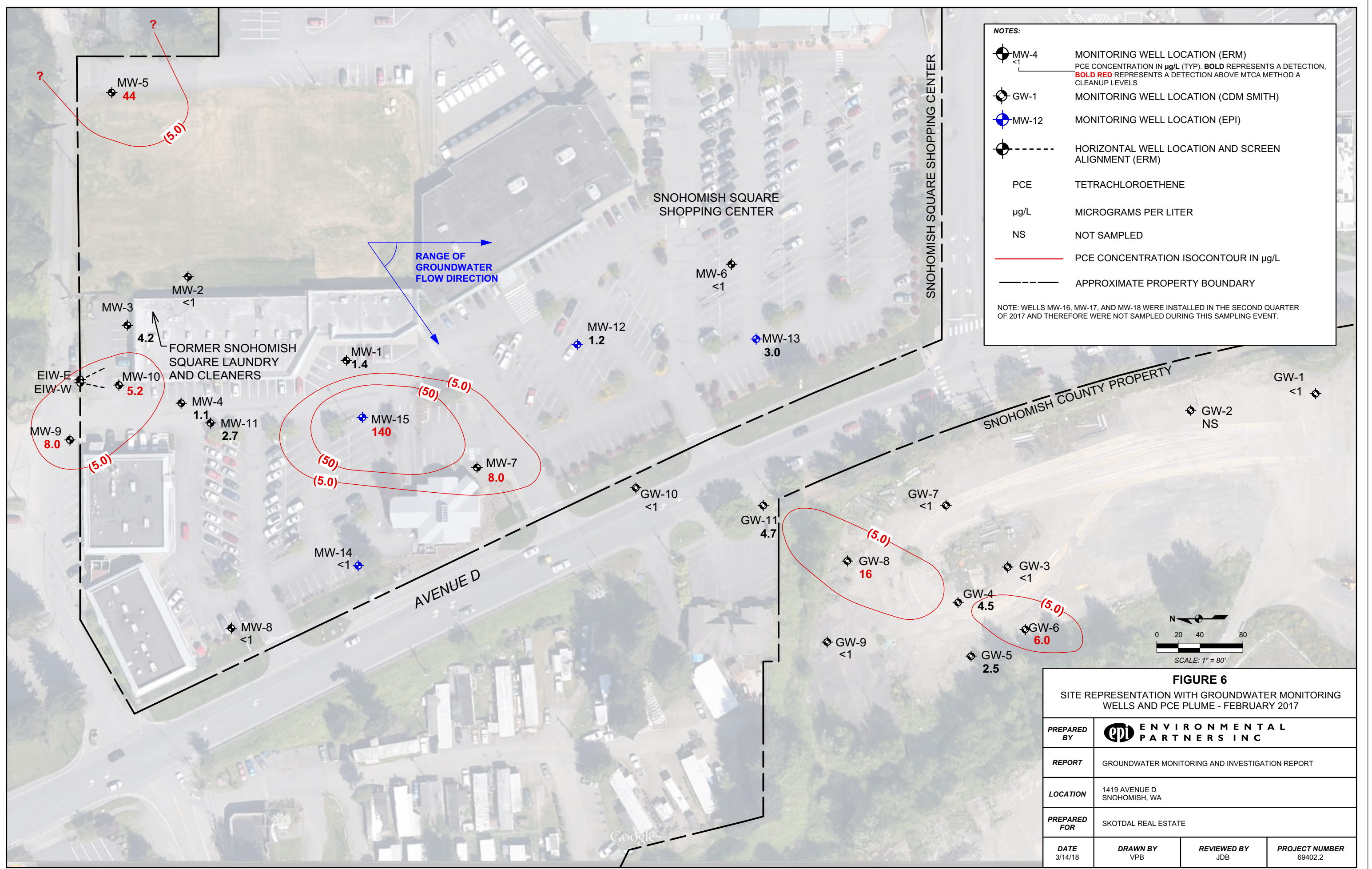
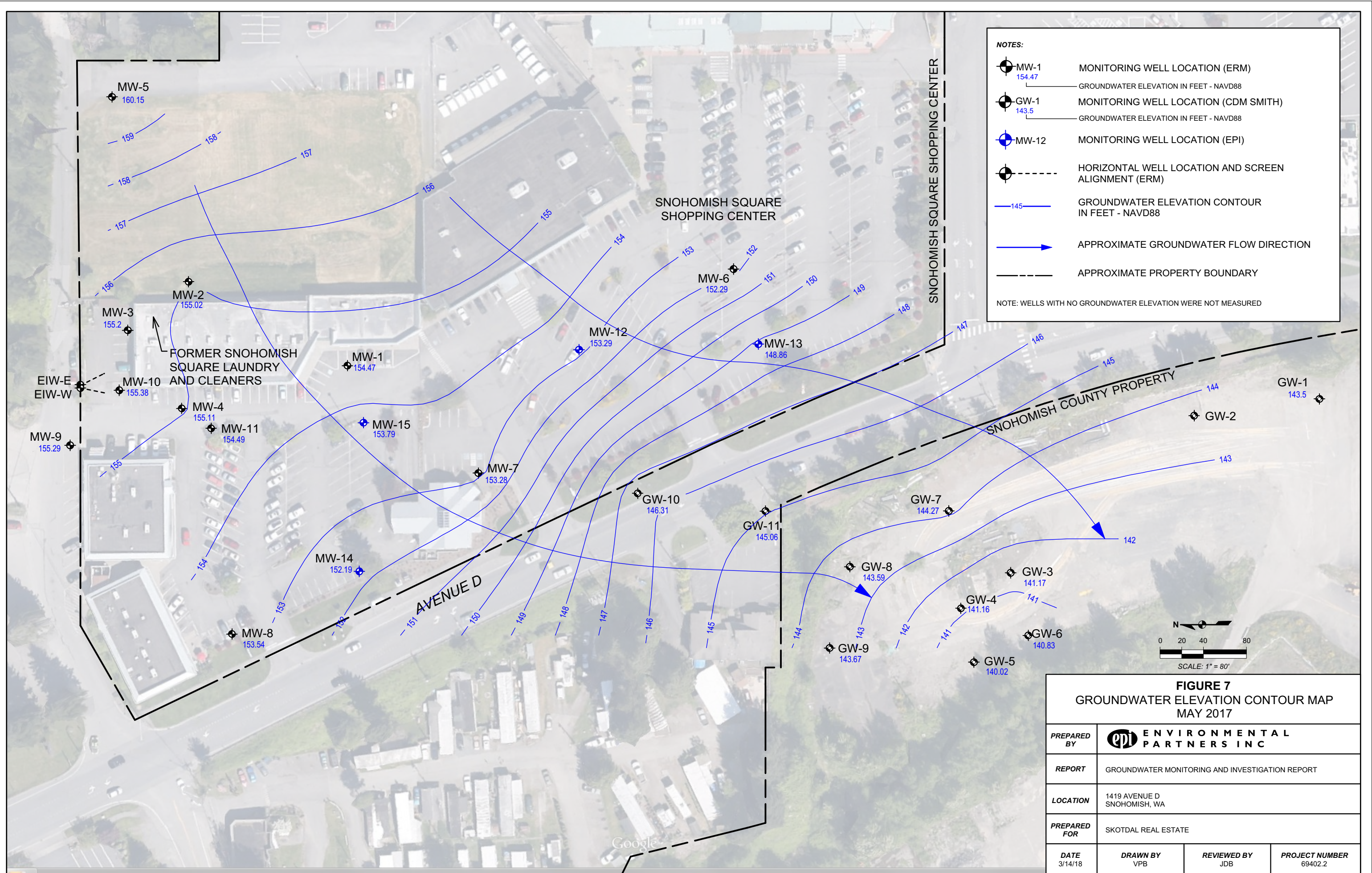


FIGURE 5
GROUNDWATER ELEVATION CONTOUR MAP
FEBRUARY 2017

PREPARED BY	ENVIRONMENTAL PARTNERS INC		
REPORT	GROUNDWATER MONITORING AND INVESTIGATION REPORT		
LOCATION	1419 AVENUE D SNOHOMISH, WA		
PREPARED FOR	SKOTDAL REAL ESTATE		
DATE	DRAWN BY	REVIEWED BY	PROJECT NUMBER
8/17/17	VPB	JDB	69402.2





- NOTES:**
- MW-1 154.47
GROUNDWATER ELEVATION IN FEET - NAVD88
 - GW-1 143.5
GROUNDWATER ELEVATION IN FEET - NAVD88
 - MW-12
 -
 - 145
GROUNDWATER ELEVATION CONTOUR IN FEET - NAVD88
 -
 -
- NOTE: WELLS WITH NO GROUNDWATER ELEVATION WERE NOT MEASURED

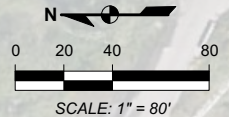
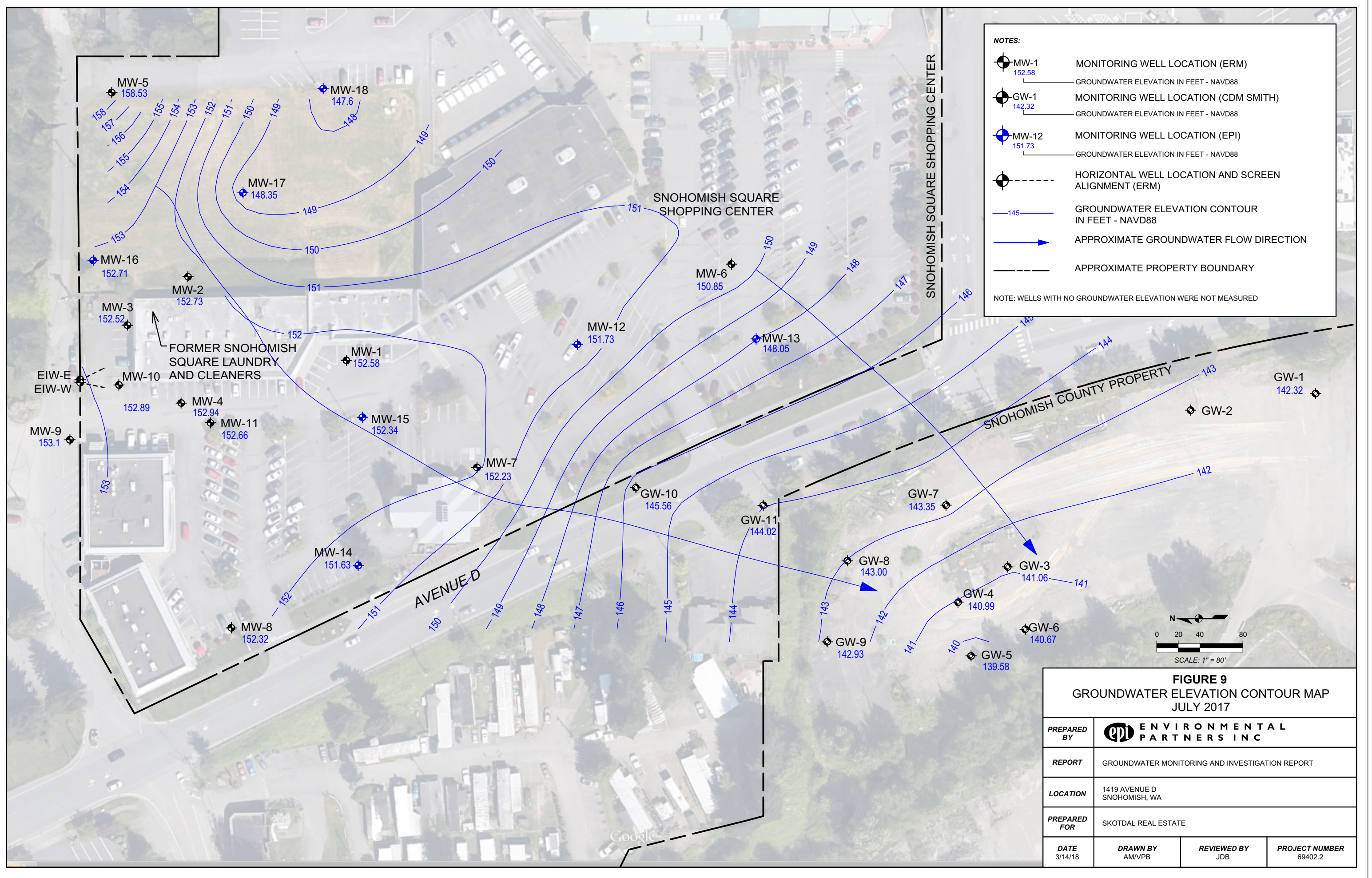


FIGURE 7
GROUNDWATER ELEVATION CONTOUR MAP
MAY 2017

PREPARED BY	ENVIRONMENTAL PARTNERS INC		
REPORT	GROUNDWATER MONITORING AND INVESTIGATION REPORT		
LOCATION	1419 AVENUE D SNOHOMISH, WA		
PREPARED FOR	SKOTDAL REAL ESTATE		
DATE 3/14/18	DRAWN BY VPB	REVIEWED BY JDB	PROJECT NUMBER 69402.2



- NOTES:**
- MW-1 152.58
GROUNDWATER ELEVATION IN FEET - NAVD88
 - GW-1 142.32
GROUNDWATER ELEVATION IN FEET - NAVD88
 - MW-12 151.73
GROUNDWATER ELEVATION IN FEET - NAVD88
 - HORIZONTAL WELL LOCATION AND SCREEN ALIGNMENT (ERM)
 - 145
GROUNDWATER ELEVATION CONTOUR IN FEET - NAVD88
 - APPROXIMATE GROUNDWATER FLOW DIRECTION
 - APPROXIMATE PROPERTY BOUNDARY
- NOTE: WELLS WITH NO GROUNDWATER ELEVATION WERE NOT MEASURED

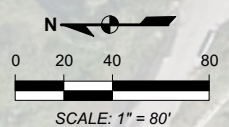
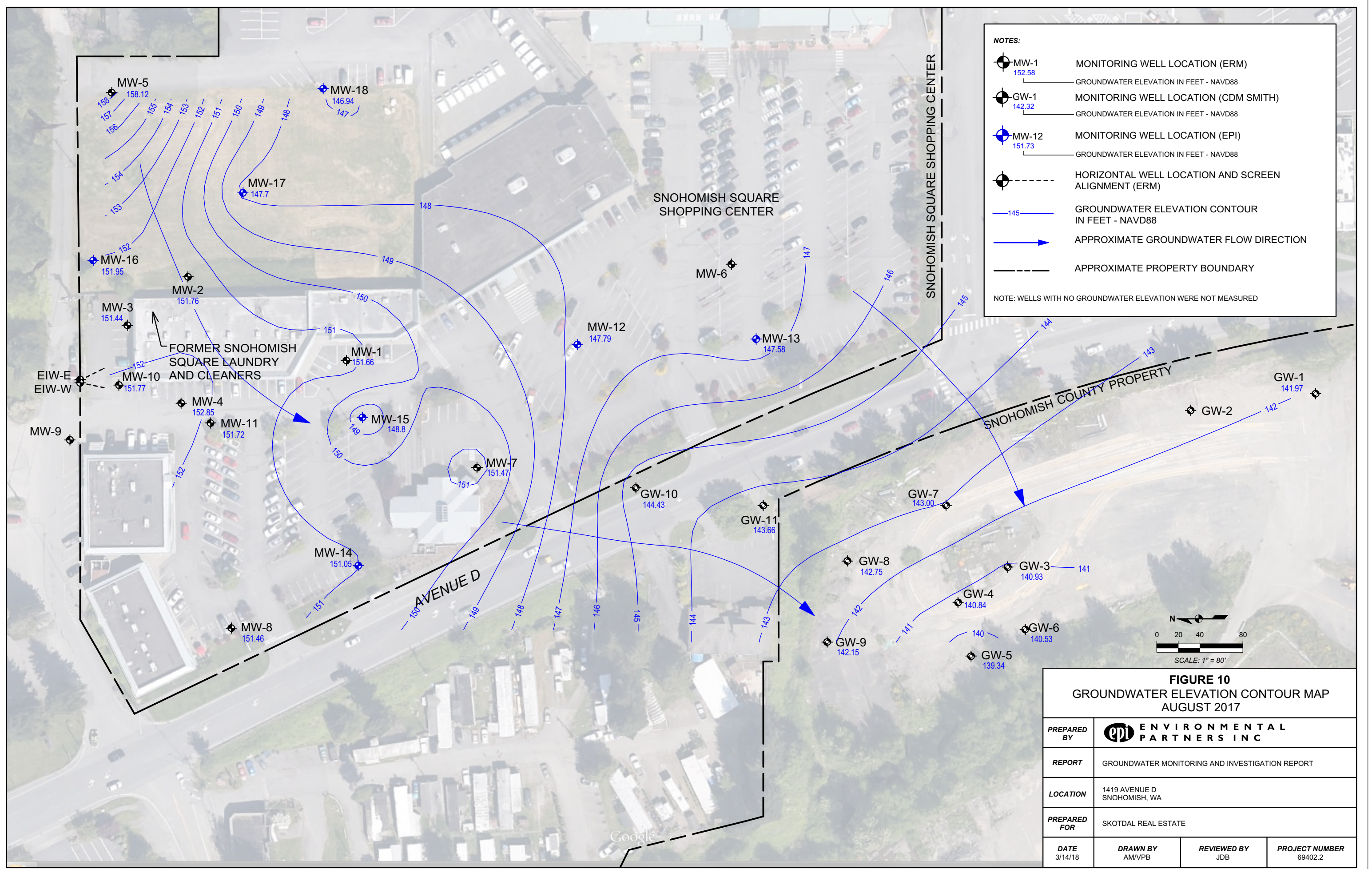


FIGURE 9
GROUNDWATER ELEVATION CONTOUR MAP
JULY 2017

PREPARED BY	ENVIRONMENTAL PARTNERS INC		
REPORT	GROUNDWATER MONITORING AND INVESTIGATION REPORT		
LOCATION	1419 AVENUE D SNOHOMISH, WA		
PREPARED FOR	SKOTDAL REAL ESTATE		
DATE 3/14/18	DRAWN BY AM/VPB	REVIEWED BY JDB	PROJECT NUMBER 69402.2



- NOTES:**
- MW-1 152.58
GROUNDWATER ELEVATION IN FEET - NAVD88
 - GW-1 142.32
GROUNDWATER ELEVATION IN FEET - NAVD88
 - MW-12 151.73
GROUNDWATER ELEVATION IN FEET - NAVD88
 - HORIZONTAL WELL LOCATION AND SCREEN ALIGNMENT (ERM)
 - 145
GROUNDWATER ELEVATION CONTOUR IN FEET - NAVD88
 - APPROXIMATE GROUNDWATER FLOW DIRECTION
 - APPROXIMATE PROPERTY BOUNDARY
- NOTE: WELLS WITH NO GROUNDWATER ELEVATION WERE NOT MEASURED

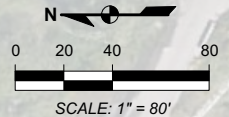
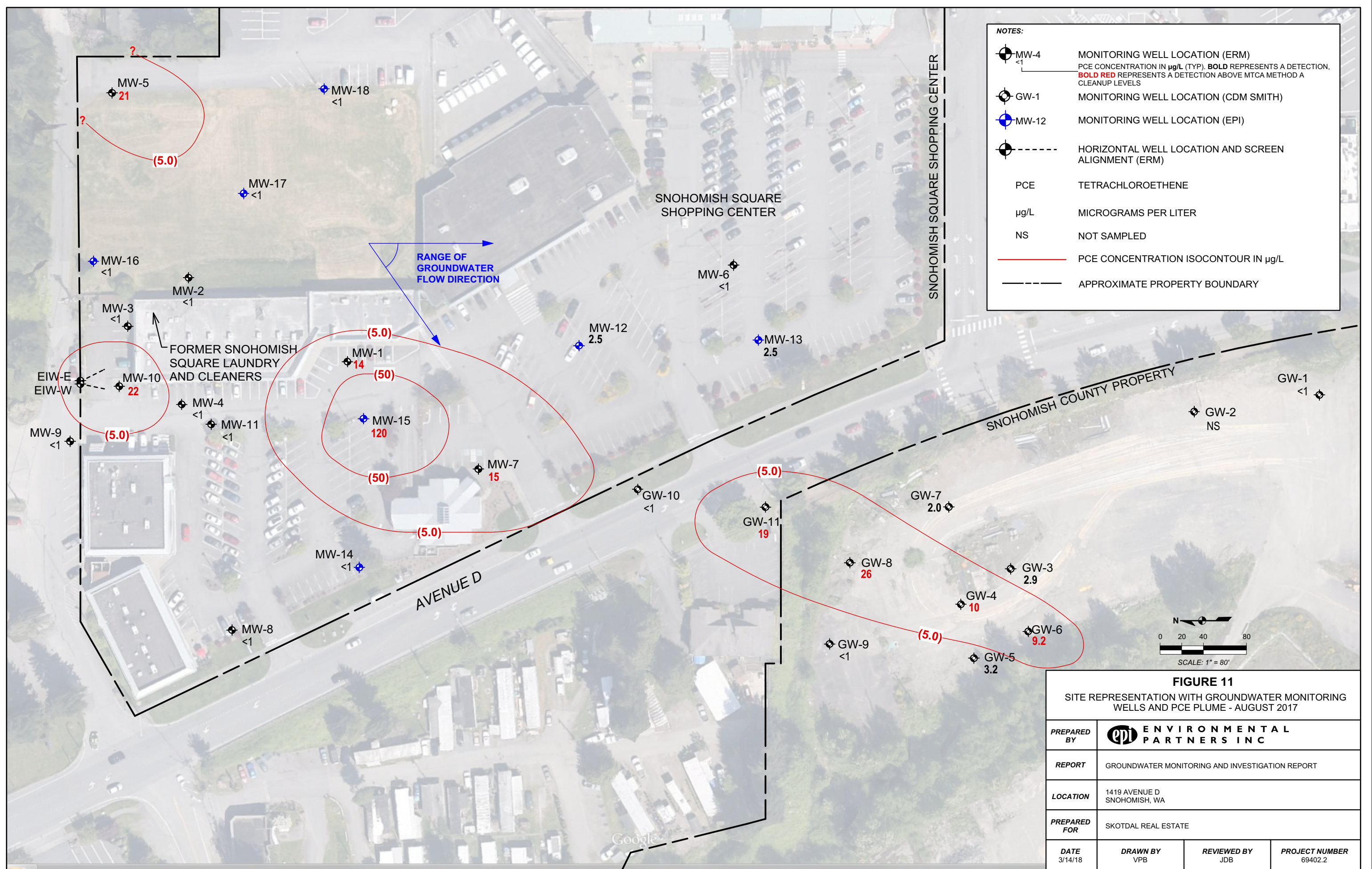
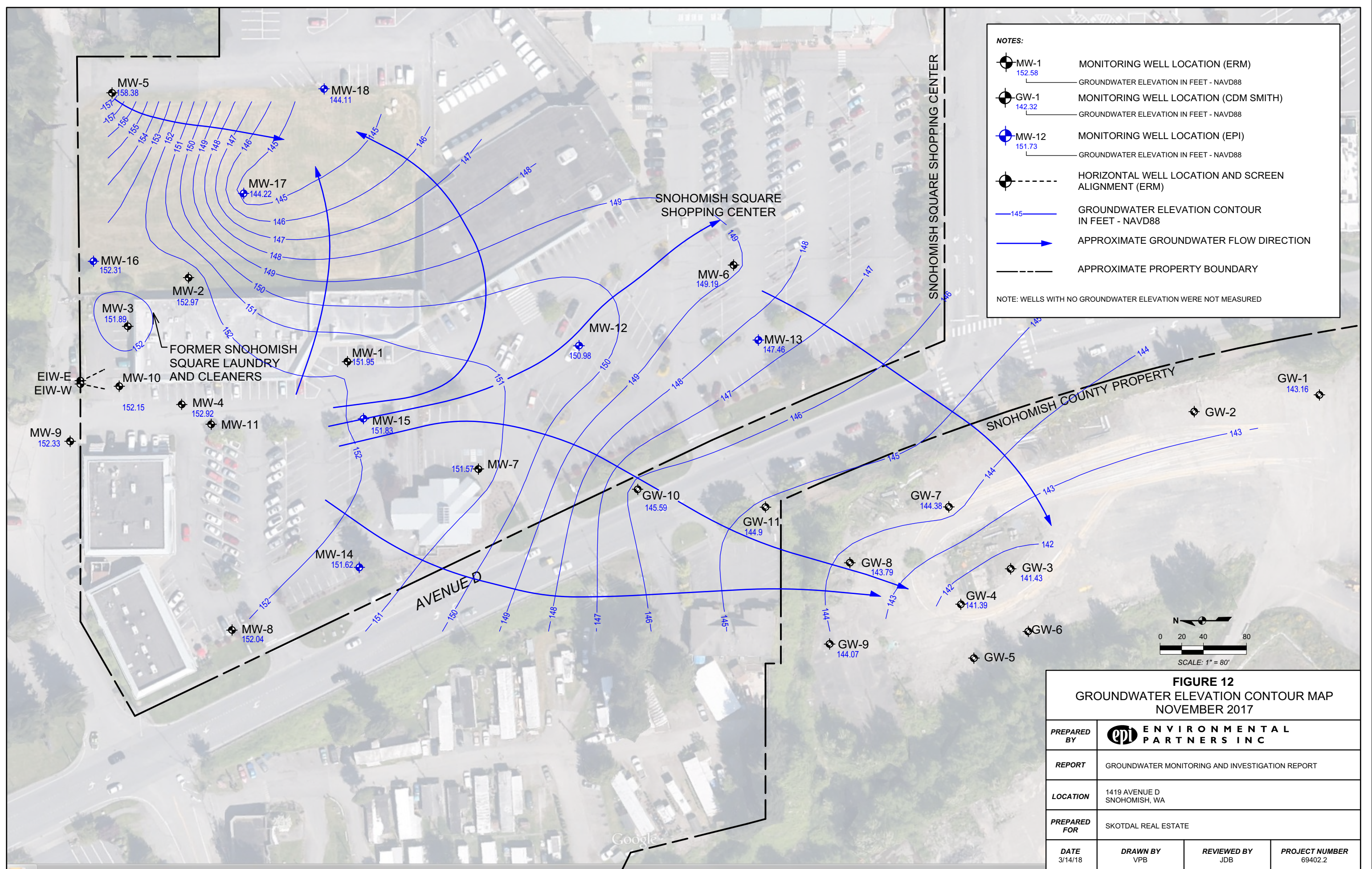


FIGURE 10
GROUNDWATER ELEVATION CONTOUR MAP
AUGUST 2017

PREPARED BY	ENVIRONMENTAL PARTNERS INC.		
REPORT	GROUNDWATER MONITORING AND INVESTIGATION REPORT		
LOCATION	1419 AVENUE D SNOHOMISH, WA		
PREPARED FOR	SKOTDAL REAL ESTATE		
DATE 3/14/18	DRAWN BY AM/VPB	REVIEWED BY JDB	PROJECT NUMBER 69402.2





- NOTES:**
- MW-1 152.58 MONITORING WELL LOCATION (ERM)
GROUNDWATER ELEVATION IN FEET - NAVD88
 - GW-1 142.32 MONITORING WELL LOCATION (CDM SMITH)
GROUNDWATER ELEVATION IN FEET - NAVD88
 - MW-12 151.73 MONITORING WELL LOCATION (EPI)
GROUNDWATER ELEVATION IN FEET - NAVD88
 - HORIZONTAL WELL LOCATION AND SCREEN ALIGNMENT (ERM)
 - 145 GROUNDWATER ELEVATION CONTOUR IN FEET - NAVD88
 - APPROXIMATE GROUNDWATER FLOW DIRECTION
 - APPROXIMATE PROPERTY BOUNDARY
- NOTE: WELLS WITH NO GROUNDWATER ELEVATION WERE NOT MEASURED

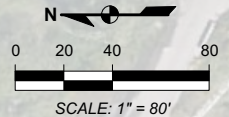
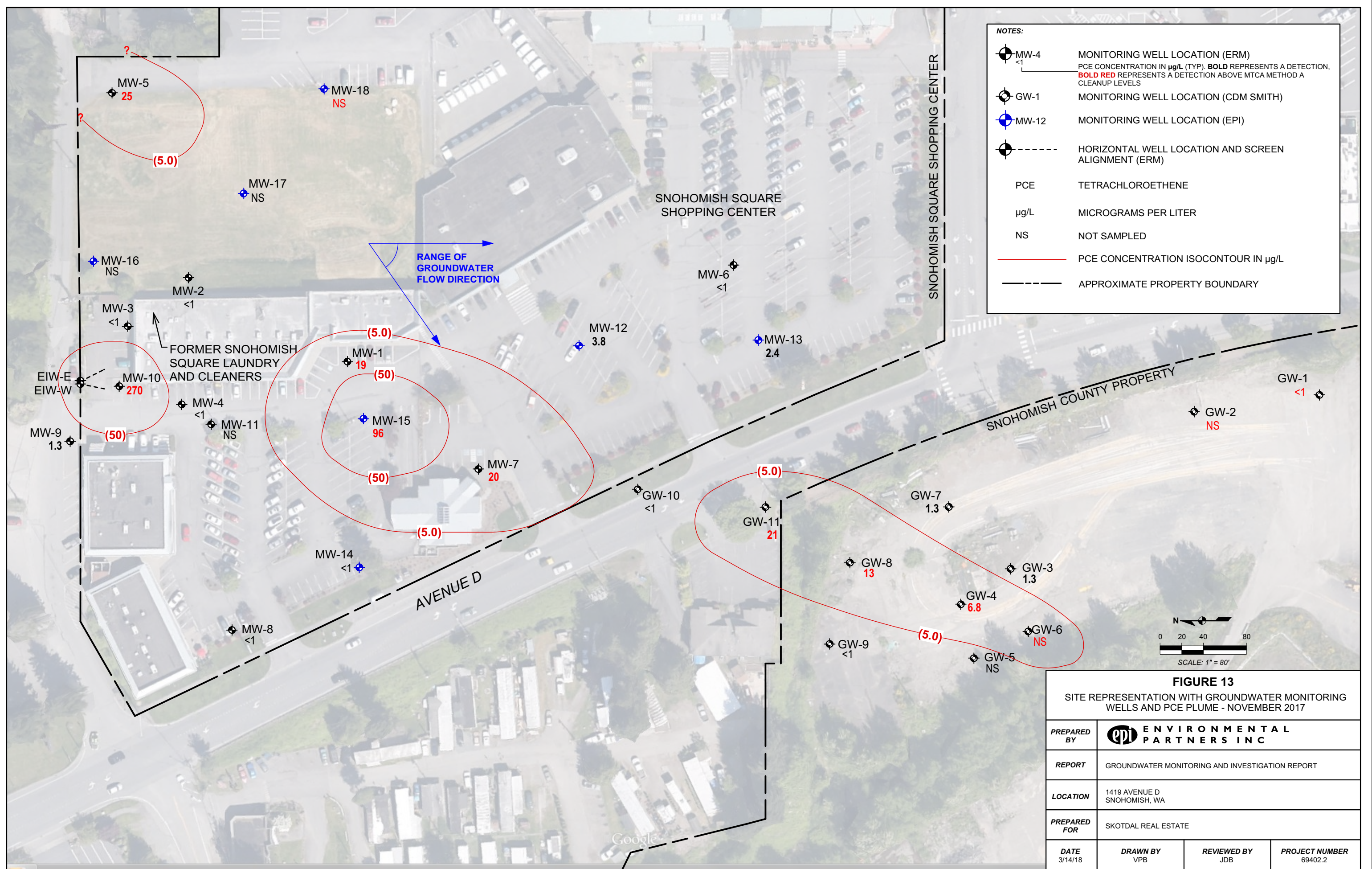


FIGURE 12
GROUNDWATER ELEVATION CONTOUR MAP
NOVEMBER 2017

PREPARED BY	ENVIRONMENTAL PARTNERS INC		
REPORT	GROUNDWATER MONITORING AND INVESTIGATION REPORT		
LOCATION	1419 AVENUE D SNOHOMISH, WA		
PREPARED FOR	SKOTDAL REAL ESTATE		
DATE 3/14/18	DRAWN BY VPB	REVIEWED BY JDB	PROJECT NUMBER 69402.2



NOTES:

- MW-4 MONITORING WELL LOCATION (ERM)
PCE CONCENTRATION IN $\mu\text{g/L}$ (TYP). **BOLD RED** REPRESENTS A DETECTION, **BOLD RED** REPRESENTS A DETECTION ABOVE MTCA METHOD A CLEANUP LEVELS
- GW-1 MONITORING WELL LOCATION (CDM SMITH)
- MW-12 MONITORING WELL LOCATION (EPI)
- HORIZONTAL WELL LOCATION AND SCREEN ALIGNMENT (ERM)
- PCE TETRACHLOROETHENE
- $\mu\text{g/L}$ MICROGRAMS PER LITER
- NS NOT SAMPLED
- PCE CONCENTRATION ISOCONTOUR IN $\mu\text{g/L}$
- APPROXIMATE PROPERTY BOUNDARY

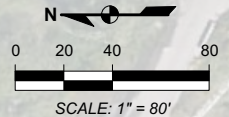



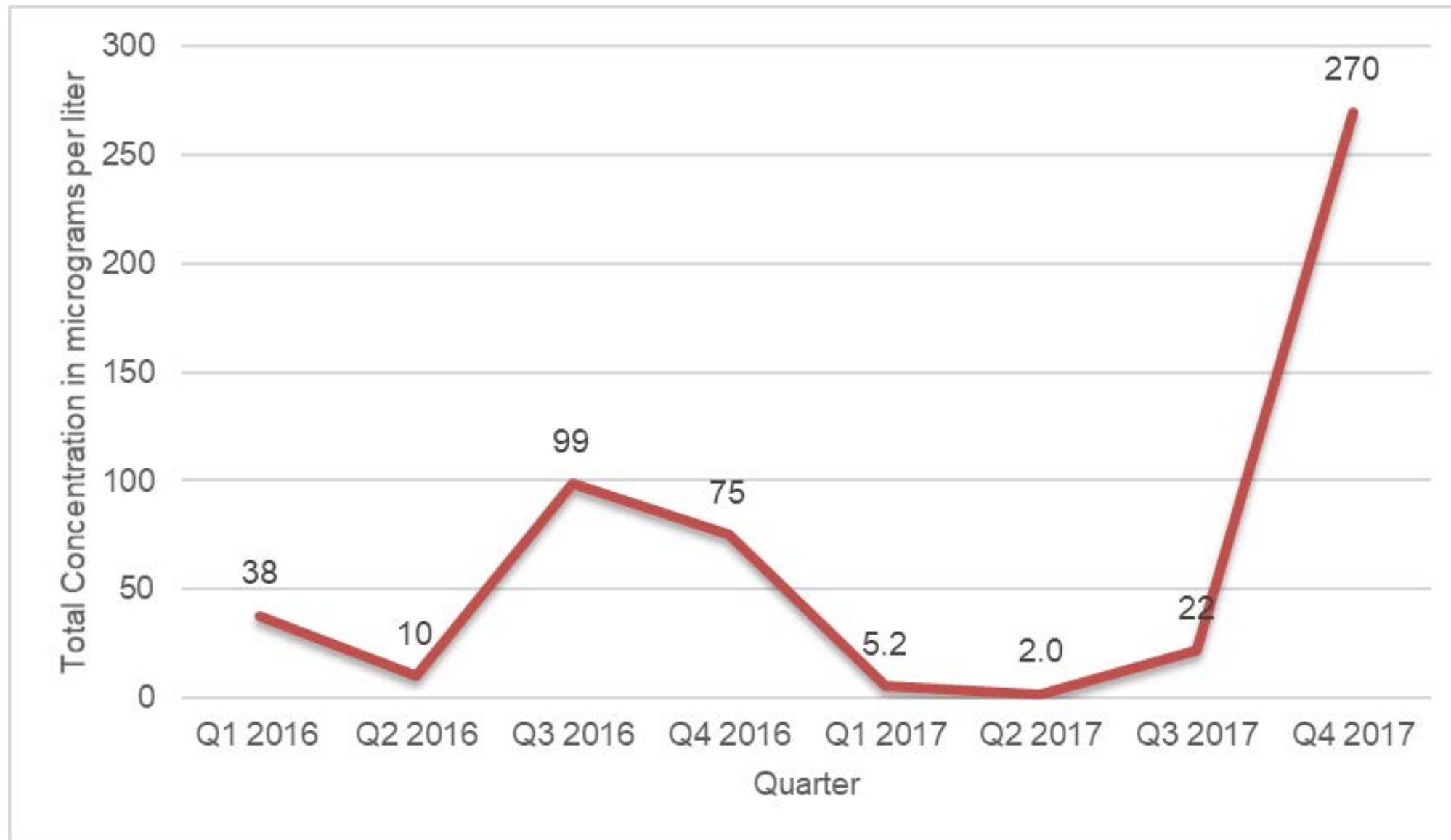
FIGURE 13
 SITE REPRESENTATION WITH GROUNDWATER MONITORING WELLS AND PCE PLUME - NOVEMBER 2017

PREPARED BY	ENVIRONMENTAL PARTNERS INC		
REPORT	GROUNDWATER MONITORING AND INVESTIGATION REPORT		
LOCATION	1419 AVENUE D SNOHOMISH, WA		
PREPARED FOR	SKOTDAL REAL ESTATE		
DATE 3/14/18	DRAWN BY VPB	REVIEWED BY JDB	PROJECT NUMBER 69402.2




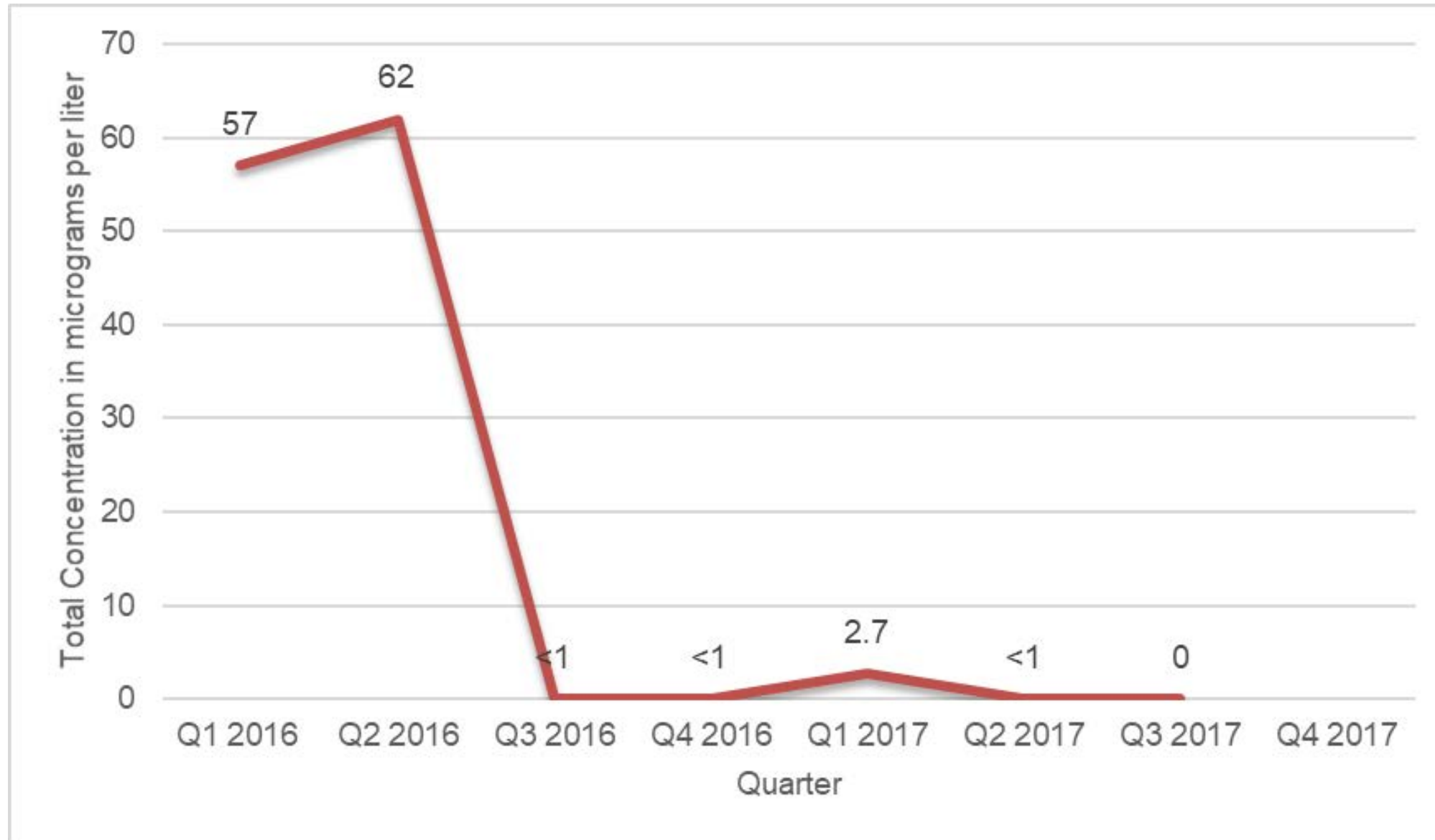
NOTE:
PCE TETRACHLOROETHENE

FIGURE 14A MW-15 PCE CONCENTRATION VERSUS TIME			
PREPARED BY	 ENVIRONMENTAL PARTNERS INC		
REPORT	GROUNDWATER MONITORING AND INVESTIGATION REPORT		
LOCATION	1419 AVENUE D SNOHOMISH, WA		
PREPARED FOR	SKOTDAL REAL ESTATE		
DATE	CREATED BY	REVIEWED BY	PROJECT NUMBER
3/2/18	CSW	JB	69402.2



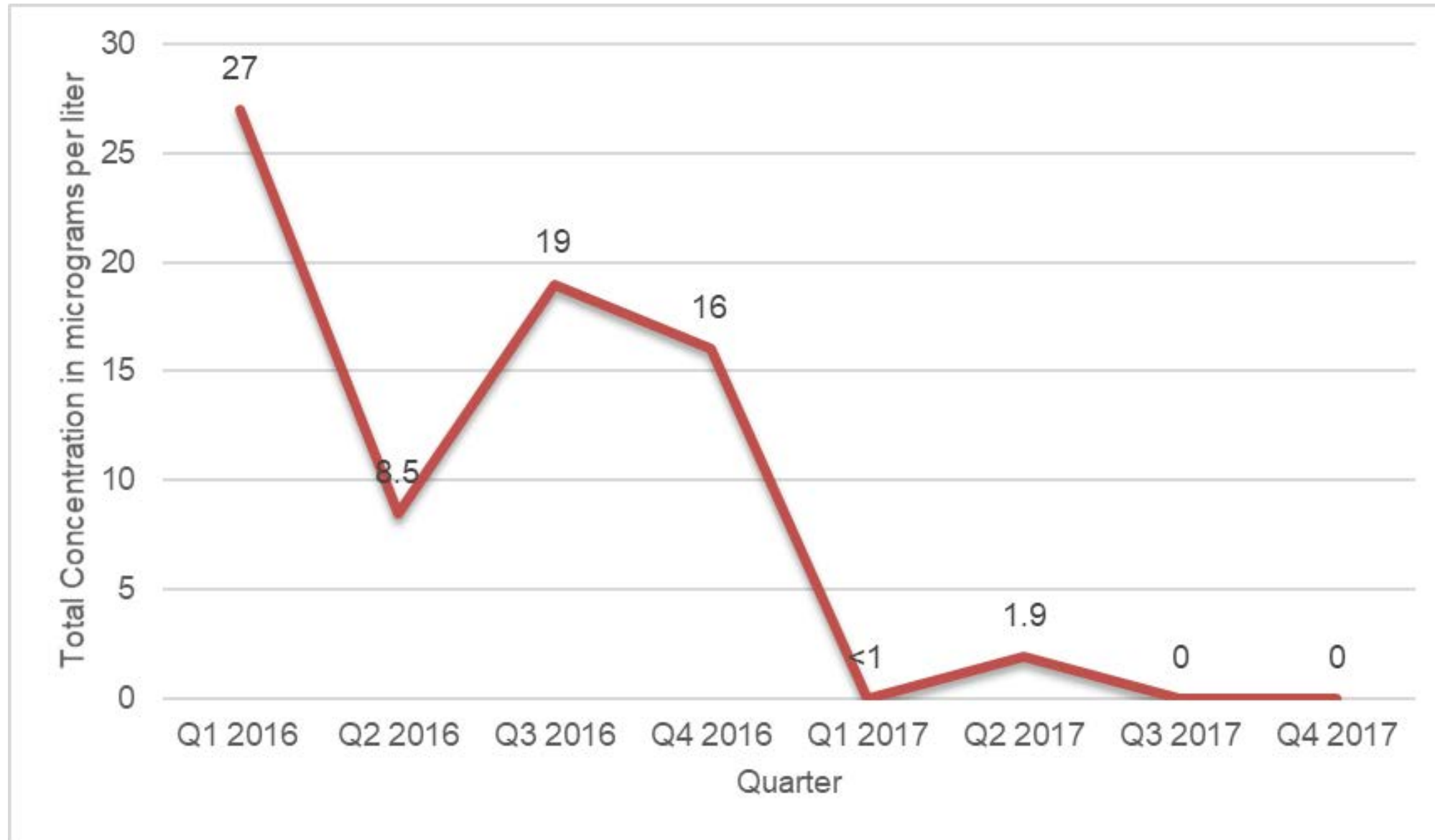
NOTE:
PCE TETRACHLOROETHENE

FIGURE 14B			
MW-10			
PCE CONCENTRATION VERSUS TIME			
PREPARED BY	 ENVIRONMENTAL PARTNERS INC		
REPORT	GROUNDWATER MONITORING AND INVESTIGATION REPORT		
LOCATION	1419 AVENUE D SNOHOMISH, WA		
PREPARED FOR	SKOTDAL REAL ESTATE		
DATE	CREATED BY	REVIEWED BY	PROJECT NUMBER
3/2/18	CSW	JB	69402.2




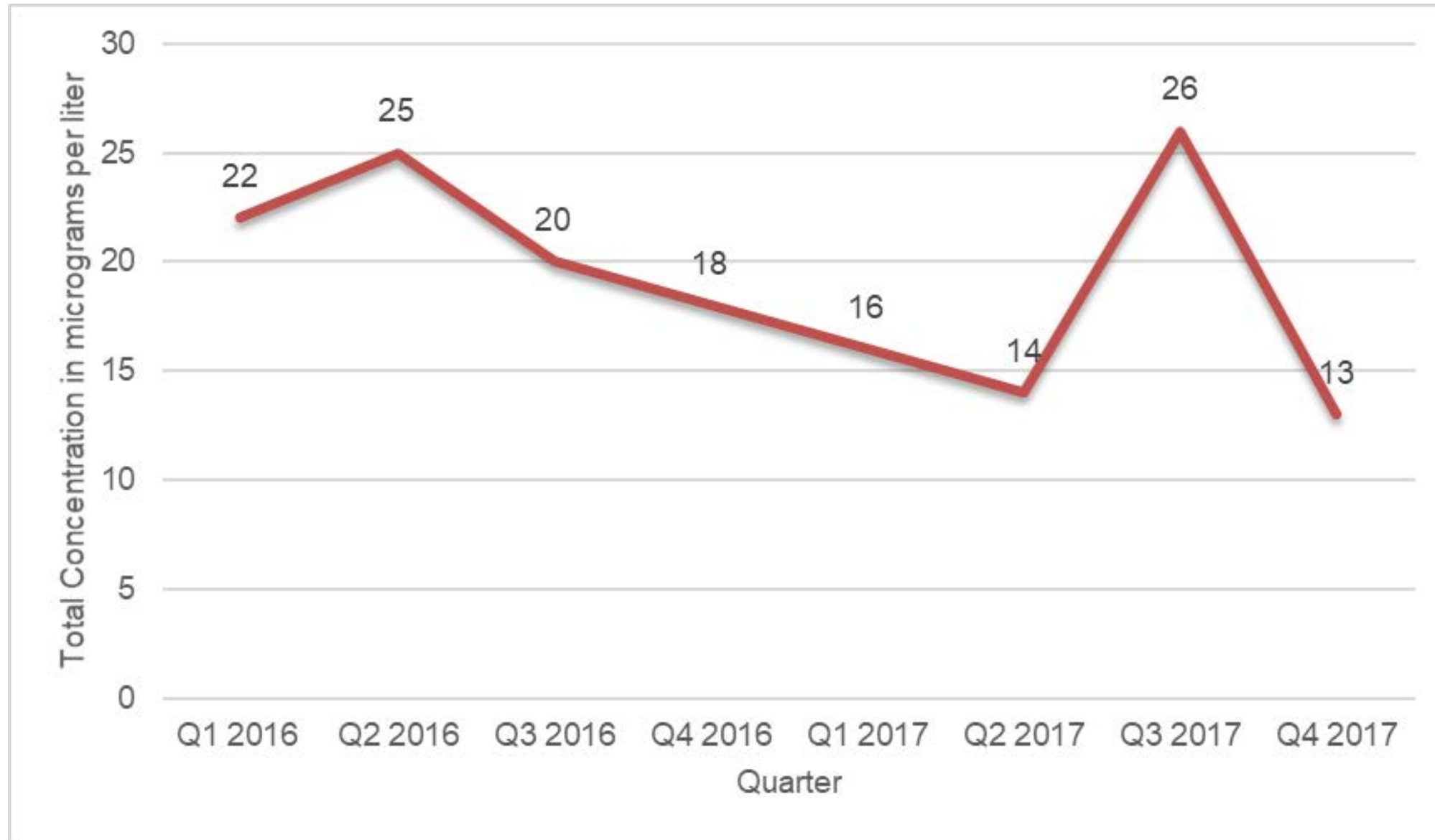
NOTE:
PCE TETRACHLOROETHENE

FIGURE 14C MW-11 PCE CONCENTRATION VERSUS TIME			
PREPARED BY	ENVIRONMENTAL PARTNERS INC		
REPORT	GROUNDWATER MONITORING AND INVESTIGATION REPORT		
LOCATION	1419 AVENUE D SNOHOMISH, WA		
PREPARED FOR	SKOTDAL REAL ESTATE		
DATE	CREATED BY	REVIEWED BY	PROJECT NUMBER
3/2/18	CSW	JB	69402.2




NOTE:
PCE TETRACHLOROETHENE

FIGURE 14D GW-10 PCE CONCENTRATION VERSUS TIME			
PREPARED BY	 ENVIRONMENTAL PARTNERS INC		
REPORT	GROUNDWATER MONITORING AND INVESTIGATION REPORT		
LOCATION	1419 AVENUE D SNOHOMISH, WA		
PREPARED FOR	SKOTDAL REAL ESTATE		
DATE	CREATED BY	REVIEWED BY	PROJECT NUMBER
3/2/18	CSW	JB	69402.2



NOTE:
PCE TETRACHLOROETHENE

FIGURE 14E GW-8 PCE CONCENTRATION VERSUS TIME			
PREPARED BY	 ENVIRONMENTAL PARTNERS INC		
REPORT	GROUNDWATER MONITORING AND INVESTIGATION REPORT		
LOCATION	1419 AVENUE D SNOHOMISH, WA		
PREPARED FOR	SKOTDAL REAL ESTATE		
DATE	CREATED BY	REVIEWED BY	PROJECT NUMBER
3/2/18	CSW	JB	69402.2

Attachment A
Laboratory Analytical Results

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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Seattle, WA 98119-2029
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fbi@isomedia.com
www.friedmanandbruya.com

March 14, 2017

Josh Bernthal, Project Manager
Environmental Partners, Inc.
1180 NW Maple St, Suite 310
Issaquah, WA 98027

RE: 69402, F&BI 702293

Dear Mr Bernthal:

Included are the results from the testing of material submitted on February 21, 2017 from the 69402, F&BI 702293 project. There are 27 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 have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
c: Cynthia Moon
EPI0314R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on February 21, 2017 by Friedman & Bruya, Inc. from the Environmental Partners 69402, F&BI 702293 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>Environmental Partners</u>
702293 -01	GW-4
702293 -02	GW-11
702293 -03	MW-2
702293 -04	MW-3

The samples were sent to Amtest for TOC, chloride, sulfate, sulfide, nitrate, nitrite, BOD, and COD analyses. In addition, the samples were sent to ALS-Simi for carbon dioxide analysis. ALS-Simi received HCl preserved VOAs for GW-11, MW-2, and MW-3 which will bias CO₂ concentrations high. Therefore unpreserved VOAs were sent to ALS for GW-11 and MW-3. There were no unpreserved VOAs available for MW-2. The results of GW-11 and MW-3 carbon dioxide testing will be forwarded to your office upon completion. The available results from Amtest and ALS are included.

All quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	GW-4	Client:	Environmental Partners
Date Received:	02/21/17	Project:	69402, F&BI 702293
Date Extracted:	02/23/17	Lab ID:	702293-01
Date Analyzed:	02/23/17	Data File:	702293-01.073
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	<50
Manganese	8.20

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	GW-11	Client:	Environmental Partners
Date Received:	02/21/17	Project:	69402, F&BI 702293
Date Extracted:	02/23/17	Lab ID:	702293-02
Date Analyzed:	02/23/17	Data File:	702293-02.074
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	108
Manganese	3.00

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	MW-2	Client:	Environmental Partners
Date Received:	02/21/17	Project:	69402, F&BI 702293
Date Extracted:	02/23/17	Lab ID:	702293-03
Date Analyzed:	02/23/17	Data File:	702293-03.075
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	<50
Manganese	2.54

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	MW-3	Client:	Environmental Partners
Date Received:	02/21/17	Project:	69402, F&BI 702293
Date Extracted:	02/23/17	Lab ID:	702293-04 x10
Date Analyzed:	02/23/17	Data File:	702293-04 x10.076
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	33,900
Manganese	5,000

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	Environmental Partners
Date Received:	Not Applicable	Project:	69402, F&BI 702293
Date Extracted:	02/23/17	Lab ID:	I7-091 mb
Date Analyzed:	02/23/17	Data File:	I7-091 mb.062
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	<50
Manganese	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	GW-4	Client:	Environmental Partners
Date Received:	02/21/17	Project:	69402, F&BI 702293
Date Extracted:	02/21/17	Lab ID:	702293-01
Date Analyzed:	02/21/17	Data File:	702293-01.034
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	123
Manganese	149

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	GW-11	Client:	Environmental Partners
Date Received:	02/21/17	Project:	69402, F&BI 702293
Date Extracted:	02/21/17	Lab ID:	702293-02
Date Analyzed:	02/21/17	Data File:	702293-02.037
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	147
Manganese	3.99

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	MW-2	Client:	Environmental Partners
Date Received:	02/21/17	Project:	69402, F&BI 702293
Date Extracted:	02/21/17	Lab ID:	702293-03
Date Analyzed:	02/21/17	Data File:	702293-03.040
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	170
Manganese	6.35

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	MW-3	Client:	Environmental Partners
Date Received:	02/21/17	Project:	69402, F&BI 702293
Date Extracted:	02/21/17	Lab ID:	702293-04 x10
Date Analyzed:	02/21/17	Data File:	702293-04 x10.045
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	37,500
Manganese	5,170

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	Environmental Partners
Date Received:	Not Applicable	Project:	69402, F&BI 702293
Date Extracted:	02/21/17	Lab ID:	I7-088 mb
Date Analyzed:	02/21/17	Data File:	I7-088 mb.026
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	<50
Manganese	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	GW-4	Client:	Environmental Partners
Date Received:	02/21/17	Project:	69402, F&BI 702293
Date Extracted:	02/23/17	Lab ID:	702293-01
Date Analyzed:	02/23/17	Data File:	022329.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	97	57	121
Toluene-d8	103	63	127
4-Bromofluorobenzene	103	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	4.5

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	GW-11	Client:	Environmental Partners
Date Received:	02/21/17	Project:	69402, F&BI 702293
Date Extracted:	02/23/17	Lab ID:	702293-02
Date Analyzed:	02/23/17	Data File:	022330.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	57	121
Toluene-d8	100	63	127
4-Bromofluorobenzene	101	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	4.7

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-2	Client:	Environmental Partners
Date Received:	02/21/17	Project:	69402, F&BI 702293
Date Extracted:	02/23/17	Lab ID:	702293-03
Date Analyzed:	02/23/17	Data File:	022331.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	57	121
Toluene-d8	103	63	127
4-Bromofluorobenzene	102	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-3	Client:	Environmental Partners
Date Received:	02/21/17	Project:	69402, F&BI 702293
Date Extracted:	02/23/17	Lab ID:	702293-04
Date Analyzed:	02/23/17	Data File:	022332.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	98	57	121
Toluene-d8	101	63	127
4-Bromofluorobenzene	103	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	3.3
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	4.2

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Method Blank	Client:	Environmental Partners
Date Received:	Not Applicable	Project:	69402, F&BI 702293
Date Extracted:	02/23/17	Lab ID:	07-0349 mb
Date Analyzed:	02/23/17	Data File:	022308.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	57	121
Toluene-d8	101	63	127
4-Bromofluorobenzene	100	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Gasses By RSK 175

Client Sample ID:	GW-4	Client:	Environmental Partners
Date Received:	02/21/17	Project:	69402, F&BI 702293
Date Extracted:	02/21/17	Lab ID:	702293-01
Date Analyzed:	02/21/17	Data File:	006F0601.D
Matrix:	Water	Instrument:	GC8
Units:	ug/L (ppb)	Operator:	JS

Compounds:	Concentration ug/L (ppb)
Methane	<5
Ethane	<10
Ethene	<10

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Gasses By RSK 175

Client Sample ID:	GW-11	Client:	Environmental Partners
Date Received:	02/21/17	Project:	69402, F&BI 702293
Date Extracted:	02/21/17	Lab ID:	702293-02
Date Analyzed:	02/21/17	Data File:	007F0701.D
Matrix:	Water	Instrument:	GC8
Units:	ug/L (ppb)	Operator:	JS

Compounds:	Concentration ug/L (ppb)
Methane	<5
Ethane	<10
Ethene	<10

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Gasses By RSK 175

Client Sample ID:	MW-2	Client:	Environmental Partners
Date Received:	02/21/17	Project:	69402, F&BI 702293
Date Extracted:	02/21/17	Lab ID:	702293-03
Date Analyzed:	02/21/17	Data File:	008F0801.D
Matrix:	Water	Instrument:	GC8
Units:	ug/L (ppb)	Operator:	JS

Compounds:	Concentration ug/L (ppb)
Methane	<5
Ethane	<10
Ethene	<10

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Gasses By RSK 175

Client Sample ID:	MW-3	Client:	Environmental Partners
Date Received:	02/21/17	Project:	69402, F&BI 702293
Date Extracted:	02/21/17	Lab ID:	702293-04
Date Analyzed:	02/21/17	Data File:	009F0901.D
Matrix:	Water	Instrument:	GC8
Units:	ug/L (ppb)	Operator:	JS

Compounds:	Concentration ug/L (ppb)
Methane	6,100 ve
Ethane	<10
Ethene	<10

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Gasses By RSK 175

Client Sample ID:	MW-3	Client:	Environmental Partners
Date Received:	02/21/17	Project:	69402, F&BI 702293
Date Extracted:	02/21/17	Lab ID:	702293-04 1/100
Date Analyzed:	03/06/17	Data File:	006F0601.D
Matrix:	Water	Instrument:	GC8
Units:	ug/L (ppb)	Operator:	JS

Compounds:	Concentration ug/L (ppb)
Methane	8,000
Ethane	<1,000
Ethene	<1,000

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Gasses By RSK 175

Client Sample ID:	Method Blank	Client:	Environmental Partners
Date Received:	Not Applicable	Project:	69402, F&BI 702293
Date Extracted:	02/21/17	Lab ID:	07-0345 mb
Date Analyzed:	02/21/17	Data File:	005F0501.D
Matrix:	Water	Instrument:	GC8
Units:	ug/L (ppb)	Operator:	JS

Compounds:	Concentration ug/L (ppb)
Methane	<5
Ethane	<10
Ethene	<10

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 03/14/17

Date Received: 02/21/17

Project: 69402, F&BI 702293

**QUALITY ASSURANCE RESULTS
FOR THE ANALYSIS OF WATER SAMPLES
FOR DISSOLVED METALS USING EPA METHOD 200.8**

Laboratory Code: 702356-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Iron	ug/L (ppb)	100	97.4	99	86	70-130	14
Manganese	ug/L (ppb)	20	134	141 b	120 b	70-130	16 b

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Iron	ug/L (ppb)	100	90	85-115
Manganese	ug/L (ppb)	20	90	85-115

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 03/14/17

Date Received: 02/21/17

Project: 69402, F&BI 702293

**QUALITY ASSURANCE RESULTS
FOR THE ANALYSIS OF WATER SAMPLES
FOR TOTAL METALS USING EPA METHOD 200.8**

Laboratory Code: 702292-02 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Iron	ug/L (ppb)	100	141	103	97	70-130	6
Manganese	ug/L (ppb)	20	97.0	126	107	70-130	16

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Iron	ug/L (ppb)	100	105	85-115
Manganese	ug/L (ppb)	20	100	85-115

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 03/14/17

Date Received: 02/21/17

Project: 69402, F&BI 702293

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER
SAMPLES FOR VOLATILES BY EPA METHOD 8260C**

Laboratory Code: 702321-12 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Acceptance Criteria
Vinyl chloride	ug/L (ppb)	50	<0.2	101	36-166
Chloroethane	ug/L (ppb)	50	<1	114	46-160
1,1-Dichloroethene	ug/L (ppb)	50	<1	104	60-136
Methylene chloride	ug/L (ppb)	50	<5	94	67-132
trans-1,2-Dichloroethene	ug/L (ppb)	50	<1	100	72-129
1,1-Dichloroethane	ug/L (ppb)	50	<1	100	70-128
cis-1,2-Dichloroethene	ug/L (ppb)	50	<1	99	71-127
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	<1	97	69-133
1,1,1-Trichloroethane	ug/L (ppb)	50	<1	101	60-146
Trichloroethene	ug/L (ppb)	50	<1	94	66-135
Tetrachloroethene	ug/L (ppb)	50	<1	95	10-226

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Vinyl chloride	ug/L (ppb)	50	106	102	50-154	4
Chloroethane	ug/L (ppb)	50	116	102	58-146	13
1,1-Dichloroethene	ug/L (ppb)	50	107	103	67-136	4
Methylene chloride	ug/L (ppb)	50	104	97	39-148	7
trans-1,2-Dichloroethene	ug/L (ppb)	50	103	99	68-128	4
1,1-Dichloroethane	ug/L (ppb)	50	103	99	79-121	4
cis-1,2-Dichloroethene	ug/L (ppb)	50	105	99	80-123	6
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	100	95	73-132	5
1,1,1-Trichloroethane	ug/L (ppb)	50	106	100	83-130	6
Trichloroethene	ug/L (ppb)	50	98	93	80-120	5
Tetrachloroethene	ug/L (ppb)	50	102	96	76-121	6

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 03/14/17

Date Received: 02/21/17

Project: 69402, F&BI 702293

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF
WATER SAMPLES FOR DISSOLVED GASSES
USING METHOD RSK 175**

Laboratory Code: 702293-04 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference (Limit 20)
Methane	ug/L (ppb)	6,100 ve	6,400 ve	nm
Ethane	ug/L (ppb)	<10	<10	nm
Ethene	ug/L (ppb)	<10	<10	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Methane	ug/L (ppb)	59	81	76	50-150	7
Ethane	ug/L (ppb)	110	72	68	50-150	6
Ethene	ug/L (ppb)	102	99	93	50-150	7

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.



2655 Park Center Dr., Suite A
Simi Valley, CA 93065
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F: +1 805 526 7270
www.alsglobal.com

LABORATORY REPORT

March 8, 2017

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

RE: 702293

Dear Mike:

Enclosed are the results of the sample submitted to our laboratory on February 23, 2017. For your reference, this analysis has been assigned our service request number P1700898.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

By Sue Anderson at 12:15 pm, Mar 08, 2017

Sue Anderson
Project Manager



2655 Park Center Dr., Suite A
Simi Valley, CA 93065
T: +1 805 526 7161
F: +1 805 526 7270
www.alsglobal.com

Client: Friedman & Bruya, Inc.
Project: 702293

Service Request No: P1700898

CASE NARRATIVE

The sample was received intact under chain of custody on February 23, 2017 and was stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the sample at the time of sample receipt.

The analysis for samples GW-11 (P1700898-002), MW-2 (P1700898-003) and MW-3 (P1700898-004) were cancelled because the submitted voa vials were acidified.

Carbon Dioxide Analysis

The sample was analyzed for carbon dioxide using a gas chromatograph equipped with a thermal conductivity detector (TCD). A known amount of liquid was displaced by injecting 8.0 milliliters of helium creating a headspace in the sample vial. The sample vial was agitated using a sonic disrupter for fifteen minutes and then allowed to equilibrate for at least four hours. A volume of the headspace was withdrawn using a gas-tight syringe and analyzed using a manual injection technique. The amount of dissolved gas (carbon dioxide) in the original sample was calculated using Henry's Law. This method was performed with guidance from RSK 175 as described in laboratory SOP VOA-DISGAS. This analyte is included on the laboratory's NELAP and DoD-ELAP scope of accreditation.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.



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ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
Arizona DHS	http://www.azdhs.gov/preparedness/state-laboratory/lab-licensure-certification/index.php#laboratory-licensure-home	AZ0694
Florida DOH (NELAP)	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E871020
Louisiana DEQ (NELAP)	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	05071
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/labcert.htm	2016036
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	1177034
New Jersey DEP (NELAP)	http://www.nj.gov/dep/oqa/	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-004
Pennsylvania DEP	http://www.depweb.state.pa.us/labs	68-03307 (Registration)
PJLA (DoD ELAP)	http://www.pjlabs.com/search-accredited-labs	65818 (Testing)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/field/ga/env_lab_accreditation.html	T104704413-16-7
Utah DOH (NELAP)	http://health.utah.gov/lab/environmental-lab-certification/	CA01627201 6-6
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at www.alsglobal.com, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

Client: Friedman & Bruya, Inc.
Project ID: 702293

Service Request: P1700898

Date Received: 2/23/2017
Time Received: 09:30

RSK 175 - CO2

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	
GW-4	P1700898-001	Water	2/20/2017	10:32	X

P17008 10

SUBCONTRACT SAMPLE CHAIN OF CUSTODY

Page # 1 of 1

TURNAROUND TIME
 Standard (2 Weeks)
 RUSH
 Rush charges authorized by: _____

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

SUBCONTRACTER ALS-Sim Valley PO # _____

PROJECT NAME/NO. 702293 E-506

REMARKS
 Please Email Results

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Matrix	# of jars	ANALYSES REQUESTED						Notes	
						Dioxins/Furans	BPH	VPH	Nitrate	Sulfate	Alkalinity		TOC-9060M
GW-4	①	2/20/17	1032	water									
GW-11	②		1125										
MW-2	③		1240										
MW-3	④		1513										

PRINT NAME: Michael Erdahl COMPANY: Friedman and Bruya DATE: 2/24/17 TIME: 1130

SIGNATURE: [Signature]

Relinquished by: _____

Received by: [Signature]

Relinquished by: _____

Received by: [Signature]

Relinquished by: _____

Received by: [Signature]

**ALS Environmental
Sample Acceptance Check Form**

Client: Friedman & Bruya, Inc. Work order: P1700898
 Project: 702293
 Sample(s) received on: 2/23/17 Date opened: 2/23/17 by: ADAVID

Note: This form is used for all samples received by ALS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

- | | Yes | No | N/A |
|---|-------------------------------------|-------------------------------------|-------------------------------------|
| 1 Were sample containers properly marked with client sample ID? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2 Did sample containers arrive in good condition? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3 Were chain-of-custody papers used and filled out? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4 Did sample container labels and/or tags agree with custody papers? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5 Was sample volume received adequate for analysis? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6 Are samples within specified holding times? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7 Was proper temperature (thermal preservation) of cooler at receipt adhered to?
Cooler Temperature: 3° C Blank Temperature: ° C | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8 Were custody seals on outside of cooler/Box/Container?
Location of seal(s)? _____ Sealing Lid? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Were signature and date included? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Were seals intact? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 9 Do containers have appropriate preservation, according to method/SOP or Client specified information?
Is there a client indication that the submitted samples are pH preserved?
Were VOA vials checked for presence/absence of air bubbles? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 10 Tubes: Are the tubes capped and intact? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 11 Badges: Are the badges properly capped and intact?
Are dual bed badges separated and individually capped and intact? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Lab Sample ID	Container Description	Required pH	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1700898-001.01	40mL VOA NP		7		A	MC 3/02/2017
P1700898-001.02	40mL VOA NP				A	
P1700898-002.01	40ml VOA HCL				A	
P1700898-002.02	40ml VOA HCL		1		A	MC 3/02/2017
P1700898-003.01	40ml VOA HCL				A	
P1700898-003.02	40ml VOA HCL		1		A	MC 3/02/2017
P1700898-004.01	40ml VOA HCL				A	
P1700898-004.02	40ml VOA HCL		1		A	MC 3/02/2017

Explain any discrepancies: (include lab sample ID numbers): _____
 Samples -002 thru -004 could not be analyzed because they were acidified.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 1 of 1

Client: Friedman & Bruya, Inc.
Client Project ID: 702293

ALS Project ID: P1700898

Carbon Dioxide

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD
Analyst: Mike Conejo
Matrix: Water
Test Notes:

Date(s) Collected: 2/20/17
Date Received: 2/23/17
Date Analyzed: 3/2/17

Client Sample ID	ALS Sample ID	Injection Volume ml(s)	Result µg/L	MRL µg/L	Data Qualifier
GW-4	P1700898-001	0.10	46,000	1,000	
Method Control Sample	P170302-MB	0.10	ND	1,000	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Page 1 of 1

Client: Friedman & Bruya, Inc.
 Client Sample ID: Duplicate Lab Control Sample
 Client Project ID: 702293

ALS Project ID: P1700898
 ALS Sample ID: P170302-DLCS

Test Code: RSK 175
 Instrument ID: HP5890A/GC10/TCD
 Analyst: Mike Conejo
 Matrix: Water
 Test Notes:

Date Collected: NA
 Date Received: NA
 Date Analyzed: 3/02/17
 Volume(s) Analyzed: NA ml(s)

CAS #	Compound	Spike Amount		Result,		% Recovery		ALS		Data Qualifier
		LCS / DLCS	LCS	DLCS	LCS	DLCS	Acceptance	RPD	RPD	
		ug/L	ug/L	ug/L	LCS	DLCS	Limits		Limit	
7782-44-7	Oxygen/Argon*	22,900	22,700	21,600	99	94	50-150	5	30	

_i = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.
 Oxygen free water cannot be achieved due to the nature of the matrix.

* = Coeluting compounds.

Am Test Inc.
13600 NE 126TH PL
Suite C
Kirkland, WA 98034
(425) 885-1664

Mar 13 2017
Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Attention: MICHAEL ERDAHL

Dear MICHAEL ERDAHL:

Enclosed please find the analytical data for your 702293 project.

The following is a cross correlation of client and laboratory identifications for your convenience.

CLIENT ID	MATRIX	AMTEST ID	TEST
GW-4	Water	17-A002329	DEM, MIN, NUT, CONV
GW-11	Water	17-A002330	DEM, MIN, NUT, CONV
MW-2	Water	17-A002331	DEM, MIN, NUT, CONV
MW-3	Water	17-A002332	DEM, MIN, NUT, CONV

Your samples were received on Tuesday, February 21, 2017. At the time of receipt, the samples were logged in and properly maintained prior to the subsequent analysis.

The analytical procedures used at AmTest are well documented and are typically derived from the protocols of the EPA, USDA, FDA or the Army Corps of Engineers.

Following the analytical data you will find the Quality Control (QC) results.

Please note that the detection limits that are listed in the body of the report refer to the Practical Quantitation Limits (PQL's), as opposed to the Method Detection Limits (MDL's).

If you should have any questions pertaining to the data package, please feel free to contact me.

Sincerely,



Aaron W. Young
Laboratory Manager

Project #: 702293
PO Number: E-504

BACT = Bacteriological
CONV = Conventional

MET = Metals
ORG = Organics

NUT=Nutrients
DEM=Demand

MIN=Minerals

ANALYSIS REPORT

Friedman & Bruya, Inc.
 3012 16th Avenue West
 Seattle, WA 98119-2029
 Attention: MICHAEL ERDAHL
 Project Name: 702293
 Project #: 702293
 PO Number: E-504
 All results reported on an as received basis.

Date Received: 02/21/17
 Date Reported: 3/13/17

AMTEST Identification Number 17-A002329
 Client Identification GW-4
 Sampling Date 02/20/17, 10:32

Conventionals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Total Sulfide	< 0.05	mg/l		0.05	SM 4500-S2-D	SW	02/28/17

Demand

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
BOD	< 2	mg/l		2	SM 5210B	NG	02/22/17
Total Organic Carbon	0.58	mg/l		0.5	SM 5310B	SW	02/23/17
Chemical Oxygen Demand	< 10	mg/l		10	EPA 410.4	SW	02/24/17

Minerals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Chloride	3.68	mg/l		0.05	EPA 300.0	JC	02/21/17
Sulfate	7.76	mg/l		0.1	EPA 300.0	JC	02/21/17

Nutrients

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Nitrite	< 0.005	mg/l		0.005	EPA 300.0	JC	02/21/17
Nitrate	0.399	mg/l		0.025	EPA 300.0	JC	02/21/17
Nitrate+Nitrite	0.399	mg/l		0.025	EPA 300.0	Calculated	

AMTEST Identification Number 17-A002330
Client Identification GW-11
Sampling Date 02/20/17, 11:25

Conventionals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Total Sulfide	< 0.05	mg/l		0.05	SM 4500-S2-D	SW	02/28/17

Demand

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
BOD	< 2	mg/l		2	SM 5210B	NG	02/22/17
Total Organic Carbon	1.1	mg/l		0.5	SM 5310B	SW	02/23/17
Chemical Oxygen Demand	< 10	mg/l		10	EPA 410.4	SW	02/24/17

Minerals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Chloride	53.8	mg/l		0.05	EPA 300.0	JC	02/27/17
Sulfate	14.2	mg/l		0.1	EPA 300.0	JC	02/21/17

Nutrients

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Nitrite	< 0.005	mg/l		0.005	EPA 300.0	JC	02/21/17
Nitrate	2.60	mg/l		0.025	EPA 300.0	JC	02/21/17
Nitrate+Nitrite	2.60	mg/l		0.025	EPA 300.0	Calculated	

AMTEST Identification Number 17-A002331
Client Identification MW-2
Sampling Date 02/20/17, 12:40

Conventionals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Total Sulfide	< 0.05	mg/l		0.05	SM 4500-S2-D	SW	02/28/17

Demand

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
BOD	< 2	mg/l		2	SM 5210B	NG	02/22/17
Total Organic Carbon	2.7	mg/l		0.5	SM 5310B	SW	02/23/17
Chemical Oxygen Demand	< 10	mg/l		10	EPA 410.4	SW	02/24/17

Minerals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Chloride	1.24	mg/l		0.05	EPA 300.0	JC	02/21/17
Sulfate	1.13	mg/l		0.1	EPA 300.0	JC	02/21/17

Nutrients

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Nitrite	< 0.005	mg/l		0.005	EPA 300.0	JC	02/21/17
Nitrate	11.2	mg/l		0.025	EPA 300.0	JC	02/24/17
Nitrate+Nitrite	11.2	mg/l		0.025	EPA 300.0	Calculated	

AMTEST Identification Number 17-A002332
Client Identification MW-3
Sampling Date 02/20/17, 15:18

Conventionals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Total Sulfide	< 0.05	mg/l		0.05	SM 4500-S2-D	SW	02/28/17

Demand

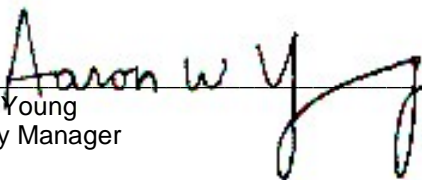
PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
BOD	83.	mg/l		2	SM 5210B	NG	02/22/17
Total Organic Carbon	76.	mg/l		0.5	SM 5310B	SW	02/23/17
Chemical Oxygen Demand	430	mg/l		10	EPA 410.4	SW	03/07/17

Minerals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Chloride	34.5	mg/l		0.05	EPA 300.0	JC	02/27/17
Sulfate	0.78	mg/l		0.1	EPA 300.0	JC	02/21/17

Nutrients

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Nitrite	< 0.005	mg/l		0.005	EPA 300.0	JC	02/21/17
Nitrate	< 0.025	mg/l		0.025	EPA 300.0	JC	02/21/17
Nitrate+Nitrite	< 0.025	mg/l		0.025	EPA 300.0	Calculated	


 Aaron W. Young
 Laboratory Manager

QC Summary for sample numbers: 17-A002329 to 17-A002332

DUPLICATES

SAMPLE #	ANALYTE	UNITS	SAMPLE VALUE	DUP VALUE	RPD
17-A002401	BOD	mg/l	< 2	< 2	
17-A002124	Chemical Oxygen Demand	mg/l	< 10	< 10	
17-A002331	Chemical Oxygen Demand	mg/l	< 10	< 10	
17-A002401	Chemical Oxygen Demand	mg/l	< 10	< 10	
17-A002540	Chemical Oxygen Demand	mg/l	15.	13.	14.
17-A002550	Chemical Oxygen Demand	mg/l	25.	23.	8.3
17-A002329	Chloride	mg/l	3.68	3.71	0.81
17-A002247	Chloride	mg/l	88.8	87.6	1.4
17-A002469	Chloride	mg/l	46.0	44.5	3.3
17-A002329	Nitrate	mg/l	0.399	0.386	3.3
17-A002367	Nitrate	mg/l	< 0.025	< 0.025	
17-A002329	Nitrite	mg/l	< 0.005	< 0.005	
17-A002367	Nitrite	mg/l	< 0.005	< 0.005	
17-A002400	Total Sulfide	mg/l	< 0.05	< 0.05	
17-A002506	Total Sulfide	mg/l	< 0.05	< 0.05	
17-A002329	Sulfate	mg/l	7.76	7.06	9.4

MATRIX SPIKES

SAMPLE #	ANALYTE	UNITS	SAMPLE VALUE	SMPL+ SPK	SPK AMT	RECOVERY
17-A002044	Total Organic Carbon	mg/l	1.7	27.	25.	101.20 %
17-A002165	Total Organic Carbon	mg/l	2.3	25.	25.	90.80 %
17-A002175	Total Organic Carbon	mg/l	3.5	27.	25.	94.00 %
17-A002399	Total Organic Carbon	mg/l	5.7	49.	50.	86.60 %
17-A002329	Chloride	mg/l	3.68	8.65	5.00	99.40 %
17-A002247	Chloride	mg/l	88.8	133.	50.0	88.40 %
17-A002469	Chloride	mg/l	46.0	93.0	50.0	94.00 %
17-A002329	Nitrate	mg/l	0.399	5.22	5.00	96.42 %
17-A002329	Nitrite	mg/l	< 0.005	4.89	5.00	97.80 %
17-A002506	Total Sulfide	mg/l	< 0.05	0.34	0.39	87.18 %
17-A002329	Sulfate	mg/l	7.76	13.1	5.00	106.80 %

QC Summary for sample numbers: 17-A002329 to 17-A002332...

STANDARD REFERENCE MATERIALS

ANALYTE	UNITS	TRUE VALUE	MEASURED VALUE	RECOVERY
BOD	mg/l	200	170	85.0 %
Total Organic Carbon	mg/l	50.	48.	96.0 %
Total Organic Carbon	mg/l	50.	48.	96.0 %
Chemical Oxygen Demand	mg/l	100	98.	98.0 %
Chemical Oxygen Demand	mg/l	100	96.	96.0 %
Chemical Oxygen Demand	mg/l	100	100	100. %
Chemical Oxygen Demand	mg/l	100	100	100. %
Chloride	mg/l	5.00	4.97	99.4 %
Chloride	mg/l	5.00	4.88	97.6 %
Chloride	mg/l	5.00	4.89	97.8 %
Nitrate	mg/l	5.00	4.83	96.6 %
Nitrate	mg/l	5.00	4.61	92.2 %
Nitrite	mg/l	5.00	4.96	99.2 %
Total Sulfide	mg/l	0.39	0.34	87.2 %
Sulfate	mg/l	5.00	5.71	114. %

BLANKS

ANALYTE	UNITS	RESULT
BOD	mg/l	< 2
Total Organic Carbon	mg/l	< 0.5
Total Organic Carbon	mg/l	< 0.5
Chemical Oxygen Demand	mg/l	< 10
Chemical Oxygen Demand	mg/l	< 10
Chemical Oxygen Demand	mg/l	< 10
Chemical Oxygen Demand	mg/l	< 10
Chloride	mg/l	< 0.05
Chloride	mg/l	< 0.05
Chloride	mg/l	< 0.05
Chloride	mg/l	< 0.05
Nitrate	mg/l	< 0.025
Nitrate	mg/l	< 0.025
Nitrite	mg/l	< 0.005
Total Sulfide	mg/l	< 0.05
Sulfate	mg/l	< 0.1

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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March 10, 2017

Josh Bernthal, Project Manager
Environmental Partners, Inc.
1180 NW Maple St, Suite 310
Issaquah, WA 98027

RE: 69402, F&BI 702316

Dear Mr Bernthal:

Included are the results from the testing of material submitted on February 21, 2017 from the 69402, F&BI 702316 project. There are 30 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 have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
c: Cynthia Moon
EPI0310R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on February 21, 2017 by Friedman & Bruya, Inc. from the Environmental Partners 69402, F&BI 702316 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>Environmental Partners</u>
702316-01	MW-15
702316-02	MW-1
702316-03	MW-7
702316-04	MW-8
702316-05	MW-9

The samples were sent to Amtest for TOC, chloride, sulfate, sulfide, nitrate, nitrite, BOD, and COD analyses. In addition, the samples were sent to ALS-Simi for carbon dioxide analysis. The results from Amtest and ALS are included.

All quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	MW-15	Client:	Environmental Partners
Date Received:	02/21/17	Project:	69402, F&BI 702316
Date Extracted:	02/27/17	Lab ID:	702316-01
Date Analyzed:	02/28/17	Data File:	702316-01.126
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	241
Manganese	8.16

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	MW-1	Client:	Environmental Partners
Date Received:	02/21/17	Project:	69402, F&BI 702316
Date Extracted:	02/27/17	Lab ID:	702316-02
Date Analyzed:	02/28/17	Data File:	702316-02.130
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	991
Manganese	2,660

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	MW-7	Client:	Environmental Partners
Date Received:	02/21/17	Project:	69402, F&BI 702316
Date Extracted:	02/27/17	Lab ID:	702316-03
Date Analyzed:	02/28/17	Data File:	702316-03.134
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	295
Manganese	10.6

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	MW-8	Client:	Environmental Partners
Date Received:	02/21/17	Project:	69402, F&BI 702316
Date Extracted:	02/27/17	Lab ID:	702316-04
Date Analyzed:	02/28/17	Data File:	702316-04.138
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	364
Manganese	52.4

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	MW-9	Client:	Environmental Partners
Date Received:	02/21/17	Project:	69402, F&BI 702316
Date Extracted:	02/27/17	Lab ID:	702316-05
Date Analyzed:	02/28/17	Data File:	702316-05.139
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	<50
Manganese	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	Environmental Partners
Date Received:	Not Applicable	Project:	69402, F&BI 702316
Date Extracted:	02/27/17	Lab ID:	I7-096 mb
Date Analyzed:	02/27/17	Data File:	I7-096 mb.060
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	<50
Manganese	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	MW-15	Client:	Environmental Partners
Date Received:	02/21/17	Project:	69402, F&BI 702316
Date Extracted:	02/23/17	Lab ID:	702316-01
Date Analyzed:	02/23/17	Data File:	702316-01.067
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	58.6
Manganese	4.17

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	MW-1	Client:	Environmental Partners
Date Received:	02/21/17	Project:	69402, F&BI 702316
Date Extracted:	02/23/17	Lab ID:	702316-02
Date Analyzed:	02/23/17	Data File:	702316-02.068
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	494
Manganese	2,650

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	MW-7	Client:	Environmental Partners
Date Received:	02/21/17	Project:	69402, F&BI 702316
Date Extracted:	02/23/17	Lab ID:	702316-03
Date Analyzed:	02/23/17	Data File:	702316-03.069
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	101
Manganese	3.11

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	MW-8	Client:	Environmental Partners
Date Received:	02/21/17	Project:	69402, F&BI 702316
Date Extracted:	02/23/17	Lab ID:	702316-04
Date Analyzed:	02/23/17	Data File:	702316-04.070
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	55.7
Manganese	10.1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	MW-9	Client:	Environmental Partners
Date Received:	02/21/17	Project:	69402, F&BI 702316
Date Extracted:	02/23/17	Lab ID:	702316-05
Date Analyzed:	02/23/17	Data File:	702316-05.072
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	<50
Manganese	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	Environmental Partners
Date Received:	Not Applicable	Project:	69402, F&BI 702316
Date Extracted:	02/23/17	Lab ID:	I7-091 mb
Date Analyzed:	02/23/17	Data File:	I7-091 mb.062
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	<50
Manganese	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-15	Client:	Environmental Partners
Date Received:	02/21/17	Project:	69402, F&BI 702316
Date Extracted:	02/24/17	Lab ID:	702316-01
Date Analyzed:	02/24/17	Data File:	022428.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	57	121
Toluene-d8	103	63	127
4-Bromofluorobenzene	104	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	2.6
Tetrachloroethene	140

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-1	Client:	Environmental Partners
Date Received:	02/21/17	Project:	69402, F&BI 702316
Date Extracted:	02/24/17	Lab ID:	702316-02
Date Analyzed:	02/24/17	Data File:	022429.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	57	121
Toluene-d8	103	63	127
4-Bromofluorobenzene	102	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	1.4

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-7	Client:	Environmental Partners
Date Received:	02/21/17	Project:	69402, F&BI 702316
Date Extracted:	02/24/17	Lab ID:	702316-03
Date Analyzed:	02/24/17	Data File:	022430.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	103	57	121
Toluene-d8	102	63	127
4-Bromofluorobenzene	102	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	8.0

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-8	Client:	Environmental Partners
Date Received:	02/21/17	Project:	69402, F&BI 702316
Date Extracted:	02/24/17	Lab ID:	702316-04
Date Analyzed:	02/24/17	Data File:	022431.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	57	121
Toluene-d8	103	63	127
4-Bromofluorobenzene	101	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-9	Client:	Environmental Partners
Date Received:	02/21/17	Project:	69402, F&BI 702316
Date Extracted:	02/24/17	Lab ID:	702316-05
Date Analyzed:	02/24/17	Data File:	022432.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	98	57	121
Toluene-d8	102	63	127
4-Bromofluorobenzene	104	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	8.0

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Method Blank	Client:	Environmental Partners
Date Received:	Not Applicable	Project:	69402, F&BI 702316
Date Extracted:	02/24/17	Lab ID:	07-0351 mb
Date Analyzed:	02/24/17	Data File:	022412.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	104	57	121
Toluene-d8	101	63	127
4-Bromofluorobenzene	102	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Gasses By RSK 175

Client Sample ID:	MW-15	Client:	Environmental Partners
Date Received:	02/21/17	Project:	69402, F&BI 702316
Date Extracted:	03/06/17	Lab ID:	702316-01
Date Analyzed:	03/06/17	Data File:	007F0701.D
Matrix:	Water	Instrument:	GC8
Units:	ug/L (ppb)	Operator:	JS

Compounds:	Concentration ug/L (ppb)
Methane	<5
Ethane	<10
Ethene	<10

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Gasses By RSK 175

Client Sample ID:	MW-1	Client:	Environmental Partners
Date Received:	02/21/17	Project:	69402, F&BI 702316
Date Extracted:	03/06/17	Lab ID:	702316-02
Date Analyzed:	03/06/17	Data File:	008F0801.D
Matrix:	Water	Instrument:	GC8
Units:	ug/L (ppb)	Operator:	JS

Compounds:	Concentration ug/L (ppb)
Methane	<5
Ethane	<10
Ethene	<10

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Gasses By RSK 175

Client Sample ID:	MW-7	Client:	Environmental Partners
Date Received:	02/21/17	Project:	69402, F&BI 702316
Date Extracted:	03/06/17	Lab ID:	702316-03
Date Analyzed:	03/06/17	Data File:	009F0901.D
Matrix:	Water	Instrument:	GC8
Units:	ug/L (ppb)	Operator:	JS

Compounds:	Concentration ug/L (ppb)
Methane	<5
Ethane	<10
Ethene	<10

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Gasses By RSK 175

Client Sample ID:	MW-8	Client:	Environmental Partners
Date Received:	02/21/17	Project:	69402, F&BI 702316
Date Extracted:	03/06/17	Lab ID:	702316-04
Date Analyzed:	03/06/17	Data File:	010F1001.D
Matrix:	Water	Instrument:	GC8
Units:	ug/L (ppb)	Operator:	JS

Compounds:	Concentration ug/L (ppb)
Methane	<5
Ethane	<10
Ethene	<10

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Gasses By RSK 175

Client Sample ID:	MW-9	Client:	Environmental Partners
Date Received:	02/21/17	Project:	69402, F&BI 702316
Date Extracted:	03/06/17	Lab ID:	702316-05
Date Analyzed:	03/06/17	Data File:	011F1101.D
Matrix:	Water	Instrument:	GC8
Units:	ug/L (ppb)	Operator:	JS

Compounds:	Concentration ug/L (ppb)
Methane	<5
Ethane	<10
Ethene	<10

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Gasses By RSK 175

Client Sample ID:	Method Blank	Client:	Environmental Partners
Date Received:	Not Applicable	Project:	69402, F&BI 702316
Date Extracted:	03/06/17	Lab ID:	07-356 mb
Date Analyzed:	03/06/17	Data File:	005F0501.D
Matrix:	Water	Instrument:	GC8
Units:	ug/L (ppb)	Operator:	JS

Compounds:	Concentration ug/L (ppb)
Methane	<5
Ethane	<10
Ethene	<10

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 03/10/17

Date Received: 02/21/17

Project: 69402, F&BI 702316

**QUALITY ASSURANCE RESULTS
FOR THE ANALYSIS OF WATER SAMPLES
FOR TOTAL METALS USING EPA METHOD 200.8**

Laboratory Code: 702402-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Iron	ug/L (ppb)	100	2,970	195 b	0 b	70-130	200 b
Manganese	ug/L (ppb)	20	670	176 b	0 b	70-130	200 b

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Iron	ug/L (ppb)	100	106	85-115
Manganese	ug/L (ppb)	20	107	85-115

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 03/10/17

Date Received: 02/21/17

Project: 69402, F&BI 702316

**QUALITY ASSURANCE RESULTS
FOR THE ANALYSIS OF WATER SAMPLES
FOR DISSOLVED METALS USING EPA METHOD 200.8**

Laboratory Code: 702356-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Iron	ug/L (ppb)	100	97.4	99	86	70-130	14
Manganese	ug/L (ppb)	20	134	141 b	120 b	70-130	16 b

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Iron	ug/L (ppb)	100	90	85-115
Manganese	ug/L (ppb)	20	90	85-115

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 03/10/17

Date Received: 02/21/17

Project: 69402, F&BI 702316

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER
SAMPLES FOR VOLATILES BY EPA METHOD 8260C**

Laboratory Code: 702387-03 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Acceptance Criteria
Vinyl chloride	ug/L (ppb)	50	<0.2	106	36-166
Chloroethane	ug/L (ppb)	50	<1	109	46-160
1,1-Dichloroethene	ug/L (ppb)	50	<1	106	60-136
Methylene chloride	ug/L (ppb)	50	<5	98	67-132
trans-1,2-Dichloroethene	ug/L (ppb)	50	<1	101	72-129
1,1-Dichloroethane	ug/L (ppb)	50	<1	101	70-128
cis-1,2-Dichloroethene	ug/L (ppb)	50	<1	102	71-127
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	<1	98	69-133
1,1,1-Trichloroethane	ug/L (ppb)	50	<1	103	60-146
Trichloroethene	ug/L (ppb)	50	<1	95	66-135
Tetrachloroethene	ug/L (ppb)	50	<1	98	10-226

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Vinyl chloride	ug/L (ppb)	50	107	118	50-154	10
Chloroethane	ug/L (ppb)	50	115	122	58-146	6
1,1-Dichloroethene	ug/L (ppb)	50	110	114	67-136	4
Methylene chloride	ug/L (ppb)	50	102	108	39-148	6
trans-1,2-Dichloroethene	ug/L (ppb)	50	105	108	68-128	3
1,1-Dichloroethane	ug/L (ppb)	50	105	107	79-121	2
cis-1,2-Dichloroethene	ug/L (ppb)	50	104	109	80-123	5
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	100	105	73-132	5
1,1,1-Trichloroethane	ug/L (ppb)	50	107	110	83-130	3
Trichloroethene	ug/L (ppb)	50	98	102	80-120	4
Tetrachloroethene	ug/L (ppb)	50	99	105	76-121	6

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 03/10/17

Date Received: 02/21/17

Project: 69402, F&BI 702316

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF
WATER SAMPLES FOR DISSOLVED GASSES
USING METHOD RSK 175**

Laboratory Code: 703011-06 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference (Limit 20)
Methane	ug/L (ppb)	100	100	0
Ethane	ug/L (ppb)	<10	<10	nm
Ethene	ug/L (ppb)	<10	<10	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Methane	ug/L (ppb)	59	66	66	50-150	0
Ethane	ug/L (ppb)	110	57	58	50-150	2
Ethene	ug/L (ppb)	102	81	81	50-150	0

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.

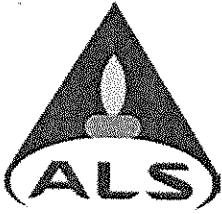
nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

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.



2655 Park Center Dr., Suite A
Simi Valley, CA 93065
T: +1 805 526 7161
F: +1 805 526 7270
www.alsglobal.com

LABORATORY REPORT

March 8, 2017

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

RE: 702316 / 702316

Dear Mike:

Enclosed are the results of the samples submitted to our laboratory on February 23, 2017. For your reference, these analyses have been assigned our service request number P1700896.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

By Sue Anderson at 12:12 pm, Mar 08, 2017

Sue Anderson
Project Manager

RIGHT SOLUTIONS | RIGHT PARTNER



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Simi Valley, CA 93065
T: +1 805 526 7161
F: +1 805 526 7270
www.alsglobal.com

Client: Friedman & Bruya, Inc.
Project: 702316 / 702316

Service Request No: P1700896

CASE NARRATIVE

The samples were received intact under chain of custody on February 23, 2017 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Carbon Dioxide Analysis

The samples were analyzed for carbon dioxide using a gas chromatograph equipped with a thermal conductivity detector (TCD). A known amount of liquid was displaced by injecting 8.0 milliliters of helium creating a headspace in the sample vial. Each sample vial was agitated using a sonic disrupter for fifteen minutes and then allowed to equilibrate for at least four hours. A volume of the headspace was withdrawn using a gas-tight syringe and analyzed using a manual injection technique. The amount of dissolved gas (carbon dioxide) in the original sample was calculated using Henry's Law. This method was performed with guidance from RSK 175 as described in laboratory SOP VOA-DISGAS. This analyte is included on the laboratory's NELAP and DoD-ELAP scope of accreditation.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.



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ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
Arizona DHS	http://www.azdhs.gov/preparedness/state-laboratory/lab-licensure-certification/index.php#laboratory-licensure-home	AZ0694
Florida DOH (NELAP)	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E871020
Louisiana DEQ (NELAP)	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	05071
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/labcert.htm	2016036
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	1177034
New Jersey DEP (NELAP)	http://www.nj.gov/dep/oqa/	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-004
Pennsylvania DEP	http://www.depweb.state.pa.us/labs	68-03307 (Registration)
PJLA (DoD ELAP)	http://www.pjlabs.com/search-accredited-labs	65818 (Testing)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704413-16-7
Utah DOH (NELAP)	http://health.utah.gov/lab/environmental-lab-certification/	CA01627201 6-6
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at www.alsglobal.com, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

Client: Friedman & Bruya, Inc.
Project ID: 702316

Service Request: P1700896

Date Received: 2/23/2017
Time Received: 09:30

RSK 175 - CO2

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	
MW-15	P1700896-001	Water	2/21/2017	06:16	X
MW-1	P1700896-002	Water	2/21/2017	07:00	X
MW-7	P1700896-003	Water	2/21/2017	08:03	X
MW-8	P1700896-004	Water	2/21/2017	09:04	X
MW-9	P1700896-005	Water	2/21/2017	09:59	X

Turnaround Time

SUBCONTRACT SAMPLE CHAIN OF CUSTODY

Page # 1 of 1

TURNAROUND TIME
 Standard (2 Weeks)
 RUSH
 Rush charges authorized by: _____

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

SUBCONTRACTOR Amtest ALS-Simi Valley
 PROJECT NAME/NO. 702316 PO # E-506

REMARKS
 Please Email Results

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Matrix	# of jars	ANALYSES REQUESTED						Notes	
						Dioxins/Furans	EPPH	VPH	Nitrate	Sulfate	Alkalinity		TOC-9060M
MW-15	1	2/21/17	0616	water									
MW-1	2		0700									X	
MW-7	3		0803									X	
MW-8	4		0904									X	
MW-9	5		0959									X	

Signature: Michael Erdahl (Signature)
 Received by: _____
 Relinquished by: _____
 Received by: _____

PRINT NAME: Michael Erdahl
 COMPANY: Friedman and Bruya
 DATE: 2/21/17
 TIME: 1130

Relinquished by: 2/23/17 0730 39ed

**ALS Environmental
Sample Acceptance Check Form**

Client: Friedman & Bruya, Inc. Work order: P1700896
 Project: 702316
 Sample(s) received on: 2/23/17 Date opened: 2/23/17 by: ADAVID

Note: This form is used for all samples received by ALS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

- | | | Yes | No | N/A |
|----|--|-------------------------------------|-------------------------------------|-------------------------------------|
| 1 | Were sample containers properly marked with client sample ID? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2 | Did sample containers arrive in good condition? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3 | Were chain-of-custody papers used and filled out? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4 | Did sample container labels and/or tags agree with custody papers? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5 | Was sample volume received adequate for analysis? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6 | Are samples within specified holding times? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7 | Was proper temperature (thermal preservation) of cooler at receipt adhered to?
Cooler Temperature: 3° C Blank Temperature: ° C | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8 | Were custody seals on outside of cooler/Box/Container?
Location of seal(s)? _____ Gel Packs | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | Were signature and date included? _____ Sealing Lid? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| | Were seals intact? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 9 | Do containers have appropriate preservation , according to method/SOP or Client specified information? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Is there a client indication that the submitted samples are pH preserved? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| | Were VOA vials checked for presence/absence of air bubbles? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Does the client/method/SOP require that the analyst check the sample pH and <u>if necessary</u> alter it? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 10 | Tubes: Are the tubes capped and intact? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 11 | Badges: Are the badges properly capped and intact? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| | Are dual bed badges separated and individually capped and intact? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Lab Sample ID	Container Description	Required pH	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1700896-001.01	40mL VOA NP		7		A	MC 3/2/2017
P1700896-001.02	40mL VOA NP				A	
P1700896-002.01	40mL VOA NP		7		A	MC 3/2/2017
P1700896-002.02	40mL VOA NP				A	
P1700896-003.01	40mL VOA NP		7		A	MC 3/2/2017
P1700896-003.02	40mL VOA NP				A	
P1700896-004.01	40mL VOA NP		7		A	MC 3/2/2017
P1700896-004.02	40mL VOA NP				A	
P1700896-005.01	40mL VOA NP		7		A	MC 3/2/2017
P1700896-005.02	40mL VOA NP				A	

Explain any discrepancies: (include lab sample ID numbers): _____

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 1 of 1

Client: Friedman & Bruya, Inc.
Client Project ID: 702316

ALS Project ID: P1700896

Carbon Dioxide

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD
Analyst: Mike Conejo
Matrix: Water
Test Notes:

Date(s) Collected: 2/21/17
Date Received: 2/23/17
Date Analyzed: 3/2/17

Client Sample ID	ALS Sample ID	Injection Volume ml(s)	Result µg/L	MRL µg/L	Data Qualifier
MW-15	P1700896-001	0.10	67,000	1,000	
MW-1	P1700896-002	0.10	130,000	1,000	
MW-7	P1700896-003	0.10	82,000	1,000	
MW-8	P1700896-004	0.10	59,000	1,000	
MW-9	P1700896-005	0.10	69,000	1,000	
Method Control Sample	P170302-MB	0.10	ND	1,000	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Page 1 of 1

Client: Friedman & Bruya, Inc.
Client Sample ID: Duplicate Lab Control Sample
Client Project ID: 702316

ALS Project ID: P1700896
ALS Sample ID: P170302-DLCS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD
Analyst: Mike Conejo
Matrix: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 3/02/17
Volume(s) Analyzed: NA ml(s)

CAS #	Compound	Spike Amount		Result _i		% Recovery		ALS	RPD	RPD	Data
		LCS / DLCS	LCS	DLCS	LCS	DLCS	Limits	Limit	Qualifier		
		ug/L	ug/L	ug/L							
124-38-9	Carbon Dioxide	22,900	22,700	21,600	99	94	62-123	5	20		

_i = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.

Am Test Inc.
13600 NE 126TH PL
Suite C
Kirkland, WA 98034
(425) 885-1664

**Professional
Analytical
Services**

Mar 8 2017
Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Attention: MICHAEL ERDAHL

Dear MICHAEL ERDAHL:

Enclosed please find the analytical data for your project.

The following is a cross correlation of client and laboratory identifications for your convenience.

CLIENT ID	MATRIX	AMTEST ID	TEST
MW-15	Water	17-A002397	DEM, MIN, NUT, CONV
MW-1	Water	17-A002398	DEM, MIN, NUT, CONV
MW-7	Water	17-A002399	DEM, MIN, NUT, CONV
MW-8	Water	17-A002400	DEM, MIN, NUT, CONV
MW-9	Water	17-A002401	DEM, MIN, NUT, CONV

Your samples were received on Wednesday, February 22, 2017. At the time of receipt, the samples were logged in and properly maintained prior to the subsequent analysis.

The analytical procedures used at AmTest are well documented and are typically derived from the protocols of the EPA, USDA, FDA or the Army Corps of Engineers.

Following the analytical data you will find the Quality Control (QC) results.

Please note that the detection limits that are listed in the body of the report refer to the Practical Quantitation Limits (PQL's), as opposed to the Method Detection Limits (MDL's).

If you should have any questions pertaining to the data package, please feel free to contact me.

Sincerely,


Aaron W. Young
Laboratory Manager

Project #: 702316
PO Number: E-503

BACT = Bacteriological
CONV = Conventionals

MET = Metals
ORG = Organics

NUT=Nutrients
DEM=Demand

MIN=Minerals

Am Test Inc.
 13600 NE 126TH PL
 Suite C
 Kirkland, WA 98034
 (425) 885-1664
 www.amtestlab.com



Professional
 Analytical
 Services

ANALYSIS REPORT

Friedman & Bruya, Inc.
 3012 16th Avenue West
 Seattle, WA 98119-2029
 Attention: MICHAEL ERDAHL
 Project #: 702316
 PO Number: E-503
 All results reported on an as received basis.

Date Received: 02/22/17
 Date Reported: 3/ 8/17

AMTEST Identification Number 17-A002397
 Client Identification MW-15
 Sampling Date 02/21/17, 06:16

Conventionals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Total Sulfide	< 0.05	mg/l		0.05	SM 4500-S2-D	SW	02/28/17

Demand

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
BOD	< 2	mg/l		2	SM 5210B	NG	02/22/17
Total Organic Carbon	0.69	mg/l		0.5	SM 5310B	SW	02/23/17
Chemical Oxygen Demand	< 10	mg/l		10	EPA 410.4	SW	02/24/17

Minerals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Chloride	< 0.05	mg/l		0.05	EPA 300.0	JC	02/22/17
Sulfate	10.4	mg/l		0.1	EPA 300.0	JC	02/22/17

Nutrients

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Nitrite	< 0.005	mg/l		0.005	EPA 300.0	JC	02/22/17
Nitrate	4.70	mg/l		0.025	EPA 300.0	JC	02/22/17

AMTEST Identification Number 17-A002398
Client Identification MW-1
Sampling Date 02/21/17, 07:00

Conventionals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Total Sulfide	< 0.05	mg/l		0.05	SM 4500-S2-D	SW	02/28/17

Demand

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
BOD	< 2	mg/l		2	SM 5210B	NG	02/22/17
Total Organic Carbon	8.4	mg/l		0.5	SM 5310B	SW	02/23/17
Chemical Oxygen Demand	18.	mg/l		10	EPA 410.4	SW	02/24/17

Minerals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Chloride	26.2	mg/l		0.05	EPA 300.0	JC	02/22/17
Sulfate	4.30	mg/l		0.1	EPA 300.0	JC	02/22/17

Nutrients

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Nitrite	< 0.005	mg/l		0.005	EPA 300.0	JC	02/22/17
Nitrate	0.995	mg/l		0.025	EPA 300.0	JC	02/22/17

Friedman & Bruya, Inc.
Project Name:
AmTest ID: 17-A002399

AMTEST Identification Number 17-A002399
Client Identification MW-7
Sampling Date 02/21/17, 08:03

Conventionals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Total Sulfide	< 0.05	mg/l		0.05	SM 4500-S2-D	SW	02/28/17

Demand

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
BOD	< 2	mg/l		2	SM 5210B	NG	02/22/17
Total Organic Carbon	5.7	mg/l		0.5	SM 5310B	SW	02/23/17
Chemical Oxygen Demand	< 10	mg/l		10	EPA 410.4	SW	02/24/17

Minerals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Chloride	134.	mg/l		0.05	EPA 300.0	JC	02/24/17
Sulfate	12.3	mg/l		0.1	EPA 300.0	JC	02/22/17

Nutrients

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Nitrite	< 0.005	mg/l		0.005	EPA 300.0	JC	02/22/17
Nitrate	5.30	mg/l		0.025	EPA 300.0	JC	02/22/17

AMTEST Identification Number 17-A002400
Client Identification MW-8
Sampling Date 02/21/17, 09:04

Conventionals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Total Sulfide	< 0.05	mg/l		0.05	SM 4500-S2-D	SW	02/28/17

Demand

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
BOD	< 2	mg/l		2	SM 5210B	NG	02/22/17
Total Organic Carbon	0.51	mg/l		0.5	SM 5310B	SW	03/01/17
Chemical Oxygen Demand	< 10	mg/l		10	EPA 410.4	SW	02/24/17

Minerals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Chloride	2.10	mg/l		0.05	EPA 300.0	JC	02/22/17
Sulfate	21.4	mg/l		0.1	EPA 300.0	JC	02/22/17

Nutrients

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Nitrite	< 0.005	mg/l		0.005	EPA 300.0	JC	02/22/17
Nitrate	1.30	mg/l		0.025	EPA 300.0	JC	02/22/17

AMTEST Identification Number 17-A002401
Client Identification MW-9
Sampling Date 02/21/17, 09:59

Conventionals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Total Sulfide	< 0.05	mg/l		0.05	SM 4500-S2-D	SW	02/28/17

Demand

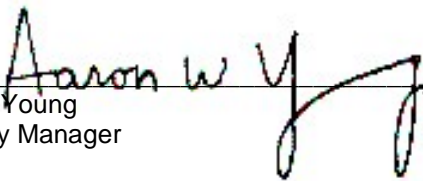
PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
BOD	< 2	mg/l		2	SM 5210B	NG	02/22/17
Total Organic Carbon	< 0.5	mg/l		0.5	SM 5310B	SW	03/01/17
Chemical Oxygen Demand	< 10	mg/l		10	EPA 410.4	SW	02/24/17

Minerals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Chloride	4.00	mg/l		0.05	EPA 300.0	JC	02/22/17
Sulfate	6.80	mg/l		0.1	EPA 300.0	JC	02/22/17

Nutrients

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Nitrite	< 0.005	mg/l		0.005	EPA 300.0	JC	02/22/17
Nitrate	0.713	mg/l		0.025	EPA 300.0	JC	02/22/17



Aaron W. Young
Laboratory Manager

QC Summary for sample numbers: 17-A002397 to 17-A002401

DUPLICATES

SAMPLE #	ANALYTE	UNITS	SAMPLE VALUE	DUP VALUE	RPD
17-A002401	BOD	mg/l	< 2	< 2	
17-A002124	Chemical Oxygen Demand	mg/l	< 10	< 10	
17-A002331	Chemical Oxygen Demand	mg/l	< 10	< 10	
17-A002401	Chemical Oxygen Demand	mg/l	< 10	< 10	
17-A002234	Chloride	mg/l	7.30	7.30	0.00
17-A002400	Total Sulfide	mg/l	< 0.05	< 0.05	
17-A002506	Total Sulfide	mg/l	< 0.05	< 0.05	

MATRIX SPIKES

SAMPLE #	ANALYTE	UNITS	SAMPLE VALUE	SMPL+ SPK	SPK AMT	RECOVERY
17-A002044	Total Organic Carbon	mg/l	1.7	27.	25.	101.20 %
17-A002165	Total Organic Carbon	mg/l	2.3	25.	25.	90.80 %
17-A002175	Total Organic Carbon	mg/l	3.5	27.	25.	94.00 %
17-A002399	Total Organic Carbon	mg/l	5.7	49.	50.	86.60 %
17-A002539	Total Organic Carbon	mg/l	9.9	57.	50.	94.20 %
17-A002549	Total Organic Carbon	mg/l	8.5	56.	50.	95.00 %
17-A002234	Chloride	mg/l	7.30	12.1	5.00	96.00 %
17-A002506	Total Sulfide	mg/l	< 0.05	0.34	0.39	87.18 %

STANDARD REFERENCE MATERIALS

ANALYTE	UNITS	TRUE VALUE	MEASURED VALUE	RECOVERY
BOD	mg/l	200	170	85.0 %
Total Organic Carbon	mg/l	50.	48.	96.0 %
Total Organic Carbon	mg/l	50.	48.	96.0 %
Total Organic Carbon	mg/l	50.	48.	96.0 %
Total Organic Carbon	mg/l	50.	48.	96.0 %
Chemical Oxygen Demand	mg/l	100	98.	98.0 %
Chemical Oxygen Demand	mg/l	100	96.	96.0 %
Chloride	mg/l	5.00	4.92	98.4 %
Chloride	mg/l	5.00	4.88	97.6 %
Chloride	mg/l	5.00	4.87	97.4 %
Nitrate	mg/l	5.00	4.78	95.6 %
Nitrite	mg/l	5.00	4.92	98.4 %
Total Sulfide	mg/l	0.39	0.34	87.2 %
Sulfate	mg/l	5.00	5.22	104. %

QC Summary for sample numbers: 17-A002397 to 17-A002401...

BLANKS

ANALYTE	UNITS	RESULT
BOD	mg/l	< 2
Total Organic Carbon	mg/l	< 0.5
Total Organic Carbon	mg/l	< 0.5
Total Organic Carbon	mg/l	< 0.5
Total Organic Carbon	mg/l	< 0.5
Chemical Oxygen Demand	mg/l	< 10
Chemical Oxygen Demand	mg/l	< 10
Chloride	mg/l	< 0.05
Chloride	mg/l	< 0.05
Chloride	mg/l	< 0.05
Nitrate	mg/l	< 0.025
Nitrite	mg/l	< 0.005
Total Sulfide	mg/l	< 0.05
Sulfate	mg/l	< 0.1

SUBCONTRACT SAMPLE CHAIN OF CUSTODY

Page # 1 of 1



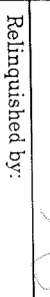
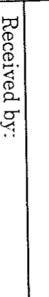
P.10

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 Awater	PO # E-503
PROJECT NAME/NO. 702316	
REMARKS Please Email Results	

TURNAROUND TIME <input checked="" type="checkbox"/> Standard (2 Weeks) <input type="checkbox"/> RUSH Rush charges authorized by: _____	SAMPLE DISPOSAL <input type="checkbox"/> Dispose after 30 days <input type="checkbox"/> Return samples <input type="checkbox"/> Will call with instructions
--	---

Sample ID	Lab ID	Date Sampled	Time Sampled	Matrix	# of jars	ANALYSES REQUESTED							Notes					
						Dioxins/Furans	Chloride PH	Nitrite PH	Nitrate	Sulfate	Sulfide Alkalinity	TOC-9060M		TOC	COD	BOD		
MW-15	2397	2/21/7	0616	water														
MW-1	98		0700															
MW-7	99		0803															
MW-8	2400		0904															
MW-9	01		0959															

SIGNATURE 	PRINT NAME Michael Erdahl
COMPANY Friedman and Bruya	DATE 2/21/7
RECEIVED BY: Relinquished by: 	TIME 0600
RECEIVED BY: Relinquished by: 	DATE 2/22/7
RECEIVED BY: Relinquished by: 	TIME 10:38

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

SAMPLE CHAIN OF CUSTODY

ME 02/21/17 WY/1 AT-3

702316
 Report To Josh Bernhart
 Company EPI
 Address 1180 NW Maple St
 City, State, ZIP Issaquah, WA 98027
 Phone 425-38-0000 Email josh@epi-wa.com

SAMPLERS (signature) _____
 PROJECT NAME 69402 PO # _____
 REMARKS _____ INVOICE TO Skandal
 ANALYSES REQUESTED
 Standard Turnaround
 RUSH
 Rush charges authorized by: _____
 SAMPLE DISPOSAL
 Dispose after 30 days
 Archive Samples
 Other _____

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED										Notes
						TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM	TOC, BOD, COP	Total Dissolved	Iron + Manganese	
MW-15	OIA-D	2-21-17	0616	Water	15					X		X	X	X	X	
MW-1	02		0700	Water												
MW-7	03		0803	Water												
MW-8	04		0904	Water												
MW-9	05		0959	Water												

Samples received at 4:00

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
<u>[Signature]</u>	<u>Joe Shered</u>	<u>EPI</u>	<u>2-21-17</u>	<u>1320</u>
<u>[Signature]</u>	<u>VINNA</u>	<u>FBI</u>	<u>2-21-17</u>	<u>1320</u>
Received by:				

Friedman & Bruja, Inc.
 16th Avenue West
 WA 98119-2029

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

March 2, 2017

Josh Bernthal, Project Manager
Environmental Partners, Inc.
1180 NW Maple St, Suite 310
Issaquah, WA 98027

RE: 69402, F&BI 702321

Dear Mr Bernthal:

Included are the results from the testing of material submitted on February 22, 2017 from the 69402, F&BI 702321 project. There are 20 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 have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
c: Cynthia Moon
EPI0302R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on February 22, 2017 by Friedman & Bruya, Inc. from the Environmental Partners 69402, F&BI 702321 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>Environmental Partners</u>
702321 -01	MW-5:Bag
702321 -02	MW-10:Bag
702321 -03	MW-4:Bag
702321 -04	MW-11:Bag
702321 -05	MW-14:Bag
702321 -06	MW-12:Bag
702321 -07	GW-10:Bag
702321 -08	MW-13:Bag
702321 -09	GW-1:Bag
702321 -10	GW-7:Bag
702321 -11	GW-8:Bag
702321 -12	GW-9:Bag
702321 -13	GW-5:Bag
702321 -14	GW-6:Bag
702321 -15	GW-3:Bag
702321 -16	MW-6:Bag

All quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-5:Bag	Client:	Environmental Partners
Date Received:	02/22/17	Project:	69402, F&BI 702321
Date Extracted:	02/23/17	Lab ID:	702321-01
Date Analyzed:	02/23/17	Data File:	022309.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	57	121
Toluene-d8	101	63	127
4-Bromofluorobenzene	101	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	44

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-10:Bag	Client:	Environmental Partners
Date Received:	02/22/17	Project:	69402, F&BI 702321
Date Extracted:	02/23/17	Lab ID:	702321-02
Date Analyzed:	02/23/17	Data File:	022327.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	57	121
Toluene-d8	102	63	127
4-Bromofluorobenzene	103	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	1.1
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	15
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	1.2
Tetrachloroethene	5.2

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-4:Bag	Client:	Environmental Partners
Date Received:	02/22/17	Project:	69402, F&BI 702321
Date Extracted:	02/23/17	Lab ID:	702321-03
Date Analyzed:	02/23/17	Data File:	022333.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	97	57	121
Toluene-d8	101	63	127
4-Bromofluorobenzen e	103	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	2.3
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	22
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	1.1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-11:Bag	Client:	Environmental Partners
Date Received:	02/22/17	Project:	69402, F&BI 702321
Date Extracted:	02/23/17	Lab ID:	702321-04
Date Analyzed:	02/23/17	Data File:	022326.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	57	121
Toluene-d8	102	63	127
4-Bromofluorobenzene	103	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	7.4
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	25
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	8.0
Tetrachloroethene	2.7

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-14:Bag	Client:	Environmental Partners
Date Received:	02/22/17	Project:	69402, F&BI 702321
Date Extracted:	02/23/17	Lab ID:	702321-05
Date Analyzed:	02/23/17	Data File:	022310.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	97	57	121
Toluene-d8	100	63	127
4-Bromofluorobenzene	102	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-12:Bag	Client:	Environmental Partners
Date Received:	02/22/17	Project:	69402, F&BI 702321
Date Extracted:	02/23/17	Lab ID:	702321-06
Date Analyzed:	02/23/17	Data File:	022311.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	57	121
Toluene-d8	101	63	127
4-Bromofluorobenzene	99	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	1.2

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	GW-10:Bag	Client:	Environmental Partners
Date Received:	02/22/17	Project:	69402, F&BI 702321
Date Extracted:	02/23/17	Lab ID:	702321-07
Date Analyzed:	02/23/17	Data File:	022324.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	57	121
Toluene-d8	103	63	127
4-Bromofluorobenzene	102	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	14
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-13:Bag	Client:	Environmental Partners
Date Received:	02/22/17	Project:	69402, F&BI 702321
Date Extracted:	02/23/17	Lab ID:	702321-08
Date Analyzed:	02/23/17	Data File:	022312.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	57	121
Toluene-d8	101	63	127
4-Bromofluorobenzene	102	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	3.0

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	GW-1:Bag	Client:	Environmental Partners
Date Received:	02/22/17	Project:	69402, F&BI 702321
Date Extracted:	02/23/17	Lab ID:	702321-09
Date Analyzed:	02/23/17	Data File:	022313.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	57	121
Toluene-d8	100	63	127
4-Bromofluorobenzene	103	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	GW-7:Bag	Client:	Environmental Partners
Date Received:	02/22/17	Project:	69402, F&BI 702321
Date Extracted:	02/23/17	Lab ID:	702321-10
Date Analyzed:	02/23/17	Data File:	022314.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	57	121
Toluene-d8	100	63	127
4-Bromofluorobenzene	102	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	GW-8:Bag	Client:	Environmental Partners
Date Received:	02/22/17	Project:	69402, F&BI 702321
Date Extracted:	02/23/17	Lab ID:	702321-11
Date Analyzed:	02/23/17	Data File:	022325.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	57	121
Toluene-d8	101	63	127
4-Bromofluorobenzene	103	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	16

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	GW-9:Bag	Client:	Environmental Partners
Date Received:	02/22/17	Project:	69402, F&BI 702321
Date Extracted:	02/23/17	Lab ID:	702321-12
Date Analyzed:	02/23/17	Data File:	022315.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	57	121
Toluene-d8	100	63	127
4-Bromofluorobenzene	101	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	GW-5:Bag	Client:	Environmental Partners
Date Received:	02/22/17	Project:	69402, F&BI 702321
Date Extracted:	02/23/17	Lab ID:	702321-13
Date Analyzed:	02/23/17	Data File:	022316.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	57	121
Toluene-d8	101	63	127
4-Bromofluorobenzene	103	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	2.5

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	GW-6:Bag	Client:	Environmental Partners
Date Received:	02/22/17	Project:	69402, F&BI 702321
Date Extracted:	02/23/17	Lab ID:	702321-14
Date Analyzed:	02/23/17	Data File:	022317.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	57	121
Toluene-d8	99	63	127
4-Bromofluorobenzene	100	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	6.0

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	GW-3:Bag	Client:	Environmental Partners
Date Received:	02/22/17	Project:	69402, F&BI 702321
Date Extracted:	02/23/17	Lab ID:	702321-15
Date Analyzed:	02/23/17	Data File:	022318.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	57	121
Toluene-d8	100	63	127
4-Bromofluorobenzene	101	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-6:Bag	Client:	Environmental Partners
Date Received:	02/22/17	Project:	69402, F&BI 702321
Date Extracted:	02/23/17	Lab ID:	702321-16
Date Analyzed:	02/23/17	Data File:	022319.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	57	121
Toluene-d8	99	63	127
4-Bromofluorobenzene	100	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Method Blank	Client:	Environmental Partners
Date Received:	Not Applicable	Project:	69402, F&BI 702321
Date Extracted:	02/23/17	Lab ID:	07-0349 mb
Date Analyzed:	02/23/17	Data File:	022308.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	57	121
Toluene-d8	101	63	127
4-Bromofluorobenzene	100	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 03/02/17

Date Received: 02/22/17

Project: 69402, F&BI 702321

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER
SAMPLES FOR VOLATILES BY EPA METHOD 8260C**

Laboratory Code: 702321-12 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Acceptance Criteria
Vinyl chloride	ug/L (ppb)	50	<0.2	101	36-166
Chloroethane	ug/L (ppb)	50	<1	114	46-160
1,1-Dichloroethene	ug/L (ppb)	50	<1	104	60-136
Methylene chloride	ug/L (ppb)	50	<5	94	67-132
trans-1,2-Dichloroethene	ug/L (ppb)	50	<1	100	72-129
1,1-Dichloroethane	ug/L (ppb)	50	<1	100	70-128
cis-1,2-Dichloroethene	ug/L (ppb)	50	<1	99	71-127
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	<1	97	69-133
1,1,1-Trichloroethane	ug/L (ppb)	50	<1	101	60-146
Trichloroethene	ug/L (ppb)	50	<1	94	66-135
Tetrachloroethene	ug/L (ppb)	50	<1	95	10-226

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Vinyl chloride	ug/L (ppb)	50	106	102	50-154	4
Chloroethane	ug/L (ppb)	50	116	102	58-146	13
1,1-Dichloroethene	ug/L (ppb)	50	107	103	67-136	4
Methylene chloride	ug/L (ppb)	50	104	97	39-148	7
trans-1,2-Dichloroethene	ug/L (ppb)	50	103	99	68-128	4
1,1-Dichloroethane	ug/L (ppb)	50	103	99	79-121	4
cis-1,2-Dichloroethene	ug/L (ppb)	50	105	99	80-123	6
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	100	95	73-132	5
1,1,1-Trichloroethane	ug/L (ppb)	50	106	100	83-130	6
Trichloroethene	ug/L (ppb)	50	98	93	80-120	5
Tetrachloroethene	ug/L (ppb)	50	102	96	76-121	6

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.

SAMPLE CHAIN OF CUSTODY

ME 02/22/17

VW4

Report To Josh Bernthal
 Company EPI
 Address 1180 NW Maple St.
 City, State, ZIP Tacoma, WA 98627
 Phone 425-385-0000 Email _____

SAMPLERS (signature) _____	
PROJECT NAME <u>19402</u>	PO #
REMARKS	INVOICE TO <u>Sickelhal</u>

Page # 1 of 2

FURNAROUND TIME

Standard Turnaround
 RUSH
 Rush charges authorized by: _____

SAMPLE DISPOSAL
 Dispose after 30 days
 Archive Samples
 Other _____

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED						Notes	
						TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	YOCS by 8260C	SVOCs by 8270D		PAHs 8270D SIM
MW-5: Bag	02 AC	2-21-17	1045	W	3					X			
MW-10: Bag	02		1055										
MW-4: Bag	03		1105										
MW-11: Bag	04		1120										
MW-14: Bag	05		1130										
MW-12: Bag	06		1140										
GW-10: Bag	07		1150										
MW-13: Bag	08		1200										
GW-1: Bag	09		1230										
GW-7: Bag	10		1240										

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

Relinquished by: _____	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Received by: _____	_____	Joe Shernoff	EPI	2-22-17	0600
Relinquished by: _____	_____	Michael Eckel	FR		0730
Received by: _____	_____				

Samples received at 2 °C

702321

SAMPLE CHAIN OF CUSTODY

ME 02/22/17

vwy

Page # 2 of 2

Report To John Bernthal

Company EPI

Address 1180 NW Maple St.

City, State, ZIP Issaquah, WA 98027

Phone 425-365-6310 Email _____

SAMPLERS (signature) [Signature]

PROJECT NAME 69402

PO # _____

REMARKS

INVOICE TO Skidell

TURNAROUND TIME
 Standard Turnaround
 RUSH
Rush charges authorized by: _____

SAMPLE DISPOSAL
 Dispose after 30 days
 Archive Samples
 Other _____

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED							Notes	
						TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM		
<u>GW-8: Bag</u>	<u>11A</u>	<u>2-24-17</u>	<u>1250</u>	<u>W</u>	<u>3</u>					<u>X</u>				
<u>GW-9: Bag</u>	<u>12</u>	<u> </u>	<u>1300</u>	<u> </u>	<u> </u>									
<u>GW-5: Bag</u>	<u>13</u>	<u> </u>	<u>1310</u>	<u> </u>	<u> </u>									
<u>GW-6: Bag</u>	<u>14</u>	<u> </u>	<u>1320</u>	<u> </u>	<u> </u>									
<u>GW-3: Bag</u>	<u>15</u>	<u> </u>	<u>1330</u>	<u> </u>	<u> </u>									
<u>MW-6: Bag</u>	<u>16</u>	<u>↓</u>	<u>1210</u>	<u>↓</u>	<u>↓</u>									

Samples received at 2 °C

Friedman & Bruya, Inc.

3012 16th Avenue West

Seattle, WA 98119-2029

Ph. (206) 285-8282

SIGNATURE		PRINT NAME		COMPANY		DATE	TIME
<u>[Signature]</u>	<u>[Signature]</u>	<u>Joe Shum</u>	<u>Michael Edell</u>	<u>EPI</u>	<u>F&B</u>	<u>2-22-17</u>	<u>0600</u>
<u>[Signature]</u>	<u>[Signature]</u>					<u>↓</u>	<u>0630</u>
Relinquished by:		Received by:					

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

June 13, 2017

Eric Koltes, Project Manager
Environmental Partners, Inc.
1180 NW Maple St, Suite 310
Issaquah, WA 98027

RE: 69402, F&BI 705438

Dear Mr Koltes:

Included are the results from the testing of material submitted on May 24, 2017 from the 69402, F&BI 705438 project. There are 18 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 have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
c: Cynthia Moon, Josh Bernthal
EPI0613R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on May 24, 2017 by Friedman & Bruya, Inc. from the Environmental Partners 69402, F&BI 705438 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>Environmental Partners</u>
705438-01	MW-8
705438-02	GW-11

The samples were sent to Amtest for TOC, chloride, sulfate, sulfide, nitrate, nitrite, BOD, and COD analyses. In addition, the samples were sent to Fremont for carbon dioxide analysis. The reports are included.

All quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	MW-8	Client:	Environmental Partners
Date Received:	05/24/17	Project:	69402, F&BI 705438
Date Extracted:	05/30/17	Lab ID:	705438-01
Date Analyzed:	05/30/17	Data File:	705438-01.135
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	<50
Manganese	13.6

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	GW-11	Client:	Environmental Partners
Date Received:	05/24/17	Project:	69402, F&BI 705438
Date Extracted:	05/30/17	Lab ID:	705438-02
Date Analyzed:	05/30/17	Data File:	705438-02.136
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	83.0
Manganese	3.19

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	Environmental Partners
Date Received:	Not Applicable	Project:	69402, F&BI 705438
Date Extracted:	05/30/17	Lab ID:	I7-295 mb
Date Analyzed:	05/30/17	Data File:	I7-295 mb.062
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	<50
Manganese	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	MW-8	Client:	Environmental Partners
Date Received:	05/24/17	Project:	69402, F&BI 705438
Date Extracted:	05/30/17	Lab ID:	705438-01
Date Analyzed:	05/30/17	Data File:	705438-01.137
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	324
Manganese	186

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	GW-11	Client:	Environmental Partners
Date Received:	05/24/17	Project:	69402, F&BI 705438
Date Extracted:	05/30/17	Lab ID:	705438-02
Date Analyzed:	05/30/17	Data File:	705438-02.138
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	106
Manganese	3.73

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	Environmental Partners
Date Received:	Not Applicable	Project:	69402, F&BI 705438
Date Extracted:	05/30/17	Lab ID:	I7-294 mb
Date Analyzed:	05/30/17	Data File:	I7-294 mb.079
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	<50
Manganese	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-8	Client:	Environmental Partners
Date Received:	05/24/17	Project:	69402, F&BI 705438
Date Extracted:	05/25/17	Lab ID:	705438-01
Date Analyzed:	05/25/17	Data File:	052511.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	57	121
Toluene-d8	103	63	127
4-Bromofluorobenzene	99	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	GW-11	Client:	Environmental Partners
Date Received:	05/24/17	Project:	69402, F&BI 705438
Date Extracted:	05/25/17	Lab ID:	705438-02
Date Analyzed:	05/25/17	Data File:	052512.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	57	121
Toluene-d8	105	63	127
4-Bromofluorobenzene	98	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	15

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Method Blank	Client:	Environmental Partners
Date Received:	Not Applicable	Project:	69402, F&BI 705438
Date Extracted:	05/25/17	Lab ID:	07-1041 mb
Date Analyzed:	05/25/17	Data File:	052505.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	98	57	121
Toluene-d8	105	63	127
4-Bromofluorobenzene	98	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Gasses By RSK 175

Client Sample ID:	MW-8	Client:	Environmental Partners
Date Received:	05/24/17	Project:	69402, F&BI 705438
Date Extracted:	05/30/17	Lab ID:	705438-01
Date Analyzed:	05/30/17	Data File:	006F0601.D
Matrix:	Water	Instrument:	GC8
Units:	ug/L (ppb)	Operator:	JS

Compounds:	Concentration ug/L (ppb)
Methane	<5
Ethane	<10
Ethene	<10

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Gasses By RSK 175

Client Sample ID:	GW-11	Client:	Environmental Partners
Date Received:	05/24/17	Project:	69402, F&BI 705438
Date Extracted:	05/30/17	Lab ID:	705438-02
Date Analyzed:	05/30/17	Data File:	007F0701.D
Matrix:	Water	Instrument:	GC8
Units:	ug/L (ppb)	Operator:	JS

Compounds:	Concentration ug/L (ppb)
Methane	<5
Ethane	<10
Ethene	<10

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Gasses By RSK 175

Client Sample ID:	Method Blank	Client:	Environmental Partners
Date Received:	Not Applicable	Project:	69402, F&BI 705438
Date Extracted:	05/30/17	Lab ID:	07-1154 mb
Date Analyzed:	05/30/17	Data File:	005F0501.D
Matrix:	Water	Instrument:	GC8
Units:	ug/L (ppb)	Operator:	JS

Compounds:	Concentration ug/L (ppb)
Methane	<5
Ethane	<10
Ethene	<10

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 06/13/17

Date Received: 05/24/17

Project: 69402, F&BI 705438

**QUALITY ASSURANCE RESULTS
FOR THE ANALYSIS OF WATER SAMPLES
FOR DISSOLVED METALS USING EPA METHOD 200.8**

Laboratory Code: 705461-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Iron	ug/L (ppb)	100	1,880	101 b	183 b	70-130	58 b
Manganese	ug/L (ppb)	20	3,820	0 b	1200 b	70-130	200 b

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Iron	ug/L (ppb)	100	100	85-115
Manganese	ug/L (ppb)	20	112	85-115

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 06/13/17

Date Received: 05/24/17

Project: 69402, F&BI 705438

**QUALITY ASSURANCE RESULTS
FOR THE ANALYSIS OF WATER SAMPLES
FOR TOTAL METALS USING EPA METHOD 200.8**

Laboratory Code: 705475-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Iron	ug/L (ppb)	100	73.3	97 b	121 b	70-130	22 b
Manganese	ug/L (ppb)	20	118	70 b	139 b	70-130	66 b

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Iron	ug/L (ppb)	100	105	85-115
Manganese	ug/L (ppb)	20	113	85-115

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 06/13/17

Date Received: 05/24/17

Project: 69402, F&BI 705438

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER
SAMPLES FOR VOLATILES BY EPA METHOD 8260C**

Laboratory Code: 705442-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Acceptance Criteria
Vinyl chloride	ug/L (ppb)	50	<0.2	97	36-166
Chloroethane	ug/L (ppb)	50	<1	112	46-160
1,1-Dichloroethene	ug/L (ppb)	50	<1	104	60-136
Methylene chloride	ug/L (ppb)	50	<5	100	67-132
trans-1,2-Dichloroethene	ug/L (ppb)	50	<1	102	72-129
1,1-Dichloroethane	ug/L (ppb)	50	<1	95	70-128
cis-1,2-Dichloroethene	ug/L (ppb)	50	<1	100	71-127
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	<1	104	69-133
1,1,1-Trichloroethane	ug/L (ppb)	50	<1	104	60-146
Trichloroethene	ug/L (ppb)	50	<1	99	66-135
Tetrachloroethene	ug/L (ppb)	50	<1	92	10-226

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Vinyl chloride	ug/L (ppb)	50	89	87	50-154	2
Chloroethane	ug/L (ppb)	50	104	102	58-146	2
1,1-Dichloroethene	ug/L (ppb)	50	97	94	67-136	3
Methylene chloride	ug/L (ppb)	50	98	99	39-148	1
trans-1,2-Dichloroethene	ug/L (ppb)	50	97	93	68-128	4
1,1-Dichloroethane	ug/L (ppb)	50	90	88	79-121	2
cis-1,2-Dichloroethene	ug/L (ppb)	50	93	91	80-123	2
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	96	94	73-132	2
1,1,1-Trichloroethane	ug/L (ppb)	50	100	96	83-130	4
Trichloroethene	ug/L (ppb)	50	94	91	80-120	3
Tetrachloroethene	ug/L (ppb)	50	91	89	76-121	2

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 06/13/17

Date Received: 05/24/17

Project: 69402, F&BI 705438

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF
WATER SAMPLES FOR DISSOLVED GASSES
USING METHOD RSK 175**

Laboratory Code: 705461-04 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference (Limit 20)
Methane	ug/L (ppb)	<5	<5	nm
Ethane	ug/L (ppb)	<10	<10	nm
Ethene	ug/L (ppb)	<10	<10	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Methane	ug/L (ppb)	59	79	79	50-150	0
Ethane	ug/L (ppb)	110	70	70	50-150	0
Ethene	ug/L (ppb)	102	94	94	50-150	0

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

RE: 705438
Work Order Number: 1705335

June 02, 2017

Attention Michael Erdahl:

Fremont Analytical, Inc. received 2 sample(s) on 5/30/2017 for the analyses presented in the following report.

Total Alkalinity by SM 2320B

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



Date: 06/02/2017

CLIENT: Friedman & Bruya
Project: 705438
Work Order: 1705335

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1705335-001	MW-8	05/24/2017 1:29 PM	05/30/2017 1:04 PM
1705335-002	GW-11	05/24/2017 2:57 PM	05/30/2017 1:04 PM

CLIENT: Friedman & Bruya

Project: 705438

WorkOrder Narrative:

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").

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 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: 705438

Lab ID: 1705335-001

Collection Date: 5/24/2017 1:29:00 PM

Client Sample ID: MW-8

Matrix: Water

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Total Alkalinity by SM 2320B

Batch ID: R36524 Analyst: MW

Carbon dioxide	145	5.00		mg/L	1	6/1/2017 12:10:00 PM
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Lab ID: 1705335-002

Collection Date: 5/24/2017 2:57:00 PM

Client Sample ID: GW-11

Matrix: Water

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Total Alkalinity by SM 2320B

Batch ID: R36524 Analyst: MW

Carbon dioxide	148	5.00		mg/L	1	6/1/2017 12:15:00 PM
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Work Order: 1705335
CLIENT: Friedman & Bruya
Project: 705438

QC SUMMARY REPORT
Total Alkalinity by SM 2320B

Sample ID MB-R36524	SampType: MBLK	Units: mg/L	Prep Date: 6/1/2017	RunNo: 36524							
Client ID: MBLKW	Batch ID: R36524		Analysis Date: 6/1/2017	SeqNo: 700651							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	ND	2.50									

Sample ID LCS-R36524	SampType: LCS	Units: mg/L	Prep Date: 6/1/2017	RunNo: 36524							
Client ID: LCSW	Batch ID: R36524		Analysis Date: 6/1/2017	SeqNo: 700652							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	113	2.50	100.0	0	113	80	120				

Sample ID 1705343-001FDUP	SampType: DUP	Units: mg/L	Prep Date: 6/1/2017	RunNo: 36524							
Client ID: BATCH	Batch ID: R36524		Analysis Date: 6/1/2017	SeqNo: 700654							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	2,520	2.50						2,572	2.06	20	

Client Name: **FB**
 Logged by: **Erica Silva**

Work Order Number: **1705335**
 Date Received: **5/30/2017 1:04:00 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:	<input type="text"/>	Date:	<input type="text"/>
By Whom:	<input type="text"/>	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	<input type="text"/>		
Client Instructions:	<input type="text"/>		

19. Additional remarks:

Item Information

Item #	Temp °C
Sample	6.1

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

SUBCONTRACT SAMPLE CHAIN OF CUSTODY

1705335

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 <u>Friedman</u>	
PROJECT NAME/NO. <u>705438</u>	PO # <u>E-653</u>
REMARKS <u>Please Email Results</u>	

Page # 1 of 1

TURNAROUND TIME
 Standard (2 Weeks)
 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							Notes				
						Dioxins/Furans	EPH	VPH	Nitrate	Sulfate	Alkalinity	TOC-9060M		Dissolved CO ₂			
MW-8		5/24/17	1329	water	3												
GW-11		↓	1457	water	3												

Friedman & Bruya, Inc. 3012 16th Avenue West Seattle, WA 98119-2029 Ph. (206) 285-8282 Fax (206) 283-5044	Requisitioned by:  Received by:  Relinquished by: _____ Received by: _____	SIGNATURE	PRINT NAME Michael Erdahl	COMPANY Friedman and Bruya	DATE 5/30/17	TIME 11:00AM
					5/30/17	1304



Am Test Inc.
13600 NE 126TH PL
Suite C
Kirkland, WA 98034
(425) 885-1664

Professional
Analytical
Services

Jun 9 2017
Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Attention: MICHAEL ERDAHL

Dear MICHAEL ERDAHL:

Enclosed please find the analytical data for your project.

The following is a cross correlation of client and laboratory identifications for your convenience.

CLIENT ID	MATRIX	AMTEST ID	TEST
MW-8	Water	17-A007750	DEM, MIN, NUT, CONV
GW-11	Water	17-A007751	DEM, MIN, NUT, CONV

Your samples were received on Thursday, May 25, 2017. At the time of receipt, the samples were logged in and properly maintained prior to the subsequent analysis.

The analytical procedures used at AmTest are well documented and are typically derived from the protocols of the EPA, USDA, FDA or the Army Corps of Engineers.

Following the analytical data you will find the Quality Control (QC) results.

Please note that the detection limits that are listed in the body of the report refer to the Practical Quantitation Limits (PQL's), as opposed to the Method Detection Limits (MDL's).

If you should have any questions pertaining to the data package, please feel free to contact me.

Sincerely,


Aaron W. Young
Laboratory Manager

Project #: 705438
PO Number: E-646

BACT = Bacteriological
CONV = Conventionals

MET = Metals
ORG = Organics

NUT=Nutrients
DEM=Demand

MIN=Minerals

Am Test Inc.
 13600 NE 126TH PL
 Suite C
 Kirkland, WA 98034
 (425) 885-1664
 www.amtestlab.com



Professional
 Analytical
 Services

ANALYSIS REPORT

Friedman & Bruya, Inc.
 3012 16th Avenue West
 Seattle, WA 98119-2029
 Attention: MICHAEL ERDAHL
 Project #: 705438
 PO Number: E-646
 All results reported on an as received basis.

Date Received: 05/25/17
 Date Reported: 6/ 9/17

AMTEST Identification Number 17-A007750
 Client Identification MW-8
 Sampling Date 05/24/17, 13:29

Conventionals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Total Sulfide	< 0.05	mg/l		0.05	SM 4500-S2-D	SW	05/30/17

Demand

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
BOD	< 2	mg/l		2	SM 5210B	JM	05/25/17
Total Organic Carbon	0.65	mg/l		0.5	SM 5310B	SW	05/30/17
Chemical Oxygen Demand	< 10	mg/l		10	EPA 410.4	SW	06/02/17

Minerals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Chloride	2.60	mg/l		0.05	EPA 300.0	JC	05/26/17
Sulfate	21.6	mg/l		0.1	EPA 300.0	JC	05/31/17

Nutrients

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Nitrite	< 0.005	mg/l		0.005	EPA 300.0	JC	05/26/17
Nitrate	1.00	mg/l		0.025	EPA 300.0	JC	05/26/17

AMTEST Identification Number 17-A007751
Client Identification GW-11
Sampling Date 05/24/17, 14:57

Conventionals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Total Sulfide	< 0.05	mg/l		0.05	SM 4500-S2-D	SW	05/30/17

Demand


PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
BOD	< 2	mg/l		2	SM 5210B	JM	05/25/17
Total Organic Carbon	1.2	mg/l		0.5	SM 5310B	SW	05/30/17
Chemical Oxygen Demand	< 10	mg/l		10	EPA 410.4	SW	06/02/17

Minerals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Chloride	41.3	mg/l		0.05	EPA 300.0	JC	06/01/17
Sulfate	25.4	mg/l		0.1	EPA 300.0	JC	06/01/17

Nutrients

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Nitrite	< 0.005	mg/l		0.005	EPA 300.0	JC	05/26/17
Nitrate	3.10	mg/l		0.025	EPA 300.0	JC	05/26/17


Aaron W. Young
Laboratory Manager

QC Summary for sample numbers: 17-A007750 to 17-A007751

DUPLICATES

SAMPLE #	ANALYTE	UNITS	SAMPLE VALUE	DUP VALUE	RPD
17-A007743	BOD	mg/l	5.0	5.3	5.8
17-A007701	Chemical Oxygen Demand	mg/l	< 10	< 10	
17-A007813	Chemical Oxygen Demand	mg/l	< 10	< 10	
17-A007927	Chemical Oxygen Demand	mg/l	< 10	< 10	
17-A007824	Nitrate	mg/l	0.102	0.093	9.2
17-A007824	Nitrite	mg/l	< 0.005	< 0.005	

MATRIX SPIKES

SAMPLE #	ANALYTE	UNITS	SAMPLE VALUE	SMPL+ SPK	SPKAMT	RECOVERY
17-A007701	Total Organic Carbon	mg/l	1.5	3.1	2.0	80.00 %
17-A007751	Total Organic Carbon	mg/l	1.2	3.0	2.0	90.00 %
17-A007701	Chemical Oxygen Demand	mg/l	< 10	45.	50.	90.00 %
17-A007813	Chemical Oxygen Demand	mg/l	< 10	89.	100	89.00 %
17-A007927	Chemical Oxygen Demand	mg/l	< 10	86.	100	86.00 %
17-A007824	Nitrate	mg/l	0.102	4.93	5.00	96.56 %
17-A007824	Nitrite	mg/l	< 0.005	4.81	5.00	96.20 %
17-A007817	Total Sulfide	mg/l	< 0.05	0.54	0.50	108.00 %
17-A007817	Total Sulfide	mg/l	< 0.05	0.54	0.50	108.00 %

MATRIX SPIKE DUPLICATES

SAMPLE #	ANALYTE	UNITS	SAMPLE + SPK	MSD VALUE	RPD
Spike	Total Sulfide	mg/l	0.54	0.54	0.00

STANDARD REFERENCE MATERIALS

ANALYTE	UNITS	TRUE VALUE	MEASURED VALUE	RECOVERY
BOD	mg/l	200	190	95.0 %
Total Organic Carbon	mg/l	5.0	5.3	106. %
Total Organic Carbon	mg/l	5.0	4.9	98.0 %
Chemical Oxygen Demand	mg/l	100	100	100. %
Chemical Oxygen Demand	mg/l	100	110	110. %
Chloride	mg/l	5.00	5.11	102. %
Chloride	mg/l	5.00	4.88	97.6 %
Nitrate	mg/l	5.00	4.92	98.4 %
Nitrate	mg/l	5.00	4.96	99.2 %
Nitrite	mg/l	5.00	5.00	100. %
Nitrite	mg/l	5.00	5.00	100. %
Total Sulfide	mg/l	1.0	1.0	100. %
Sulfate	mg/l	5.00	5.45	109. %
Sulfate	mg/l	5.00	5.17	103. %

QC Summary for sample numbers: 17-A007750 to 17-A007751...

BLANKS

ANALYTE	UNITS	RESULT
BOD	mg/l	< 2
Total Organic Carbon	mg/l	< 0.5
Total Organic Carbon	mg/l	< 0.5
Chemical Oxygen Demand	mg/l	< 10
Chemical Oxygen Demand	mg/l	< 10
Chloride	mg/l	< 0.05
Chloride	mg/l	< 0.05
Nitrate	mg/l	< 0.025
Nitrate	mg/l	< 0.025
Nitrite	mg/l	< 0.005
Nitrite	mg/l	< 0.005
Total Sulfide	mg/l	< 0.05
Sulfate	mg/l	< 0.1
Sulfate	mg/l	< 0.1

SUBCONTRACT SAMPLE CHAIN OF CUSTODY

Send Report To Michael Erdahl

Company Friedman and Bruya, Inc.

Address 3012 16th Ave W

City, State, ZIP Seattle, WA 98119

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

TURNAROUND TIME 2
 Standard (2 Weeks)
 RUSH
 Rush charges authorized by: _____

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

SUBCONTRACTER Analyt, st
 PROJECT NAME/NO. 705438 PO # E-646
 REMARKS
Please Email Results

Sample ID	Lab ID	Date Sampled	Time Sampled	Matrix	# of jars	Dioxins/Furans	ANALYSES REQUESTED					Notes	
							EPH Sulfide	EPH	Nitrate	Sulfate	Chloride Alkalinity		TOC-9060M
MW-8	7750	5/24/17	1329	water	5		X	X	X	X	X	X	
GW-11	51	↓	1457		5		X	X	X	X	X	X	

Friedman & Bruya, Inc.
 3012 16th Avenue West
 Seattle, WA 98119-2029

Ph. (206) 285-8282
 Fax (206) 283-5044

SIGNATURE [Signature] PRINT NAME Michael Erdahl COMPANY Friedman and Bruya DATE 5/25/17 TIME 10:01

Relinquished by: _____ Received by: _____

Relinquished by: _____ Received by: _____

705438

SAMPLE CHAIN OF CUSTODY

ME 05/25/17

ALH/wj3

Report To Eric LaHes/Jessie Bernthal

Company EPI

Address 1180 NW Maple St

City, State, ZIP Issaquah, WA 98027

Phone _____ Email _____

SAMPLERS (signature) <u>S. D. W. By</u>		Page # <u>1</u> of <u>6</u>
PROJECT NAME	PO #	TURNAROUND TIME
<u>69402</u>		<input checked="" type="checkbox"/> Standard Turnaround <input type="checkbox"/> RUSH
REMARKS	INVOICE TO	Rush charges authorized by: _____
		SAMPLE DISPOSAL
		<input checked="" type="checkbox"/> Dispose after 30 days <input type="checkbox"/> Archive Samples <input type="checkbox"/> Other _____

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED															
						TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM	Total ^{Mn} Pb/Fe	Dissolved ^{Mn} Pb/Fe	Methane/Ethane/Emul	TOC/COD	Nitrate/N. triole	sulfate/chloride	BOD	Sulfide	
MNW-8	01A-P	5/24/17	1329	H ₂ O	16					X			X	X	X	X	X	X	X	X	X
GW-11	02A-P	5/24/17 ↓	1457	H ₂ O	16					X			X	X	X	X	X	X	X	X	X

Samples received at 5 °C

Mn Pb/Fe
5/29/17
AL

SIGNATURE		PRINT NAME		COMPANY		DATE	TIME
Reinquired by:	<u>[Signature]</u>	<u>Erica R. Weber-By</u>	<u>EPI</u>			<u>5/24/17</u>	<u>1650</u>
Received by:	<u>[Signature]</u>	<u>HONIG VERNER</u>	<u>FBI</u>			<u>✓</u>	<u>✓</u>
Reinquired by:							
Received by:							

Friedman & Bruya, Inc.

3012 16th Avenue West

Seattle, WA 98119-2029

Ph. (206) 285-8282

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

June 13, 2017

Eric Koltes, Project Manager
Environmental Partners, Inc.
1180 NW Maple St, Suite 310
Issaquah, WA 98027

RE: 69402, F&BI 705461

Dear Mr Koltes:

Included are the results from the testing of material submitted on May 25, 2017 from the 69402, F&BI 705461 project. There are 26 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 have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
c: Cynthia Moon, Josh Bernthal
EPI0613R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on May 25, 2017 by Friedman & Bruya, Inc. from the Environmental Partners 69402, F&BI 705461 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>Environmental Partners</u>
705461 -01	MW-1
705461 -02	MW-7
705461 -03	MW-15
705461 -04	MW-9

The samples were sent to Amtest for TOC, chloride, sulfate, sulfide, nitrate, nitrite, BOD, and COD analyses. In addition, the samples were sent to Fremont for carbon dioxide analysis. The reports are included.

All quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	MW-1	Client:	Environmental Partners
Date Received:	05/25/17	Project:	69402, F&BI 705461
Date Extracted:	05/30/17	Lab ID:	705461-01
Date Analyzed:	05/30/17	Data File:	705461-01.099
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	1,880
Manganese	3,820

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	MW-7	Client:	Environmental Partners
Date Received:	05/25/17	Project:	69402, F&BI 705461
Date Extracted:	05/30/17	Lab ID:	705461-02
Date Analyzed:	05/30/17	Data File:	705461-02.103
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	303
Manganese	10.4

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	MW-15	Client:	Environmental Partners
Date Received:	05/25/17	Project:	69402, F&BI 705461
Date Extracted:	05/30/17	Lab ID:	705461-03
Date Analyzed:	05/30/17	Data File:	705461-03.104
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	<50
Manganese	3.37

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	MW-9	Client:	Environmental Partners
Date Received:	05/25/17	Project:	69402, F&BI 705461
Date Extracted:	05/30/17	Lab ID:	705461-04
Date Analyzed:	05/30/17	Data File:	705461-04.105
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	<50
Manganese	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	Environmental Partners
Date Received:	Not Applicable	Project:	69402, F&BI 705461
Date Extracted:	05/30/17	Lab ID:	I7-295 mb
Date Analyzed:	05/30/17	Data File:	I7-295 mb.062
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	<50
Manganese	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	MW-1	Client:	Environmental Partners
Date Received:	05/25/17	Project:	69402, F&BI 705461
Date Extracted:	05/30/17	Lab ID:	705461-01
Date Analyzed:	05/30/17	Data File:	705461-01.121
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	2,740
Manganese	3,490

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	MW-7	Client:	Environmental Partners
Date Received:	05/25/17	Project:	69402, F&BI 705461
Date Extracted:	05/30/17	Lab ID:	705461-02
Date Analyzed:	05/30/17	Data File:	705461-02.122
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	323
Manganese	10.9

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	MW-15	Client:	Environmental Partners
Date Received:	05/25/17	Project:	69402, F&BI 705461
Date Extracted:	05/30/17	Lab ID:	705461-03
Date Analyzed:	05/30/17	Data File:	705461-03.130
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	62.5
Manganese	3.31

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	MW-9	Client:	Environmental Partners
Date Received:	05/25/17	Project:	69402, F&BI 705461
Date Extracted:	05/30/17	Lab ID:	705461-04
Date Analyzed:	05/30/17	Data File:	705461-04.131
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	<50
Manganese	1.02

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	Environmental Partners
Date Received:	Not Applicable	Project:	69402, F&BI 705461
Date Extracted:	05/30/17	Lab ID:	I7-294 mb
Date Analyzed:	05/30/17	Data File:	I7-294 mb.079
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	<50
Manganese	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-1	Client:	Environmental Partners
Date Received:	05/25/17	Project:	69402, F&BI 705461
Date Extracted:	05/26/17	Lab ID:	705461-01
Date Analyzed:	05/26/17	Data File:	052618.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	57	121
Toluene-d8	104	63	127
4-Bromofluorobenzene	99	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	2.4

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-7	Client:	Environmental Partners
Date Received:	05/25/17	Project:	69402, F&BI 705461
Date Extracted:	05/26/17	Lab ID:	705461-02
Date Analyzed:	05/26/17	Data File:	052619.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	57	121
Toluene-d8	105	63	127
4-Bromofluorobenzene	98	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	11

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-15	Client:	Environmental Partners
Date Received:	05/25/17	Project:	69402, F&BI 705461
Date Extracted:	05/26/17	Lab ID:	705461-03
Date Analyzed:	05/26/17	Data File:	052620.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	57	121
Toluene-d8	105	63	127
4-Bromofluorobenzene	99	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	1.1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	2.7
Tetrachloroethene	120

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-9	Client:	Environmental Partners
Date Received:	05/25/17	Project:	69402, F&BI 705461
Date Extracted:	05/26/17	Lab ID:	705461-04
Date Analyzed:	05/26/17	Data File:	052621.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	57	121
Toluene-d8	105	63	127
4-Bromofluorobenzene	99	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	5.4

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Method Blank	Client:	Environmental Partners
Date Received:	Not Applicable	Project:	69402, F&BI 705461
Date Extracted:	05/26/17	Lab ID:	07-1044 mb
Date Analyzed:	05/26/17	Data File:	052609.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	57	121
Toluene-d8	103	63	127
4-Bromofluorobenzene	99	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Gasses By RSK 175

Client Sample ID:	MW-1	Client:	Environmental Partners
Date Received:	05/25/17	Project:	69402, F&BI 705461
Date Extracted:	05/30/17	Lab ID:	705461-01
Date Analyzed:	05/30/17	Data File:	008F0801.D
Matrix:	Water	Instrument:	GC8
Units:	ug/L (ppb)	Operator:	JS

Compounds:	Concentration ug/L (ppb)
Methane	9.0
Ethane	<10
Ethene	<10

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Gasses By RSK 175

Client Sample ID:	MW-7	Client:	Environmental Partners
Date Received:	05/25/17	Project:	69402, F&BI 705461
Date Extracted:	05/30/17	Lab ID:	705461-02
Date Analyzed:	05/30/17	Data File:	009F0901.D
Matrix:	Water	Instrument:	GC8
Units:	ug/L (ppb)	Operator:	JS

Compounds:	Concentration ug/L (ppb)
Methane	<5
Ethane	<10
Ethene	<10

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Gasses By RSK 175

Client Sample ID:	MW-15	Client:	Environmental Partners
Date Received:	05/25/17	Project:	69402, F&BI 705461
Date Extracted:	05/30/17	Lab ID:	705461-03
Date Analyzed:	05/30/17	Data File:	010F1001.D
Matrix:	Water	Instrument:	GC8
Units:	ug/L (ppb)	Operator:	JS

Compounds:	Concentration ug/L (ppb)
Methane	<5
Ethane	<10
Ethene	<10

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Gasses By RSK 175

Client Sample ID:	MW-9	Client:	Environmental Partners
Date Received:	05/25/17	Project:	69402, F&BI 705461
Date Extracted:	05/30/17	Lab ID:	705461-04
Date Analyzed:	05/30/17	Data File:	011F1101.D
Matrix:	Water	Instrument:	GC8
Units:	ug/L (ppb)	Operator:	JS

Compounds:	Concentration ug/L (ppb)
Methane	<5
Ethane	<10
Ethene	<10

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Gasses By RSK 175

Client Sample ID:	Method Blank	Client:	Environmental Partners
Date Received:	Not Applicable	Project:	69402, F&BI 705461
Date Extracted:	05/30/17	Lab ID:	07-1154 mb
Date Analyzed:	05/30/17	Data File:	005F0501.D
Matrix:	Water	Instrument:	GC8
Units:	ug/L (ppb)	Operator:	JS

Compounds:	Concentration ug/L (ppb)
Methane	<5
Ethane	<10
Ethene	<10

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 06/13/17

Date Received: 05/25/17

Project: 69402, F&BI 705461

**QUALITY ASSURANCE RESULTS
FOR THE ANALYSIS OF WATER SAMPLES
FOR DISSOLVED METALS USING EPA METHOD 200.8**

Laboratory Code: 705461-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Iron	ug/L (ppb)	100	1,880	101 b	183 b	70-130	58 b
Manganese	ug/L (ppb)	20	3,820	0 b	1200 b	70-130	200 b

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Iron	ug/L (ppb)	100	100	85-115
Manganese	ug/L (ppb)	20	112	85-115

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 06/13/17

Date Received: 05/25/17

Project: 69402, F&BI 705461

**QUALITY ASSURANCE RESULTS
FOR THE ANALYSIS OF WATER SAMPLES
FOR TOTAL METALS USING EPA METHOD 200.8**

Laboratory Code: 705475-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Iron	ug/L (ppb)	100	73.3	97 b	121 b	70-130	22 b
Manganese	ug/L (ppb)	20	118	70 b	139 b	70-130	66 b

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Iron	ug/L (ppb)	100	105	85-115
Manganese	ug/L (ppb)	20	113	85-115

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 06/13/17
 Date Received: 05/25/17
 Project: 69402, F&BI 705461

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER
 SAMPLES FOR VOLATILES BY EPA METHOD 8260C**

Laboratory Code: 705475-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent	Acceptance
				Recovery MS	Criteria
Vinyl chloride	ug/L (ppb)	50	<0.2	84	36-166
Chloroethane	ug/L (ppb)	50	<1	98	46-160
1,1-Dichloroethene	ug/L (ppb)	50	<1	97	60-136
Methylene chloride	ug/L (ppb)	50	<5	96	67-132
trans-1,2-Dichloroethene	ug/L (ppb)	50	<1	95	72-129
1,1-Dichloroethane	ug/L (ppb)	50	<1	89	70-128
cis-1,2-Dichloroethene	ug/L (ppb)	50	<1	92	71-127
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	<1	95	69-133
1,1,1-Trichloroethane	ug/L (ppb)	50	<1	96	60-146
Trichloroethene	ug/L (ppb)	50	<1	92	66-135
Tetrachloroethene	ug/L (ppb)	50	4.1	90	10-226

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent	Percent	Acceptance Criteria	RPD (Limit 20)
			Recovery LCS	Recovery LCSD		
Vinyl chloride	ug/L (ppb)	50	87	83	50-154	5
Chloroethane	ug/L (ppb)	50	99	97	58-146	2
1,1-Dichloroethene	ug/L (ppb)	50	95	96	67-136	1
Methylene chloride	ug/L (ppb)	50	91	88	39-148	3
trans-1,2-Dichloroethene	ug/L (ppb)	50	94	94	68-128	0
1,1-Dichloroethane	ug/L (ppb)	50	89	87	79-121	2
cis-1,2-Dichloroethene	ug/L (ppb)	50	91	91	80-123	0
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	96	93	73-132	3
1,1,1-Trichloroethane	ug/L (ppb)	50	99	95	83-130	4
Trichloroethene	ug/L (ppb)	50	92	90	80-120	2
Tetrachloroethene	ug/L (ppb)	50	93	89	76-121	4

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 06/13/17

Date Received: 05/25/17

Project: 69402, F&BI 705461

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF
WATER SAMPLES FOR DISSOLVED GASSES
USING METHOD RSK 175**

Laboratory Code: 705461-04 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference (Limit 20)
Methane	ug/L (ppb)	<5	<5	nm
Ethane	ug/L (ppb)	<10	<10	nm
Ethene	ug/L (ppb)	<10	<10	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Methane	ug/L (ppb)	59	79	79	50-150	0
Ethane	ug/L (ppb)	110	70	70	50-150	0
Ethene	ug/L (ppb)	102	94	94	50-150	0

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

RE: 705461
Work Order Number: 1705336

June 02, 2017

Attention Michael Erdahl:

Fremont Analytical, Inc. received 4 sample(s) on 5/30/2017 for the analyses presented in the following report.

Total Alkalinity by SM 2320B

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

CLIENT: Friedman & Bruya
Project: 705461
Work Order: 1705336

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1705336-001	MW-1	05/25/2017 8:13 AM	05/30/2017 1:04 PM
1705336-002	MW-7	05/25/2017 9:06 AM	05/30/2017 1:04 PM
1705336-003	MW-15	05/25/2017 10:00 AM	05/30/2017 1:04 PM
1705336-004	MW-9	05/25/2017 11:21 AM	05/30/2017 1:04 PM

CLIENT: Friedman & Bruya

Project: 705461

WorkOrder Narrative:

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").

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 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: 705461

Lab ID: 1705336-001

Collection Date: 5/25/2017 8:13:00 AM

Client Sample ID: MW-1

Matrix: Water

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Total Alkalinity by SM 2320B

Batch ID: R36524 Analyst: MW

Carbon dioxide	370	5.00		mg/L	1	6/1/2017 11:50:00 AM
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Lab ID: 1705336-002

Collection Date: 5/25/2017 9:06:00 AM

Client Sample ID: MW-7

Matrix: Water

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Total Alkalinity by SM 2320B

Batch ID: R36524 Analyst: MW

Carbon dioxide	137	5.00		mg/L	1	6/1/2017 11:55:00 AM
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Lab ID: 1705336-003

Collection Date: 5/25/2017 10:00:00 AM

Client Sample ID: MW-15

Matrix: Water

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Total Alkalinity by SM 2320B

Batch ID: R36524 Analyst: MW

Carbon dioxide	116	5.00		mg/L	1	6/1/2017 12:00:00 PM
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CLIENT: Friedman & Bruya
Project: 705461

Lab ID: 1705336-004

Collection Date: 5/25/2017 11:21:00 AM

Client Sample ID: MW-9

Matrix: Water

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Total Alkalinity by SM 2320B

Batch ID: R36524

Analyst: MW

Carbon dioxide	92.8	5.00		mg/L	1	6/1/2017 12:05:00 PM
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Work Order: 1705336
CLIENT: Friedman & Bruya
Project: 705461

QC SUMMARY REPORT
Total Alkalinity by SM 2320B

Sample ID MB-R36524	SampType: MBLK	Units: mg/L		Prep Date: 6/1/2017	RunNo: 36524						
Client ID: MBLKW	Batch ID: R36524			Analysis Date: 6/1/2017	SeqNo: 700651						
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	ND	2.50									

Sample ID LCS-R36524	SampType: LCS	Units: mg/L		Prep Date: 6/1/2017	RunNo: 36524						
Client ID: LCSW	Batch ID: R36524			Analysis Date: 6/1/2017	SeqNo: 700652						
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	113	2.50	100.0	0	113	80	120				

Sample ID 1705343-001FDUP	SampType: DUP	Units: mg/L		Prep Date: 6/1/2017	RunNo: 36524						
Client ID: BATCH	Batch ID: R36524			Analysis Date: 6/1/2017	SeqNo: 700654						
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	2,520	2.50						2,572	2.06	20	

Client Name: **FB**
 Logged by: **Erica Silva**

Work Order Number: **1705336**
 Date Received: **5/30/2017 1:04:00 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:	<input type="text"/>	Date:	<input type="text"/>
By Whom:	<input type="text"/>	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	<input type="text"/>		
Client Instructions:	<input type="text"/>		

19. Additional remarks:

Item Information

Item #	Temp °C
Sample	6.1

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

SUBCONTRACT SAMPLE CHAIN OF CUSTODY

1705334

SUBCONTRACTOR Friedman & Bruya

PROJECT NAME/NO. 705461 PO # E-653

REMARKS

Please Email Results

Page # 1 of 1
TURNAROUND TIME

Standard (2 Weeks)
 RUSH
Rush charges authorized by: _____

SAMPLE DISPOSAL

Dispose after 30 days
 Return samples
 Will call with instructions

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Matrix	# of jars	ANALYSES REQUESTED							Notes		
						Dioxins/Furans	EPH	VPH	Nitrate	Sulfate	Alkalinity	TOC-9060M		Dissolved CO ₂	
MW-1		5/25/17	0813	water	3										
MW-7			0906		3								X		
MW-15			1000		3								X		
MW-9			1121		3								X		

Friedman & Bruya, Inc. 3012 16th Avenue West Seattle, WA 98119-2029 Ph. (206) 285-8282 Fax (206) 283-5044		SIGNATURE 		PRINT NAME Michael Erdahl		COMPANY Friedman and Bruya		DATE 5/30/17	TIME 11:00AM
Received by:		Received by:		Received by:		Received by:			
Relinquished by:		Relinquished by:		Relinquished by:		Relinquished by:			
Received by:		Received by:		Received by:		Received by:			

Am Test Inc.
13600 NE 126TH PL
Suite C
Kirkland, WA 98034
(425) 885-1664

Jun 9 2017
Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Attention: MICHAEL ERDAHL

Dear MICHAEL ERDAHL:

Enclosed please find the analytical data for your project.

The following is a cross correlation of client and laboratory identifications for your convenience.

CLIENT ID	MATRIX	AMTEST ID	TEST
MW-1	Water	17-A007810	DEM, MIN, NUT, CONV
MW-7	Water	17-A007811	DEM, MIN, NUT, CONV
MW-15	Water	17-A007812	DEM, MIN, NUT, CONV
MW-9	Water	17-A007813	DEM, MIN, NUT, CONV

Your samples were received on Friday, May 26, 2017. At the time of receipt, the samples were logged in and properly maintained prior to the subsequent analysis.

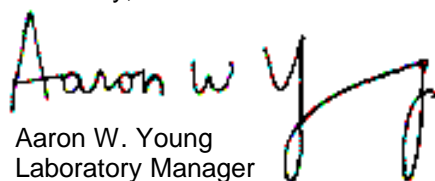
The analytical procedures used at AmTest are well documented and are typically derived from the protocols of the EPA, USDA, FDA or the Army Corps of Engineers.

Following the analytical data you will find the Quality Control (QC) results.

Please note that the detection limits that are listed in the body of the report refer to the Practical Quantitation Limits (PQL's), as opposed to the Method Detection Limits (MDL's).

If you should have any questions pertaining to the data package, please feel free to contact me.

Sincerely,


Aaron W. Young
Laboratory Manager

Project #: 705461
PO Number: E-647

BACT = Bacteriological
CONV = Conventional

MET = Metals
ORG = Organics

NUT=Nutrients
DEM=Demand

MIN=Minerals

Am Test Inc.
 13600 NE 126TH PL
 Suite C
 Kirkland, WA 98034
 (425) 885-1664
 www.amtestlab.com



Professional
 Analytical
 Services

ANALYSIS REPORT

Friedman & Bruya, Inc.
 3012 16th Avenue West
 Seattle, WA 98119-2029
 Attention: MICHAEL ERDAHL
 Project #: 705461
 PO Number: E-647
 All results reported on an as received basis.

Date Received: 05/26/17
 Date Reported: 6/ 9/17

AMTEST Identification Number 17-A007810
 Client Identification MW-1
 Sampling Date 05/25/17, 08:13

Conventionals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Total Sulfide	< 0.05	mg/l		0.05	SM 4500-S2-D	SW	05/30/17

Demand

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
BOD	< 2	mg/l		2	SM 5210B	JM	05/26/17
Total Organic Carbon	9.6	mg/l		0.5	SM 5310B	SW	06/06/17
Chemical Oxygen Demand	< 10	mg/l		10	EPA 410.4	SW	06/02/17

Minerals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Chloride	36.2	mg/l		0.05	EPA 300.0	JC	06/05/17
Sulfate	5.50	mg/l		0.1	EPA 300.0	JC	05/26/17

Nutrients

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Nitrite	< 0.005	mg/l		0.005	EPA 300.0	JC	05/26/17
Nitrate	0.901	mg/l		0.025	EPA 300.0	JC	05/26/17

Friedman & Bruya, Inc.
Project Name:
AmTest ID: 17-A007811

AMTEST Identification Number 17-A007811
Client Identification MW-7
Sampling Date 05/25/17, 09:06

Conventionals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Total Sulfide	< 0.05	mg/l		0.05	SM 4500-S2-D	SW	05/30/17

Demand

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
BOD	< 2	mg/l		2	SM 5210B	JM	05/26/17
Total Organic Carbon	1.2	mg/l		0.5	SM 5310B	SW	06/06/17
Chemical Oxygen Demand	< 10	mg/l		10	EPA 410.4	SW	06/02/17

Minerals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Chloride	617.	mg/l		0.05	EPA 300.0	JC	06/01/17
Sulfate	17.6	mg/l		0.1	EPA 300.0	JC	06/01/17

Nutrients

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Nitrite	< 0.005	mg/l		0.005	EPA 300.0	JC	05/26/17
Nitrate	4.40	mg/l		0.025	EPA 300.0	JC	05/26/17

Friedman & Bruya, Inc.
Project Name:
AmTest ID: 17-A007812

AMTEST Identification Number 17-A007812
Client Identification MW-15
Sampling Date 05/25/17, 10:00

Conventionals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Total Sulfide	< 0.05	mg/l		0.05	SM 4500-S2-D	SW	05/30/17

Demand

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
BOD	< 2	mg/l		2	SM 5210B	JM	05/26/17
Total Organic Carbon	1.0	mg/l		0.5	SM 5310B	SW	06/06/17
Chemical Oxygen Demand	< 10	mg/l		10	EPA 410.4	SW	06/02/17

Minerals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Chloride	10.4	mg/l		0.05	EPA 300.0	JC	06/01/17
Sulfate	12.4	mg/l		0.1	EPA 300.0	JC	06/01/17

Nutrients

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Nitrite	< 0.005	mg/l		0.005	EPA 300.0	JC	05/26/17
Nitrate	1.90	mg/l		0.025	EPA 300.0	JC	05/26/17

AMTEST Identification Number 17-A007813
Client Identification MW-9
Sampling Date 05/25/17, 11:21

Conventionals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Total Sulfide	< 0.05	mg/l		0.05	SM 4500-S2-D	SW	05/30/17

Demand


PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
BOD	< 2	mg/l		2	SM 5210B	JM	05/26/17
Total Organic Carbon	< 0.5	mg/l		0.5	SM 5310B	SW	06/06/17
Chemical Oxygen Demand	< 10	mg/l		10	EPA 410.4	SW	06/02/17

Minerals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Chloride	5.08	mg/l		0.05	EPA 300.0	JC	05/26/17
Sulfate	8.10	mg/l		0.1	EPA 300.0	JC	05/26/17

Nutrients

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Nitrite	< 0.005	mg/l		0.005	EPA 300.0	JC	05/26/17
Nitrate	0.753	mg/l		0.025	EPA 300.0	JC	05/26/17


 Aaron W. Young
 Laboratory Manager

QC Summary for sample numbers: 17-A007810 to 17-A007813

DUPLICATES

SAMPLE #	ANALYTE	UNITS	SAMPLE VALUE	DUP VALUE	RPD
17-A007796	BOD	mg/l	4.6	5.1	10.
17-A007701	Chemical Oxygen Demand	mg/l	< 10	< 10	
17-A007813	Chemical Oxygen Demand	mg/l	< 10	< 10	
17-A007927	Chemical Oxygen Demand	mg/l	< 10	< 10	
17-A007824	Nitrate	mg/l	0.102	0.093	9.2
17-A007824	Nitrite	mg/l	< 0.005	< 0.005	

MATRIX SPIKES

SAMPLE #	ANALYTE	UNITS	SAMPLE VALUE	SMPL+ SPK	SPKAMT	RECOVERY
17-A007844	Total Organic Carbon	mg/l	0.89	5.9	5.0	100.20 %
17-A007848	Total Organic Carbon	mg/l	0.78	6.4	5.0	112.40 %
17-A007701	Chemical Oxygen Demand	mg/l	< 10	45.	50.	90.00 %
17-A007813	Chemical Oxygen Demand	mg/l	< 10	89.	100	89.00 %
17-A007927	Chemical Oxygen Demand	mg/l	< 10	86.	100	86.00 %
17-A007824	Nitrate	mg/l	0.102	4.93	5.00	96.56 %
17-A007824	Nitrite	mg/l	< 0.005	4.81	5.00	96.20 %
17-A007817	Total Sulfide	mg/l	< 0.05	0.54	0.50	108.00 %
17-A007817	Total Sulfide	mg/l	< 0.05	0.54	0.50	108.00 %

MATRIX SPIKE DUPLICATES

SAMPLE #	ANALYTE	UNITS	SAMPLE + SPK	MSD VALUE	RPD
Spike	Total Sulfide	mg/l	0.54	0.54	0.00

STANDARD REFERENCE MATERIALS

ANALYTE	UNITS	TRUE VALUE	MEASURED VALUE	RECOVERY
BOD	mg/l	200	200	100. %
Total Organic Carbon	mg/l	5.0	5.1	102. %
Chemical Oxygen Demand	mg/l	100	100	100. %
Chemical Oxygen Demand	mg/l	100	110	110. %
Chloride	mg/l	5.00	5.11	102. %
Chloride	mg/l	5.00	4.88	97.6 %
Chloride	mg/l	5.00	4.87	97.4 %
Nitrate	mg/l	5.00	4.92	98.4 %
Nitrate	mg/l	5.00	4.96	99.2 %
Nitrite	mg/l	5.00	5.00	100. %
Nitrite	mg/l	5.00	5.00	100. %
Total Sulfide	mg/l	1.0	1.0	100. %
Sulfate	mg/l	5.00	5.26	105. %
Sulfate	mg/l	5.00	5.17	103. %

QC Summary for sample numbers: 17-A007810 to 17-A007813...

BLANKS

ANALYTE	UNITS	RESULT
BOD	mg/l	< 2
Total Organic Carbon	mg/l	< 0.5
Chemical Oxygen Demand	mg/l	< 10
Chemical Oxygen Demand	mg/l	< 10
Chloride	mg/l	< 0.05
Chloride	mg/l	< 0.05
Chloride	mg/l	< 0.05
Nitrate	mg/l	< 0.025
Nitrate	mg/l	< 0.025
Nitrite	mg/l	< 0.005
Nitrite	mg/l	< 0.005
Total Sulfide	mg/l	< 0.05
Sulfate	mg/l	< 0.1
Sulfate	mg/l	< 0.1

SUBCONTRACT SAMPLE CHAIN OF CUSTODY

Send Report To Michael Erdahl

Company Friedman and Bruya, Inc.

Address 3012 16th Ave W

City, State, ZIP Seattle, WA 98119

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

SUBCONTRACTOR <u>Anst</u>	PO #
PROJECT NAME/NO. <u>705461</u>	<u>E-647</u>
REMARKS Please Email Results	

Page # 1 of 1

TURNAROUND TIME
 Standard (2 Weeks)
 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							Notes	
						Dioxins/Furans	EPH	VPH	Nitrate	Sulfate	Chloride Alkalinity	TOC-9060M		COD
MW-1	7810	Sps/17	8:13	water	4		X	X	X	X	X	X		
MW-7	11	↓	9:04		5		X	X	X	X	X	X		
MW-15	12	↓	10:00		5		X	X	X	X	X	X		
MW-9	13	↓	11:21		5		X	X	X	X	X	X		

Friedman & Bruya, Inc. 3012 16th Avenue West Seattle, WA 98119-2029 Ph. (206) 285-8282 Fax (206) 283-5044	SIGNATURE <u>[Signature]</u>	PRINT NAME <u>Michael Erdahl</u>	COMPANY <u>Friedman and Bruya</u>	DATE <u>5/26/17</u>	TIME <u>8:30</u>
	Relinquished by: _____				
	Received by: <u>AS</u>		<u>4 STARS</u>		
	Relinquished by: _____				
	Received by: _____				

COPIED

705461

SAMPLE CHAIN OF CUSTODY

ME 05/25/17 WUS/ALG

Report To Eric Kotter/Josh Bernthal
 Company EPI
 Address 1180 NW Maple St
 City, State, ZIP Issaquah, WA
 Phone _____ Email _____

SAMPLER'S (signature) E.P.M.B.
 PROJECT NAME 69402
 REMARKS
 INVOICE TO

Page # 1 of 1
 TURNOURND TIME
 Standard Turnaround
 RUSH
 Rush charges authorized by:
 SAMPLE DISPOSAL
 Dispose after 30 days
 Archive Samples
 Other _____

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED																		
						TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM	Total Fe+Pb Mn+Zn	Dissolved Fe+Pb Mn+Zn	Methane, ethane, propane	TOC + COD	Nitrate/Nitrite	Sulfate + Chloride Nites	BOD	Sulfide	Carbon Dioxide			
MW-1	01A-0	5/25/17	813	Water	16									X			X	X	X	X	X	X		
MW-7	02A-P		906		16					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
MW-15	03A-P		1000		16					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
MW-9	04A-P		1121		16					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
						For Mn-pollus						S/n/17 ok												

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

SIGNATURE		PRINT NAME		COMPANY		DATE	TIME
Relinquished by:	<u>[Signature]</u>	<u>E. P. M. Bernthal</u>	<u>E. P. M. Bernthal</u>	<u>EPI</u>		<u>5/25/17</u>	<u>15:15</u>
Received by:	<u>[Signature]</u>	<u>[Name]</u>	<u>[Name]</u>	<u>[Company]</u>		<u>5-25-17</u>	<u>15:15</u>
Relinquished by:							
Received by:							

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

June 1, 2017

Eric Koltes, Project Manager
Environmental Partners, Inc.
1180 NW Maple St, Suite 310
Issaquah, WA 98027

RE: 69402, F&BI 705462

Dear Mr Koltes:

Included are the results from the testing of material submitted on May 25, 2017 from the 69402, F&BI 705462 project. There are 14 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 have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
c: Cynthia Moon, Josh Bernthal
EPI0601R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on May 25, 2017 by Friedman & Bruya, Inc. from the Environmental Partners 69402, F&BI 705462 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>Environmental Partners</u>
705462 -01	MW-4:Bag
705462 -02	MW-10:Bag
705462 -03	MW-11:Bag
705462 -04	MW-5:Bag
705462 -05	MW-14:Bag
705462 -06	MW-12:Bag
705462 -07	MW-6:Bag
705462 -08	MW-13:Bag
705462 -09	GW-10:Bag

All quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-4:Bag	Client:	Environmental Partners
Date Received:	05/25/17	Project:	69402, F&BI 705462
Date Extracted:	05/26/17	Lab ID:	705462-01
Date Analyzed:	05/26/17	Data File:	052613.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	97	85	117
Toluene-d8	99	91	108
4-Bromofluorobenzene	99	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	2.1
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	9.8
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-10:Bag	Client:	Environmental Partners
Date Received:	05/25/17	Project:	69402, F&BI 705462
Date Extracted:	05/26/17	Lab ID:	705462-02
Date Analyzed:	05/26/17	Data File:	052618.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	85	117
Toluene-d8	100	91	108
4-Bromofluorobenzene	102	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	3.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	16
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	1.3
Tetrachloroethene	2.0

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-11:Bag	Client:	Environmental Partners
Date Received:	05/25/17	Project:	69402, F&BI 705462
Date Extracted:	05/26/17	Lab ID:	705462-03
Date Analyzed:	05/26/17	Data File:	052620.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	85	117
Toluene-d8	98	91	108
4-Bromofluorobenzene	99	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	4.1
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	26
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-5:Bag	Client:	Environmental Partners
Date Received:	05/25/17	Project:	69402, F&BI 705462
Date Extracted:	05/26/17	Lab ID:	705462-04
Date Analyzed:	05/26/17	Data File:	052630.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	85	117
Toluene-d8	100	91	108
4-Bromofluorobenzene	101	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	1.5
Tetrachloroethene	51

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-14:Bag	Client:	Environmental Partners
Date Received:	05/25/17	Project:	69402, F&BI 705462
Date Extracted:	05/26/17	Lab ID:	705462-05
Date Analyzed:	05/26/17	Data File:	052631.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	85	117
Toluene-d8	100	91	108
4-Bromofluorobenzene	101	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-12:Bag	Client:	Environmental Partners
Date Received:	05/25/17	Project:	69402, F&BI 705462
Date Extracted:	05/26/17	Lab ID:	705462-06
Date Analyzed:	05/26/17	Data File:	052621.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	85	117
Toluene-d8	98	91	108
4-Bromofluorobenzene	98	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-6:Bag	Client:	Environmental Partners
Date Received:	05/25/17	Project:	69402, F&BI 705462
Date Extracted:	05/26/17	Lab ID:	705462-07
Date Analyzed:	05/26/17	Data File:	052622.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	85	117
Toluene-d8	100	91	108
4-Bromofluorobenzene	100	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-13:Bag	Client:	Environmental Partners
Date Received:	05/25/17	Project:	69402, F&BI 705462
Date Extracted:	05/26/17	Lab ID:	705462-08
Date Analyzed:	05/26/17	Data File:	052623.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	85	117
Toluene-d8	100	91	108
4-Bromofluorobenzene	101	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	3.0

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	GW-10:Bag	Client:	Environmental Partners
Date Received:	05/25/17	Project:	69402, F&BI 705462
Date Extracted:	05/26/17	Lab ID:	705462-09
Date Analyzed:	05/26/17	Data File:	052624.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	85	117
Toluene-d8	99	91	108
4-Bromofluorobenzene	100	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	18
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	1.9

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Method Blank	Client:	Environmental Partners
Date Received:	Not Applicable	Project:	69402, F&BI 705462
Date Extracted:	05/26/17	Lab ID:	07-1043 mb
Date Analyzed:	05/26/17	Data File:	052609.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	85	117
Toluene-d8	100	91	108
4-Bromofluorobenzene	103	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 06/01/17

Date Received: 05/25/17

Project: 69402, F&BI 705462

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER
SAMPLES FOR VOLATILES BY EPA METHOD 8260C**

Laboratory Code: 705453-02 1/100 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Vinyl chloride	ug/L (ppb)	<20	<20	nm
Chloroethane	ug/L (ppb)	<100	<100	nm
1,1-Dichloroethene	ug/L (ppb)	<100	<100	nm
Methylene chloride	ug/L (ppb)	<500	<500	nm
trans-1,2-Dichloroethene	ug/L (ppb)	<100	<100	nm
1,1-Dichloroethane	ug/L (ppb)	<100	<100	nm
cis-1,2-Dichloroethene	ug/L (ppb)	<100	<100	nm
1,2-Dichloroethane (EDC)	ug/L (ppb)	<100	<100	nm
1,1,1-Trichloroethane	ug/L (ppb)	<100	<100	nm
Trichloroethene	ug/L (ppb)	<100	<100	nm
Tetrachloroethene	ug/L (ppb)	<100	<100	nm

Laboratory Code: 705462-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Acceptance Criteria
Vinyl chloride	ug/L (ppb)	50	2.1	93	61-139
Chloroethane	ug/L (ppb)	50	<1	91	55-149
1,1-Dichloroethene	ug/L (ppb)	50	<1	94	71-123
Methylene chloride	ug/L (ppb)	50	<5	98	61-126
trans-1,2-Dichloroethene	ug/L (ppb)	50	<1	96	72-122
1,1-Dichloroethane	ug/L (ppb)	50	<1	94	79-113
cis-1,2-Dichloroethene	ug/L (ppb)	50	9.8	92	63-126
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	<1	90	70-119
1,1,1-Trichloroethane	ug/L (ppb)	50	<1	94	75-121
Trichloroethene	ug/L (ppb)	50	<1	85	73-122
Tetrachloroethene	ug/L (ppb)	50	<1	89	72-113

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 06/01/17

Date Received: 05/25/17

Project: 69402, F&BI 705462

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER
SAMPLES FOR VOLATILES BY EPA METHOD 8260C**

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Vinyl chloride	ug/L (ppb)	50	99	94	70-128	5
Chloroethane	ug/L (ppb)	50	96	91	66-149	5
1,1-Dichloroethene	ug/L (ppb)	50	98	97	75-119	1
Methylene chloride	ug/L (ppb)	50	106	103	63-132	3
trans-1,2-Dichloroethene	ug/L (ppb)	50	99	96	76-118	3
1,1-Dichloroethane	ug/L (ppb)	50	95	93	77-119	2
cis-1,2-Dichloroethene	ug/L (ppb)	50	95	92	76-119	3
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	92	90	78-114	2
1,1,1-Trichloroethane	ug/L (ppb)	50	97	95	80-116	2
Trichloroethene	ug/L (ppb)	50	88	86	72-119	2
Tetrachloroethene	ug/L (ppb)	50	91	90	78-109	1

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.

705462

SAMPLE CHAIN OF CUSTODY

ME 05-25-17

Page # 1 of 1

Report To Eric Voltes/Josh Bernthal

Company EP1

Address 1880 NW Maple St

City, State, ZIP Issaquah, WA

Phone _____ Email _____

SAMPLER'S (signature) [Signature]
PROJECT NAME 69402

PO #

REMARKS

INVOICE TO

TURNAROUND TIME
 Standard Turnaround
 RUSH
 Rush charges authorized by: _____

SAMPLE DISPOSAL
 Dispose after 30 days
 Archive Samples
 Other

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED								Notes	
						TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM			
MW-4: Bag	01A-D	5/25	1247	W	4					X					
MW-10: Bag	02		1258		4					X					
MW-11: Bag	03		1305		4					X					
MW-5: Bag	04		1319		4					X					
MW-14: Bag	05		1330		4					X					
MW-12: Bag	06		1349		4					X					
MW-6: Bag	07		1357		4					X					
MW-13: Bag	08		1407		4					X					
GW-10: Bag	09		1413		4					X					

Samples received at 5°C

SIGNATURE

PRINT NAME

COMPANY

DATE

TIME

Relinquished by: [Signature]

Elizabeth Webber-Bruce

EP1

5/25/17 15:25

Received by: [Signature]

DPVO

F&B

5-25-17 18:25

Friedman & Bruya, Inc.

3012 16th Avenue West

Seattle, WA 98119-3029

Ph. (206) 285-8282

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

June 13, 2017

Eric Koltes, Project Manager
Environmental Partners, Inc.
1180 NW Maple St, Suite 310
Issaquah, WA 98027

RE: 69402, F&BI 705475

Dear Mr Koltes:

Included are the results from the testing of material submitted on May 26, 2017 from the 69402, F&BI 705475 project. There are 14 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 have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
c: Cynthia Moon, Josh Bernthal
EPI0613R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on May 26, 2017 by Friedman & Bruya, Inc. from the Environmental Partners 69402, F&BI 705475 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>Environmental Partners</u>
705475 -01	GW-4

Sample GW-4 was sent to Amtest for TOC, chloride, sulfate, sulfide, nitrate, nitrite, BOD, and COD analyses. In addition, the sample was sent to Fremont for carbon dioxide analysis. The reports are included.

All quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	GW-4	Client:	Environmental Partners
Date Received:	05/26/17	Project:	69402, F&BI 705475
Date Extracted:	05/30/17	Lab ID:	705475-01
Date Analyzed:	05/30/17	Data File:	705475-01.082
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	73.3
Manganese	118

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	Environmental Partners
Date Received:	Not Applicable	Project:	69402, F&BI 705475
Date Extracted:	05/30/17	Lab ID:	I7-294 mb
Date Analyzed:	05/30/17	Data File:	I7-294 mb.079
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	<50
Manganese	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	GW-4	Client:	Environmental Partners
Date Received:	05/26/17	Project:	69402, F&BI 705475
Date Extracted:	05/30/17	Lab ID:	705475-01
Date Analyzed:	05/30/17	Data File:	705475-01.086
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	<50
Manganese	1.81

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	Environmental Partners
Date Received:	Not Applicable	Project:	69402, F&BI 705475
Date Extracted:	05/30/17	Lab ID:	I7-295 mb
Date Analyzed:	05/30/17	Data File:	I7-295 mb.062
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	<50
Manganese	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	GW-4	Client:	Environmental Partners
Date Received:	05/26/17	Project:	69402, F&BI 705475
Date Extracted:	05/26/17	Lab ID:	705475-01
Date Analyzed:	05/26/17	Data File:	052617.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	57	121
Toluene-d8	105	63	127
4-Bromofluorobenzene	98	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	4.1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Method Blank	Client:	Environmental Partners
Date Received:	Not Applicable	Project:	69402, F&BI 705475
Date Extracted:	05/26/17	Lab ID:	07-1044 mb
Date Analyzed:	05/26/17	Data File:	052609.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	57	121
Toluene-d8	103	63	127
4-Bromofluorobenzene	99	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Gasses By RSK 175

Client Sample ID:	GW-4	Client:	Environmental Partners
Date Received:	05/26/17	Project:	69402, F&BI 705475
Date Extracted:	05/30/17	Lab ID:	705475-01
Date Analyzed:	05/30/17	Data File:	013F1301.D
Matrix:	Water	Instrument:	GC8
Units:	ug/L (ppb)	Operator:	JS

Compounds:	Concentration ug/L (ppb)
Methane	<5
Ethane	<10
Ethene	<10

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Gasses By RSK 175

Client Sample ID:	Method Blank	Client:	Environmental Partners
Date Received:	Not Applicable	Project:	69402, F&BI 705475
Date Extracted:	05/30/17	Lab ID:	07-1154 mb
Date Analyzed:	05/30/17	Data File:	005F0501.D
Matrix:	Water	Instrument:	GC8
Units:	ug/L (ppb)	Operator:	JS

Compounds:	Concentration ug/L (ppb)
Methane	<5
Ethane	<10
Ethene	<10

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 06/13/17

Date Received: 05/26/17

Project: 69402, F&BI 705475

**QUALITY ASSURANCE RESULTS
FOR THE ANALYSIS OF WATER SAMPLES
FOR TOTAL METALS USING EPA METHOD 200.8**

Laboratory Code: 705475-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Iron	ug/L (ppb)	100	73.3	97 b	121 b	70-130	22 b
Manganese	ug/L (ppb)	20	118	70 b	139 b	70-130	66 b

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Iron	ug/L (ppb)	100	105	85-115
Manganese	ug/L (ppb)	20	113	85-115

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 06/13/17

Date Received: 05/26/17

Project: 69402, F&BI 705475

**QUALITY ASSURANCE RESULTS
FOR THE ANALYSIS OF WATER SAMPLES
FOR DISSOLVED METALS USING EPA METHOD 200.8**

Laboratory Code: 705461-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Iron	ug/L (ppb)	100	1,880	101 b	183 b	70-130	58 b
Manganese	ug/L (ppb)	20	3,820	0 b	1200 b	70-130	200 b

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Iron	ug/L (ppb)	100	100	85-115
Manganese	ug/L (ppb)	20	112	85-115

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 06/13/17

Date Received: 05/26/17

Project: 69402, F&BI 705475

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER
SAMPLES FOR VOLATILES BY EPA METHOD 8260C**

Laboratory Code: 705475-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Acceptance Criteria
Vinyl chloride	ug/L (ppb)	50	<0.2	84	36-166
Chloroethane	ug/L (ppb)	50	<1	98	46-160
1,1-Dichloroethene	ug/L (ppb)	50	<1	97	60-136
Methylene chloride	ug/L (ppb)	50	<5	96	67-132
trans-1,2-Dichloroethene	ug/L (ppb)	50	<1	95	72-129
1,1-Dichloroethane	ug/L (ppb)	50	<1	89	70-128
cis-1,2-Dichloroethene	ug/L (ppb)	50	<1	92	71-127
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	<1	95	69-133
1,1,1-Trichloroethane	ug/L (ppb)	50	<1	96	60-146
Trichloroethene	ug/L (ppb)	50	<1	92	66-135
Tetrachloroethene	ug/L (ppb)	50	4.1	90	10-226

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Vinyl chloride	ug/L (ppb)	50	87	83	50-154	5
Chloroethane	ug/L (ppb)	50	99	97	58-146	2
1,1-Dichloroethene	ug/L (ppb)	50	95	96	67-136	1
Methylene chloride	ug/L (ppb)	50	91	88	39-148	3
trans-1,2-Dichloroethene	ug/L (ppb)	50	94	94	68-128	0
1,1-Dichloroethane	ug/L (ppb)	50	89	87	79-121	2
cis-1,2-Dichloroethene	ug/L (ppb)	50	91	91	80-123	0
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	96	93	73-132	3
1,1,1-Trichloroethane	ug/L (ppb)	50	99	95	83-130	4
Trichloroethene	ug/L (ppb)	50	92	90	80-120	2
Tetrachloroethene	ug/L (ppb)	50	93	89	76-121	4

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 06/13/17

Date Received: 05/26/17

Project: 69402, F&BI 705475

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF
WATER SAMPLES FOR DISSOLVED GASSES
USING METHOD RSK 175**

Laboratory Code: 705461-04 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference (Limit 20)
Methane	ug/L (ppb)	<5	<5	nm
Ethane	ug/L (ppb)	<10	<10	nm
Ethene	ug/L (ppb)	<10	<10	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Methane	ug/L (ppb)	59	79	79	50-150	0
Ethane	ug/L (ppb)	110	70	70	50-150	0
Ethene	ug/L (ppb)	102	94	94	50-150	0

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

RE: 705475
Work Order Number: 1705337

June 02, 2017

Attention Michael Erdahl:

Fremont Analytical, Inc. received 1 sample(s) on 5/30/2017 for the analyses presented in the following report.

Total Alkalinity by SM 2320B

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

CLIENT: Friedman & Bruya
Project: 705475
Work Order: 1705337

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1705337-001	GW-4	05/28/2017 7:12 AM	05/30/2017 1:04 PM

CLIENT: Friedman & Bruya

Project: 705475

WorkOrder Narrative:

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").

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 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

Collection Date: 5/28/2017 7:12:00 AM

Project: 705475

Lab ID: 1705337-001

Matrix: Water

Client Sample ID: GW-4

Analyses

Result

RL

Qual

Units

DF

Date Analyzed

Total Alkalinity by SM 2320B

Batch ID: R36524

Analyst: MW

Carbon dioxide

135

5.00

mg/L

1

6/1/2017 12:20:00 PM

Work Order: 1705337
CLIENT: Friedman & Bruya
Project: 705475

QC SUMMARY REPORT
Total Alkalinity by SM 2320B

Sample ID MB-R36524	SampType: MBLK	Units: mg/L	Prep Date: 6/1/2017	RunNo: 36524							
Client ID: MBLKW	Batch ID: R36524		Analysis Date: 6/1/2017	SeqNo: 700651							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	ND	2.50									

Sample ID LCS-R36524	SampType: LCS	Units: mg/L	Prep Date: 6/1/2017	RunNo: 36524							
Client ID: LCSW	Batch ID: R36524		Analysis Date: 6/1/2017	SeqNo: 700652							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	113	2.50	100.0	0	113	80	120				

Sample ID 1705343-001FDUP	SampType: DUP	Units: mg/L	Prep Date: 6/1/2017	RunNo: 36524							
Client ID: BATCH	Batch ID: R36524		Analysis Date: 6/1/2017	SeqNo: 700654							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	2,520	2.50						2,572	2.06	20	

Client Name: **FB**
 Logged by: **Erica Silva**

Work Order Number: **1705337**
 Date Received: **5/30/2017 1:04:00 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

Sample 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:	<input type="text"/>	Date:	<input type="text"/>
By Whom:	<input type="text"/>	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	<input type="text"/>		
Client Instructions:	<input type="text"/>		

19. Additional remarks:

Item Information

Item #	Temp °C
Sample	6.1

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

SUBCONTRACT SAMPLE CHAIN OF CUSTODY

1705337

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

SUBCONTRACTOR <u>Friedman & Bruya</u>	PROJECT NAME/NO. <u>705475</u>
PO # <u>E-653</u>	REMARKS <u>Please Email Results</u>


Page # 1 of 1

TURNAROUND TIME
 Standard (2 Weeks)
 RUSH
 Rush charges authorized by: _____

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

Page 8 of 8

Sample ID	Lab ID	Date Sampled	Time Sampled	Matrix	# of jars	ANALYSES REQUESTED							Notes	
						Dioxins/Furans	EPH	VPH	Nitrate	Sulfate	Alkalinity	TOC-9060M		Dissolved CO ₂
GW-4		5/28/17	0712	Water	2								X	

Friedman & Bruya, Inc. 3012 16th Avenue West Seattle, WA 98119-2029 Ph. (206) 285-8282 Fax (206) 283-5044	SIGNATURE  PRINT NAME Michael Erdahl COMPANY Friedman and Bruya DATE 5/30/17 TIME 11:00AM
Relinquished by:	Received by:
Relinquished by:	Received by:

Am Test Inc.
 13600 NE 126TH PL
 Suite C
 Kirkland, WA 98034
 (425) 885-1664

*Professional
 Analytical
 Services*

Jun 9 2017
 Friedman & Bruya, Inc.
 3012 16th Avenue West
 Seattle, WA 98119-2029
 Attention: MICHAEL ERDAHL

Dear MICHAEL ERDAHL:

Enclosed please find the analytical data for your project.

The following is a cross correlation of client and laboratory identifications for your convenience.

CLIENT ID	MATRIX	AMTEST ID	TEST
GW-4	Water	17-A007817	DEM, MIN, NUT, CONV

Your sample was received on Friday, May 26, 2017. At the time of receipt, the sample was logged in and properly maintained prior to the subsequent analysis.

The analytical procedures used at AmTest are well documented and are typically derived from the protocols of the EPA, USDA, FDA or the Army Corps of Engineers.

Following the analytical data you will find the Quality Control (QC) results.

Please note that the detection limits that are listed in the body of the report refer to the Practical Quantitation Limits (PQL's), as opposed to the Method Detection Limits (MDL's).

If you should have any questions pertaining to the data package, please feel free to contact me.

Sincerely,


 Aaron W. Young
 Laboratory Manager

Project #: 705475
 PO Number: E-650

BACT = Bacteriological
 CONV = Conventional

MET = Metals
 ORG = Organics

NUT=Nutrients
 DEM=Demand

MIN=Minerals

Am Test Inc.
 13600 NE 126TH PL
 Suite C
 Kirkland, WA 98034
 (425) 885-1664
 www.amtestlab.com



*Professional
 Analytical
 Services*

ANALYSIS REPORT

Friedman & Bruya, Inc.
 3012 16th Avenue West
 Seattle, WA 98119-2029
 Attention: MICHAEL ERDAHL
 Project #: 705475
 PO Number: E-650
 All results reported on an as received basis.

Date Received: 05/26/17
 Date Reported: 6/ 9/17

AMTEST Identification Number 17-A007817
Client Identification GW-4
Sampling Date 05/26/17, 07:12

Conventionals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Total Sulfide	< 0.05	mg/l		0.05	SM 4500-S2-D	SW	05/30/17

Demand

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
BOD	< 2	mg/l		2	SM 5210B	JM	05/26/17
Total Organic Carbon	0.60	mg/l		0.5	SM 5310B	SW	06/06/17
Chemical Oxygen Demand	< 10	mg/l		10	EPA 410.4	SW	06/02/17

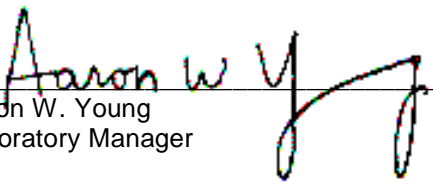
Minerals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Chloride	8.10	mg/l		0.05	EPA 300.0	JC	05/26/17
Sulfate	6.00	mg/l		0.1	EPA 300.0	JC	05/26/17

Nutrients

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Nitrite	< 0.005	mg/l		0.005	EPA 300.0	JC	05/26/17
Nitrate	0.599	mg/l		0.025	EPA 300.0	JC	05/26/17

Friedman & Bruya, Inc.
Project Name:
AmTest ID: 17-A007817



Aaron W. Young
Laboratory Manager

QC Summary for sample number: 17-A007817

DUPLICATES

SAMPLE #	ANALYTE	UNITS	SAMPLE VALUE	DUP VALUE	RPD
17-A007796	BOD	mg/l	4.6	5.1	10.
17-A007701	Chemical Oxygen Demand	mg/l	< 10	< 10	
17-A007813	Chemical Oxygen Demand	mg/l	< 10	< 10	
17-A007927	Chemical Oxygen Demand	mg/l	< 10	< 10	
17-A007824	Nitrate	mg/l	0.102	0.093	9.2
17-A007824	Nitrite	mg/l	< 0.005	< 0.005	

MATRIX SPIKES

SAMPLE #	ANALYTE	UNITS	SAMPLE VALUE	SMPL+ SPK	SPKAMT	RECOVERY
17-A007844	Total Organic Carbon	mg/l	0.89	5.9	5.0	100.20 %
17-A007848	Total Organic Carbon	mg/l	0.78	6.4	5.0	112.40 %
17-A007701	Chemical Oxygen Demand	mg/l	< 10	45.	50.	90.00 %
17-A007813	Chemical Oxygen Demand	mg/l	< 10	89.	100	89.00 %
17-A007927	Chemical Oxygen Demand	mg/l	< 10	86.	100	86.00 %
17-A007824	Nitrate	mg/l	0.102	4.93	5.00	96.56 %
17-A007824	Nitrite	mg/l	< 0.005	4.81	5.00	96.20 %
17-A007817	Total Sulfide	mg/l	< 0.05	0.54	0.50	108.00 %
17-A007817	Total Sulfide	mg/l	< 0.05	0.54	0.50	108.00 %

MATRIX SPIKE DUPLICATES

SAMPLE #	ANALYTE	UNITS	SAMPLE + SPK	MSD VALUE	RPD
Spike	Total Sulfide	mg/l	0.54	0.54	0.00

STANDARD REFERENCE MATERIALS

ANALYTE	UNITS	TRUE VALUE	MEASURED VALUE	RECOVERY
BOD	mg/l	200	200	100. %
Total Organic Carbon	mg/l	5.0	5.1	102. %
Chemical Oxygen Demand	mg/l	100	100	100. %
Chemical Oxygen Demand	mg/l	100	110	110. %
Chloride	mg/l	5.00	5.11	102. %
Nitrate	mg/l	5.00	4.92	98.4 %
Nitrate	mg/l	5.00	4.96	99.2 %
Nitrite	mg/l	5.00	5.00	100. %
Nitrite	mg/l	5.00	5.00	100. %
Total Sulfide	mg/l	1.0	1.0	100. %
Sulfate	mg/l	5.00	5.26	105. %

QC Summary for sample number: 17-A007817...

BLANKS

ANALYTE	UNITS	RESULT
BOD	mg/l	< 2
Total Organic Carbon	mg/l	< 0.5
Chemical Oxygen Demand	mg/l	< 10
Chemical Oxygen Demand	mg/l	< 10
Chloride	mg/l	< 0.05
Nitrate	mg/l	< 0.025
Nitrate	mg/l	< 0.025
Nitrite	mg/l	< 0.005
Nitrite	mg/l	< 0.005
Total Sulfide	mg/l	< 0.05
Sulfate	mg/l	< 0.1

SUBCONTRACT SAMPLE CHAIN OF CUSTODY

Send Report To Michael Erdahl

Company Friedman and Bruya, Inc.

Address 3012 16th Ave W

City, State, ZIP Seattle, WA 98119

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

SUBCONTRACTOR <i>Amest</i>	PROJECT NAME/NO. <u>705475</u>
PO # <u>E-650</u>	
REMARKS Please Email Results	

TURNAROUND TIME <input checked="" type="checkbox"/> Standard (2 Weeks) <input type="checkbox"/> RUSH
Rush charges authorized by: _____
SAMPLE DISPOSAL <input type="checkbox"/> Dispose after 30 days <input type="checkbox"/> Return samples <input type="checkbox"/> Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Matrix	# of jars	ANALYSES REQUESTED							Notes	
						Dioxins/Furans	EPH Sulfide XPH	Nitrate	Sulfate Chloride Alkalinity	TOC 9060M	COD	Nitrite		BOD
GW-4	1817	5/26/17	7:12	w	5		X	X	X	X	X	X	X	125°

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
<i>[Signature]</i>	<u>Michael Erdahl</u>	<u>Friedman and Bruya</u>	<u>5/26/17</u>	<u>1100</u>
Relinquished by:	<u>Michael Erdahl</u>			
Received by:	<u>[Signature]</u>	<u>MF</u>	<u>5/26/17</u>	<u>BOD</u>
Relinquished by:				
Received by:				

705475

SAMPLE CHAIN OF CUSTODY

ME 05.26.17

W2 / AFB

Report To Josh Benthal/ Eric Kates

Company Environmental Partners Inc

Address 1180 NW Maple St

City, State, ZIP Issaquah, WA

Phone _____ Email _____

SAMPLERS (signature) <u>[Signature]</u>	
PROJECT NAME	PO #
<u>69402</u>	
REMARKS	INVOICE TO

TURNAROUND TIME	Page # _____ of _____
<input checked="" type="checkbox"/> Standard Turnaround	
<input type="checkbox"/> RUSH	
Rush charges authorized by: _____	
SAMPLE DISPOSAL	
<input type="checkbox"/> Dispose after 30 days	
<input type="checkbox"/> Archive Samples	
<input type="checkbox"/> Other	

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED																								
						TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	<input checked="" type="checkbox"/> cVOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM	<input checked="" type="checkbox"/> Total Pb+Fe	<input checked="" type="checkbox"/> Dissolved Pb+Fe	<input checked="" type="checkbox"/> Methane, ethane, ethene	<input checked="" type="checkbox"/> TOC+COD	<input checked="" type="checkbox"/> Nitrate + Nitrite	<input checked="" type="checkbox"/> Sulfate + Chloride	<input checked="" type="checkbox"/> BOD	<input checked="" type="checkbox"/> Sulfide										
<u>GW-4</u>	<u>OLA-F</u>	<u>5/26/17</u>	<u>7:12</u>	<u>Water</u>	<u>16</u>								<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		

SIGNATURE		PRINT NAME		COMPANY	DATE	TIME
Relinquished by: <u>[Signature]</u>		<u>Elizabeth Weatherly</u>		<u>EPI</u>	<u>5/26/17</u>	<u>9:45</u>
Received by: <u>[Signature]</u>		<u>DD WD</u>		<u>Fe BT</u>	<u>5-26-17</u>	<u>9:47</u>
Relinquished by:						
Received by:						

Friedman & Bryya, Inc.
 3012 16th Avenue West
 Seattle, WA 98119-3029
 Ph. (206) 285-8282

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

June 1, 2017

Eric Koltes, Project Manager
Environmental Partners, Inc.
1180 NW Maple St, Suite 310
Issaquah, WA 98027

RE: 69402, F&BI 705476

Dear Mr Koltes:

Included are the results from the testing of material submitted on May 26, 2017 from the 69402, F&BI 705476 project. There are 11 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 have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
c: Cynthia Moon, Josh Bernthal
EPI0601R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on May 26, 2017 by Friedman & Bruya, Inc. from the Environmental Partners 69402, F&BI 705476 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>Environmental Partners</u>
705476 -01	GW-1:Bag
705476 -02	GW-7:Bag
705476 -03	GW-8:Bag
705476 -04	GW-9:Bag
705476 -05	GW-5:Bag
705476 -06	GW-6:Bag
705476 -07	GW-3:Bag

All quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	GW-1:Bag	Client:	Environmental Partners
Date Received:	05/26/17	Project:	69402, F&BI 705476
Date Extracted:	05/30/17	Lab ID:	705476-01
Date Analyzed:	05/30/17	Data File:	053009.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	98	85	117
Toluene-d8	99	91	108
4-Bromofluorobenzene	100	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	GW-7:Bag	Client:	Environmental Partners
Date Received:	05/26/17	Project:	69402, F&BI 705476
Date Extracted:	05/30/17	Lab ID:	705476-02
Date Analyzed:	05/30/17	Data File:	053010.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	85	117
Toluene-d8	99	91	108
4-Bromofluorobenzene	99	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	1.0

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	GW-8:Bag	Client:	Environmental Partners
Date Received:	05/26/17	Project:	69402, F&BI 705476
Date Extracted:	05/30/17	Lab ID:	705476-03
Date Analyzed:	05/30/17	Data File:	053011.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	85	117
Toluene-d8	102	91	108
4-Bromofluorobenzene	98	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	14

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	GW-9:Bag	Client:	Environmental Partners
Date Received:	05/26/17	Project:	69402, F&BI 705476
Date Extracted:	05/30/17	Lab ID:	705476-04
Date Analyzed:	05/30/17	Data File:	053012.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	85	117
Toluene-d8	101	91	108
4-Bromofluorobenzene	99	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	1.1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	GW-5:Bag	Client:	Environmental Partners
Date Received:	05/26/17	Project:	69402, F&BI 705476
Date Extracted:	05/30/17	Lab ID:	705476-05
Date Analyzed:	05/30/17	Data File:	053013.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	85	117
Toluene-d8	100	91	108
4-Bromofluorobenzene	99	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	2.3

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	GW-6:Bag	Client:	Environmental Partners
Date Received:	05/26/17	Project:	69402, F&BI 705476
Date Extracted:	05/30/17	Lab ID:	705476-06
Date Analyzed:	05/30/17	Data File:	053014.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	98	85	117
Toluene-d8	101	91	108
4-Bromofluorobenzene	100	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	5.6

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	GW-3:Bag	Client:	Environmental Partners
Date Received:	05/26/17	Project:	69402, F&BI 705476
Date Extracted:	05/30/17	Lab ID:	705476-07
Date Analyzed:	05/30/17	Data File:	053015.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	98	85	117
Toluene-d8	100	91	108
4-Bromofluorobenzene	100	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Method Blank	Client:	Environmental Partners
Date Received:	Not Applicable	Project:	69402, F&BI 705476
Date Extracted:	05/30/17	Lab ID:	07-1049 mb
Date Analyzed:	05/30/17	Data File:	053008.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	85	117
Toluene-d8	99	91	108
4-Bromofluorobenzene	97	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 06/01/17

Date Received: 05/26/17

Project: 69402, F&BI 705476

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER
SAMPLES FOR VOLATILES BY EPA METHOD 8260C**

Laboratory Code: 705476-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Acceptance Criteria
Vinyl chloride	ug/L (ppb)	50	<0.2	99	61-139
Chloroethane	ug/L (ppb)	50	<1	97	55-149
1,1-Dichloroethene	ug/L (ppb)	50	<1	101	71-123
Methylene chloride	ug/L (ppb)	50	<5	102	61-126
trans-1,2-Dichloroethene	ug/L (ppb)	50	<1	100	72-122
1,1-Dichloroethane	ug/L (ppb)	50	<1	97	79-113
cis-1,2-Dichloroethene	ug/L (ppb)	50	<1	96	63-126
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	<1	96	70-119
1,1,1-Trichloroethane	ug/L (ppb)	50	<1	99	75-121
Trichloroethene	ug/L (ppb)	50	<1	91	73-122
Tetrachloroethene	ug/L (ppb)	50	<1	91	72-113

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Vinyl chloride	ug/L (ppb)	50	96	96	70-128	0
Chloroethane	ug/L (ppb)	50	93	96	66-149	3
1,1-Dichloroethene	ug/L (ppb)	50	99	100	75-119	1
Methylene chloride	ug/L (ppb)	50	93	94	63-132	1
trans-1,2-Dichloroethene	ug/L (ppb)	50	97	98	76-118	1
1,1-Dichloroethane	ug/L (ppb)	50	93	95	77-119	2
cis-1,2-Dichloroethene	ug/L (ppb)	50	94	94	76-119	0
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	94	94	78-114	0
1,1,1-Trichloroethane	ug/L (ppb)	50	95	97	80-116	2
Trichloroethene	ug/L (ppb)	50	90	90	72-119	0
Tetrachloroethene	ug/L (ppb)	50	91	91	78-109	0

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.

705476

SAMPLE CHAIN OF CUSTODY

ME 05-26-17

1/12

Report To Eric Wotter/Josh Bernthal

Company EP1

Address 1180 NW Maple St

City, State, ZIP Issaquah, WA

Phone _____ Email _____

SAMPLE #S (signature) <u>S.D. Weber</u>	PROJECT NAME <u>69402</u>	PO #
REMARKS	INVOICE TO	

Page # _____ of _____

TURNAROUND TIME
 Standard Turnaround
 RUSH
 Rush charges authorized by: _____

SAMPLE DISPOSAL
 Dispose after 30 days
 Archive Samples
 Other _____

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED							Notes		
						TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM			
GW-1: Bag	01 A.D	5/26/17	6:06	Water	4					X					
GW-7: Bag	02		6:20							X					
GW-8: Bag	03		6:28							X					
GW-9: Bag	04		6:34							X					
GW-5: Bag	05		7:03							X					
GW-6: Bag	06		7:45							X					
GW-3: Bag	07		7:54							X					

Samples received at 4 °C

Friedman & Bruya, Inc.

3012 16th Avenue West

Seattle, WA 98119-3029

Ph. (206) 285-8282

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: <u>S.D. Weber</u>	<u>Eric Wotter Weber Bruya</u>	<u>EP1</u>	<u>5/26/17</u>	<u>9:45</u>
Received by: <u>[Signature]</u>	<u>DDVD</u>	<u>F&B</u>	<u>5-26-17</u>	<u>9:41</u>
Relinquished by:				
Received by:				

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

June 13, 2017

Eric Koltes, Project Manager
Environmental Partners, Inc.
1180 NW Maple St, Suite 310
Issaquah, WA 98027

RE: 69402, F&BI 705507

Dear Mr Koltes:

Included are the results from the testing of material submitted on May 30, 2017 from the 69402, F&BI 705507 project. There are 19 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 have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
c: Cynthia Moon, Josh Bernthal
EPI0613R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on May 30, 2017 by Friedman & Bruya, Inc. from the Environmental Partners 69402, F&BI 705507 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>Environmental Partners</u>
705507 -01	MW-3
705507 -02	MW-2

The samples were sent to Amtest for TOC, chloride, sulfate, sulfide, nitrate, nitrite, BOD, and COD analyses. In addition, the samples were sent to Fremont for carbon dioxide analysis. The reports are included.

All quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	MW-3	Client:	Environmental Partners
Date Received:	05/30/17	Project:	69402, F&BI 705507
Date Extracted:	05/31/17	Lab ID:	705507-01 x10
Date Analyzed:	05/31/17	Data File:	705507-01 x10.057
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	30,200
Manganese	4,490

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	MW-2	Client:	Environmental Partners
Date Received:	05/30/17	Project:	69402, F&BI 705507
Date Extracted:	05/31/17	Lab ID:	705507-02
Date Analyzed:	05/31/17	Data File:	705507-02.051
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	59.6
Manganese	4.30

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	Environmental Partners
Date Received:	Not Applicable	Project:	69402, F&BI 705507
Date Extracted:	05/31/17	Lab ID:	I7-294 mb2
Date Analyzed:	05/31/17	Data File:	I7-294 mb2.043
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	<50
Manganese	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	MW-3	Client:	Environmental Partners
Date Received:	05/30/17	Project:	69402, F&BI 705507
Date Extracted:	05/31/17	Lab ID:	705507-01 x10
Date Analyzed:	05/31/17	Data File:	705507-01 x10.056
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	28,100
Manganese	4,530

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	MW-2	Client:	Environmental Partners
Date Received:	05/30/17	Project:	69402, F&BI 705507
Date Extracted:	05/31/17	Lab ID:	705507-02
Date Analyzed:	05/31/17	Data File:	705507-02.053
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	<50
Manganese	3.76

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	Environmental Partners
Date Received:	Not Applicable	Project:	69402, F&BI 705507
Date Extracted:	05/31/17	Lab ID:	I7-295 mb2
Date Analyzed:	05/31/17	Data File:	I7-295 mb2.042
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	<50
Manganese	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-3	Client:	Environmental Partners
Date Received:	05/30/17	Project:	69402, F&BI 705507
Date Extracted:	06/01/17	Lab ID:	705507-01
Date Analyzed:	06/01/17	Data File:	060109.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	57	121
Toluene-d8	100	63	127
4-Bromofluorobenzene	102	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	9.4
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	2.1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-2	Client:	Environmental Partners
Date Received:	05/30/17	Project:	69402, F&BI 705507
Date Extracted:	06/01/17	Lab ID:	705507-02
Date Analyzed:	06/01/17	Data File:	060110.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	98	57	121
Toluene-d8	101	63	127
4-Bromofluorobenzene	103	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Method Blank	Client:	Environmental Partners
Date Received:	Not Applicable	Project:	69402, F&BI 705507
Date Extracted:	06/01/17	Lab ID:	07-1157 mb
Date Analyzed:	06/01/17	Data File:	060107.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	57	121
Toluene-d8	101	63	127
4-Bromofluorobenzene	104	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Gasses By RSK 175

Client Sample ID:	MW-3	Client:	Environmental Partners
Date Received:	05/30/17	Project:	69402, F&BI 705507
Date Extracted:	06/01/17	Lab ID:	705507-01
Date Analyzed:	06/01/17	Data File:	007F0701.D
Matrix:	Water	Instrument:	GC8
Units:	ug/L (ppb)	Operator:	JS

Compounds:	Concentration ug/L (ppb)
Methane	3,300 ve
Ethane	<10
Ethene	<10

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Gasses By RSK 175

Client Sample ID:	MW-3	Client:	Environmental Partners
Date Received:	05/30/17	Project:	69402, F&BI 705507
Date Extracted:	06/01/17	Lab ID:	705507-01 1/10
Date Analyzed:	06/01/17	Data File:	006F0601.D
Matrix:	Water	Instrument:	GC8
Units:	ug/L (ppb)	Operator:	JS

Compounds:	Concentration ug/L (ppb)
Methane	3,300
Ethane	<100
Ethene	<100

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Gasses By RSK 175

Client Sample ID:	MW-2	Client:	Environmental Partners
Date Received:	05/30/17	Project:	69402, F&BI 705507
Date Extracted:	06/01/17	Lab ID:	705507-02
Date Analyzed:	06/01/17	Data File:	008F0801.D
Matrix:	Water	Instrument:	GC8
Units:	ug/L (ppb)	Operator:	JS

Compounds:	Concentration ug/L (ppb)
Methane	<5
Ethane	<10
Ethene	<10

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Gasses By RSK 175

Client Sample ID:	Method Blank	Client:	Environmental Partners
Date Received:	Not Applicable	Project:	69402, F&BI 705507
Date Extracted:	06/01/17	Lab ID:	07-1158 mb
Date Analyzed:	06/01/17	Data File:	005F0501.D
Matrix:	Water	Instrument:	GC8
Units:	ug/L (ppb)	Operator:	JS

Compounds:	Concentration ug/L (ppb)
Methane	<5
Ethane	<10
Ethene	<10

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 06/13/17

Date Received: 05/30/17

Project: 69402, F&BI 705507

**QUALITY ASSURANCE RESULTS
FOR THE ANALYSIS OF WATER SAMPLES
FOR TOTAL METALS USING EPA METHOD 200.8**

Laboratory Code: 705475-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Iron	ug/L (ppb)	100	73.3	97 b	121 b	70-130	22 b
Manganese	ug/L (ppb)	20	118	70 b	139 b	70-130	66 b

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Iron	ug/L (ppb)	100	105	85-115
Manganese	ug/L (ppb)	20	113	85-115

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 06/13/17

Date Received: 05/30/17

Project: 69402, F&BI 705507

**QUALITY ASSURANCE RESULTS
FOR THE ANALYSIS OF WATER SAMPLES
FOR DISSOLVED METALS USING EPA METHOD 200.8**

Laboratory Code: 705461-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Iron	ug/L (ppb)	100	1,880	101 b	183 b	70-130	58 b
Manganese	ug/L (ppb)	20	3,820	0 b	1200 b	70-130	200 b

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Iron	ug/L (ppb)	100	100	85-115
Manganese	ug/L (ppb)	20	112	85-115

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 06/13/17

Date Received: 05/30/17

Project: 69402, F&BI 705507

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER
SAMPLES FOR VOLATILES BY EPA METHOD 8260C**

Laboratory Code: 705507-02 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Acceptance Criteria
Vinyl chloride	ug/L (ppb)	50	<0.2	100	36-166
Chloroethane	ug/L (ppb)	50	<1	103	46-160
1,1-Dichloroethene	ug/L (ppb)	50	<1	99	60-136
Methylene chloride	ug/L (ppb)	50	<5	96	67-132
trans-1,2-Dichloroethene	ug/L (ppb)	50	<1	101	72-129
1,1-Dichloroethane	ug/L (ppb)	50	<1	97	70-128
cis-1,2-Dichloroethene	ug/L (ppb)	50	<1	99	71-127
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	<1	97	69-133
1,1,1-Trichloroethane	ug/L (ppb)	50	<1	99	60-146
Trichloroethene	ug/L (ppb)	50	<1	96	66-135
Tetrachloroethene	ug/L (ppb)	50	<1	95	10-226

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Vinyl chloride	ug/L (ppb)	50	106	105	50-154	1
Chloroethane	ug/L (ppb)	50	110	107	58-146	3
1,1-Dichloroethene	ug/L (ppb)	50	106	101	67-136	5
Methylene chloride	ug/L (ppb)	50	106	98	39-148	8
trans-1,2-Dichloroethene	ug/L (ppb)	50	108	102	68-128	6
1,1-Dichloroethane	ug/L (ppb)	50	103	98	79-121	5
cis-1,2-Dichloroethene	ug/L (ppb)	50	105	99	80-123	6
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	104	99	73-132	5
1,1,1-Trichloroethane	ug/L (ppb)	50	105	101	83-130	4
Trichloroethene	ug/L (ppb)	50	103	98	80-120	5
Tetrachloroethene	ug/L (ppb)	50	102	97	76-121	5

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 06/13/17

Date Received: 05/30/17

Project: 69402, F&BI 705507

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF
WATER SAMPLES FOR DISSOLVED GASSES
USING METHOD RSK 175**

Laboratory Code: 706013-05 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference (Limit 20)
Methane	ug/L (ppb)	25	22	13
Ethane	ug/L (ppb)	<10	<10	nm
Ethene	ug/L (ppb)	<10	<10	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Methane	ug/L (ppb)	59	79	77	50-150	3
Ethane	ug/L (ppb)	110	71	71	50-150	0
Ethene	ug/L (ppb)	102	95	93	50-150	2

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.



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: 705507
Work Order Number: 1705351

June 02, 2017

Attention Michael Erdahl:

Fremont Analytical, Inc. received 2 sample(s) on 5/31/2017 for the analyses presented in the following report.

Total Alkalinity by SM 2320B

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,

A handwritten signature in black ink, appearing to read "Mike C. Ridgeway", written in a cursive style.

Mike Ridgeway
Laboratory Director

CLIENT: Friedman & Bruya
Project: 705507
Work Order: 1705351

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1705351-001	MW-3	05/30/2017 12:07 PM	05/31/2017 10:19 AM
1705351-002	MW-2	05/30/2017 1:27 PM	05/31/2017 10:19 AM

CLIENT: Friedman & Bruya

Project: 705507

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").

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 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: 705507

Lab ID: 1705351-001

Collection Date: 5/30/2017 12:07:00 PM

Client Sample ID: MW-3

Matrix: Water

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Total Alkalinity by SM 2320B

Batch ID: R36524 Analyst: MW

Carbon dioxide	445	5.00		mg/L	1	6/1/2017 12:25:00 PM
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Lab ID: 1705351-002

Collection Date: 5/30/2017 1:27:00 PM

Client Sample ID: MW-2

Matrix: Water

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Total Alkalinity by SM 2320B

Batch ID: R36524 Analyst: MW

Carbon dioxide	35.1	5.00		mg/L	1	6/1/2017 12:30:00 PM
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Work Order: 1705351
 CLIENT: Friedman & Bruya
 Project: 705507

QC SUMMARY REPORT
Total Alkalinity by SM 2320B

Sample ID MB-R36524	SampType: MBLK	Units: mg/L	Prep Date: 6/1/2017	RunNo: 36524							
Client ID: MBLKW	Batch ID: R36524		Analysis Date: 6/1/2017	SeqNo: 700651							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	ND	2.50									

Sample ID LCS-R36524	SampType: LCS	Units: mg/L	Prep Date: 6/1/2017	RunNo: 36524							
Client ID: LCSW	Batch ID: R36524		Analysis Date: 6/1/2017	SeqNo: 700652							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	113	2.50	100.0	0	113	80	120				

Sample ID 1705343-001FDUP	SampType: DUP	Units: mg/L	Prep Date: 6/1/2017	RunNo: 36524							
Client ID: BATCH	Batch ID: R36524		Analysis Date: 6/1/2017	SeqNo: 700654							
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	2,520	5.00						2,572	2.06	20	
Alkalinity, Carbonate (As CaCO3)	ND	5.00						0		20	
Alkalinity, Hydroxide (As CaCO3)	ND	5.00						0		20	
Alkalinity, Total (As CaCO3)	2,520	2.50						2,572	2.06	20	

Client Name: **FB**
 Logged by: **Erica Silva**

 Work Order Number: **1705351**
 Date Received: **5/31/2017 10:19:00 AM**
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
No cooler present
4. Shipping container/cooler in good condition? Yes No
5. Custody Seals present on shipping container/cooler?
 (Refer to comments for Custody Seals not intact) Yes No Not 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:	<input type="text"/>	Date:	<input type="text"/>
By Whom:	<input type="text"/>	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	<input type="text"/>		
Client Instructions:	<input type="text"/>		

19. Additional remarks:

Item Information

Item #	Temp °C
Sample	2.5

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

SUBCONTRACT SAMPLE CHAIN OF CUSTODY

1705351

Page # 1 of 1

SUBCONTRACTOR Frimo+

PROJECT NAME/NO. 705507 PO # E-653

REMARKS

Please Email Results


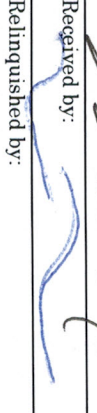
TURNAROUND TIME
 Standard (2 Weeks)
 RUSH
 Rush charges authorized by: _____

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

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

Sample ID	Lab ID	Date Sampled	Time Sampled	Matrix	# of jars	ANALYSES REQUESTED							Notes					
						Dioxins/Furans	EPH	VPH	Nitrate	Sulfate	Alkalinity	TOC-9060M						
MW-3		5/30/17	1207	water														
MW-2		↓	1317	↓								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
Received by: 	Michael Erdahl	Friedman and Bruya	5/31/17	09:00AM
Relinquished by: 	Brianna Barnes	FBI	5/31/17	1019
Received by: _____				



Am Test Inc.
13600 NE 126TH PL
Suite C
Kirkland, WA 98034
(425) 885-1664

Professional
Analytical
Services

Jun 9 2017
Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Attention: MICHAEL ERDAHL

Dear MICHAEL ERDAHL:

Enclosed please find the analytical data for your project.

The following is a cross correlation of client and laboratory identifications for your convenience.

CLIENT ID	MATRIX	AMTEST ID	TEST
MW-3	Water	17-A007927	DEM, MIN, NUT, CONV
MW-2	Water	17-A007928	DEM, MIN, NUT, CONV

Your samples were received on Wednesday, May 31, 2017. At the time of receipt, the samples were logged in and properly maintained prior to the subsequent analysis.

The analytical procedures used at AmTest are well documented and are typically derived from the protocols of the EPA, USDA, FDA or the Army Corps of Engineers.

Following the analytical data you will find the Quality Control (QC) results.

Please note that the detection limits that are listed in the body of the report refer to the Practical Quantitation Limits (PQL's), as opposed to the Method Detection Limits (MDL's).

If you should have any questions pertaining to the data package, please feel free to contact me.

Sincerely,


Aaron W. Young
Laboratory Manager

Project #: 705507
PO Number: E-657

BACT = Bacteriological
CONV = Conventionals

MET = Metals
ORG = Organics

NUT=Nutrients
DEM=Demand

MIN=Minerals

Am Test Inc.
 13600 NE 126TH PL
 Suite C
 Kirkland, WA 98034
 (425) 885-1664
 www.amtestlab.com



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 Analytical
 Services*

ANALYSIS REPORT

Friedman & Bruya, Inc.
 3012 16th Avenue West
 Seattle, WA 98119-2029
 Attention: MICHAEL ERDAHL
 Project #: 705507
 PO Number: E-657
 All results reported on an as received basis.

Date Received: 05/31/17
 Date Reported: 6/ 9/17

AMTEST Identification Number 17-A007927
Client Identification MW-3
Sampling Date 05/30/17, 12:07

Conventionals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Total Sulfide	< 0.05	mg/l		0.05	SM 4500-S2-D	SW	06/05/17

Demand

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
BOD	< 2	mg/l		2	SM 5210B	NG	06/01/17
Total Organic Carbon	9.3	mg/l		0.5	SM 5310B	SW	06/06/17
Chemical Oxygen Demand	< 10	mg/l		10	EPA 410.4	SW	06/02/17

Minerals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Chloride	4.10	mg/l		0.05	EPA 300.0	JC	05/31/17
Sulfate	22.4	mg/l		0.1	EPA 300.0	JC	06/01/17

Nutrients

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Nitrite	< 0.005	mg/l		0.005	EPA 300.0	JC	05/31/17
Nitrate	7.70	mg/l		0.025	EPA 300.0	JC	05/31/17

AMTEST Identification Number 17-A007928
Client Identification MW-2
Sampling Date 05/30/17, 13:27

Conventionals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Total Sulfide	< 0.05	mg/l		0.05	SM 4500-S2-D	SW	06/05/17

Demand


PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
BOD	98.	mg/l		2	SM 5210B	NG	06/01/17
Total Organic Carbon	72.	mg/l		0.5	SM 5310B	SW	06/06/17
Chemical Oxygen Demand	270	mg/l		10	EPA 410.4	SW	06/02/17

Minerals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Chloride	27.3	mg/l		0.05	EPA 300.0	JC	06/01/17
Sulfate	0.77	mg/l		0.1	EPA 300.0	JC	05/31/17

Nutrients

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Nitrite	< 0.005	mg/l		0.005	EPA 300.0	JC	05/31/17
Nitrate	< 0.025	mg/l		0.025	EPA 300.0	JC	05/31/17


Aaron W. Young
Laboratory Manager

QC Summary for sample numbers: 17-A007927 to 17-A007928

DUPLICATES

SAMPLE #	ANALYTE	UNITS	SAMPLE VALUE	DUP VALUE	RPD
17-A007923	BOD	mg/l	160	150	6.5
17-A007701	Chemical Oxygen Demand	mg/l	< 10	< 10	
17-A007813	Chemical Oxygen Demand	mg/l	< 10	< 10	
17-A007927	Chemical Oxygen Demand	mg/l	< 10	< 10	
17-A007930	Nitrate	mg/l	0.627	0.610	2.7
17-A007930	Nitrite	mg/l	< 0.005	< 0.005	

MATRIX SPIKES

SAMPLE #	ANALYTE	UNITS	SAMPLE VALUE	SMPL+ SPK	SPKAMT	RECOVERY
17-A007844	Total Organic Carbon	mg/l	0.89	5.9	5.0	100.20 %
17-A007848	Total Organic Carbon	mg/l	0.78	6.4	5.0	112.40 %
17-A007701	Chemical Oxygen Demand	mg/l	< 10	45.	50.	90.00 %
17-A007813	Chemical Oxygen Demand	mg/l	< 10	89.	100	89.00 %
17-A007927	Chemical Oxygen Demand	mg/l	< 10	86.	100	86.00 %
17-A007930	Nitrate	mg/l	0.627	2.75	2.00	106.15 %
17-A007930	Nitrite	mg/l	< 0.005	1.83	2.00	91.50 %
17-A008102	Total Sulfide	mg/l	< 0.05	0.53	0.50	106.00 %
17-A008102	Total Sulfide	mg/l	< 0.05	0.56	0.50	112.00 %

MATRIX SPIKE DUPLICATES

SAMPLE #	ANALYTE	UNITS	SAMPLE + SPK	MSD VALUE	RPD
Spike	Total Sulfide	mg/l	0.53	0.56	5.5

STANDARD REFERENCE MATERIALS

ANALYTE	UNITS	TRUE VALUE	MEASURED VALUE	RECOVERY
BOD	mg/l	200	180	90.0 %
Total Organic Carbon	mg/l	5.0	5.1	102. %
Chemical Oxygen Demand	mg/l	100	100	100. %
Chemical Oxygen Demand	mg/l	100	110	110. %
Chloride	mg/l	5.00	5.20	104. %
Chloride	mg/l	5.00	4.88	97.6 %
Nitrate	mg/l	5.00	4.97	99.4 %
Nitrite	mg/l	5.00	5.00	100. %
Total Sulfide	mg/l	1.0	0.99	99.0 %
Sulfate	mg/l	5.00	5.45	109. %
Sulfate	mg/l	5.00	5.17	103. %

QC Summary for sample numbers: 17-A007927 to 17-A007928...

BLANKS

ANALYTE	UNITS	RESULT
BOD	mg/l	< 2
Total Organic Carbon	mg/l	< 0.5
Chemical Oxygen Demand	mg/l	< 10
Chemical Oxygen Demand	mg/l	< 10
Chloride	mg/l	0.07
Chloride	mg/l	< 0.05
Nitrate	mg/l	< 0.025
Nitrite	mg/l	< 0.005
Total Sulfide	mg/l	< 0.05
Sulfate	mg/l	< 0.1
Sulfate	mg/l	< 0.1

SUBCONTRACT SAMPLE CHAIN OF CUSTODY

Send Report To Michael Erdahl

Company Friedman and Bruya, Inc.

Address 3012 16th Ave W

City, State, ZIP Seattle, WA 98119

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

SUBCONTRACTOR <u>Amtest</u>	
PROJECT NAME/NO. <u>705501</u>	PO # <u>E-657</u>
REMARKS <u>Please Email Results</u>	

TURNAROUND TIME <input checked="" type="checkbox"/> Standard (2 Weeks) <input type="checkbox"/> RUSH
Rush charges authorized by: _____
SAMPLE DISPOSAL <input type="checkbox"/> Dispose after 30 days <input type="checkbox"/> Return samples <input type="checkbox"/> Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Matrix	# of jars	ANALYSES REQUESTED							Notes	
						Dioxins/Furans	EPH Sulfide APH	Nitrate	Sulfate	chloride Alkalinity	TOC-9060M-	COD		Nitrite
MM-3	7927	5/20/17	1207	W	5		X	X	X	X	X	X		
MM-2	28	↓	1327	↓	5		X	X	X	X	X	X		

Received by: [Signature] SIGNATURE

Michael Erdahl PRINT NAME

Friedman and Bruya COMPANY

S/21/17 DATE

09:00 AM TIME

Received by: _____

Received by: _____

Received by: _____

Fedex

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

Report To Josh Bernthal / Eric Kohler
 Company EPI
 Address 1182 NW Maple St
 City, State, ZIP Issaquah, WA 98027
 Phone _____ Email _____

SAMPLERS (signature) [Signature]
 PROJECT NAME 69402
 PO # _____
 REMARKS _____
 INVOICE TO _____
 ANALYSES REQUESTED
 Standard Turnaround
 RUSH
 Rush charges authorized by: _____
 SAMPLE DISPOSAL
 Dispose after 30 days
 Archive Samples
 Other

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED															
						TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM	Total Pb+Fe	Dissolved Pb+Fe	Dissolved methanol, ethanol, ethane	TOC+COD	Nitrate+Nitrite	Sulfate and Chloride	BOD	Sulfide	Carbon Dioxide
MW-3	01 A-P	5/30/17	1207	Water	16					X			X	X	X	X	X	X	X	X	X
MW-2	02 A-P	5/30/17	1327	Water	16					X			X	X	X	X	X	X	X	X	X
Samples received at <u>4</u> °C																					

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

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
<u>[Signature]</u>	Elizabeth Webber-Bryna	EPI	5/30/17	1450
<u>[Signature]</u>	Jon Shimazaki	FBI		
Received by:				

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

July 3, 2017

Josh Bernthal, Project Manager
Environmental Partners, Inc.
1180 NW Maple St, Suite 310
Issaquah, WA 98027

RE: 69402, F&BI 706447

Dear Mr Bernthal:

Included are the results from the testing of material submitted on June 28, 2017 from the 69402, F&BI 706447 project. There are 18 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 have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
c: Cynthia Moon, Charles McFadden
EPI0703R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on June 28, 2017 by Friedman & Bruya, Inc. from the Environmental Partners 69402, F&BI 706447 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>Environmental Partners</u>
706447 -01	MW-16:5
706447 -02	MW-16:10
706447 -03	MW-16:20
706447 -04	MW-16:25
706447 -05	MW-17:5
706447 -06	MW-17:10
706447 -07	MW-17:15
706447 -08	MW-17:20
706447 -09	MW-17:25
706447 -10	MW-16
706447 -11	MW-17
706447 -12	DPT-1
706447 -13	MW-18
706447 -14	MW-18:5
706447 -15	MW-18:10
706447 -16	MW-18:15
706447 -17	MW-18:20
706447 -18	MW-18:25
706447 -19	DPT-1:5
706447 -20	DPT-1:10
706447 -21	DPT-1:12.5
706447 -22	DPT-1:15
706447 -23	DPT-1:20
706447 -24	DPT-2:5
706447 -25	DPT-2:12.5
706447 -26	DPT-2:15
706447 -27	DPT-3:10
706447 -28	DPT-3:12.5
706447 -29	DPT-3:15

All quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	DPT-1:5	Client:	Environmental Partners
Date Received:	06/28/17	Project:	69402, F&BI 706447
Date Extracted:	06/28/17	Lab ID:	706447-19
Date Analyzed:	06/28/17	Data File:	062829.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	62	142
Toluene-d8	107	55	145
4-Bromofluorobenzene	98	65	139

Compounds:	Concentration mg/kg (ppm)
Vinyl chloride	<0.05
Chloroethane	<0.5
1,1-Dichloroethene	<0.05
Methylene chloride	<0.5
trans-1,2-Dichloroethene	<0.05
1,1-Dichloroethane	<0.05
cis-1,2-Dichloroethene	<0.05
1,2-Dichloroethane (EDC)	<0.05
1,1,1-Trichloroethane	<0.05
Trichloroethene	<0.02
Tetrachloroethene	<0.025

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	DPT-1:12.5	Client:	Environmental Partners
Date Received:	06/28/17	Project:	69402, F&BI 706447
Date Extracted:	06/28/17	Lab ID:	706447-21
Date Analyzed:	06/28/17	Data File:	062830.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	62	142
Toluene-d8	105	55	145
4-Bromofluorobenzene	99	65	139

Compounds:	Concentration mg/kg (ppm)
Vinyl chloride	<0.05
Chloroethane	<0.5
1,1-Dichloroethene	<0.05
Methylene chloride	<0.5
trans-1,2-Dichloroethene	<0.05
1,1-Dichloroethane	<0.05
cis-1,2-Dichloroethene	<0.05
1,2-Dichloroethane (EDC)	<0.05
1,1,1-Trichloroethane	<0.05
Trichloroethene	<0.02
Tetrachloroethene	<0.025

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	DPT-1:15	Client:	Environmental Partners
Date Received:	06/28/17	Project:	69402, F&BI 706447
Date Extracted:	06/28/17	Lab ID:	706447-22
Date Analyzed:	06/28/17	Data File:	062828.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	62	142
Toluene-d8	107	55	145
4-Bromofluorobenzene	100	65	139

Compounds:	Concentration mg/kg (ppm)
Vinyl chloride	<0.05
Chloroethane	<0.5
1,1-Dichloroethene	<0.05
Methylene chloride	<0.5
trans-1,2-Dichloroethene	<0.05
1,1-Dichloroethane	<0.05
cis-1,2-Dichloroethene	<0.05
1,2-Dichloroethane (EDC)	<0.05
1,1,1-Trichloroethane	<0.05
Trichloroethene	<0.02
Tetrachloroethene	<0.025

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	DPT-2:5	Client:	Environmental Partners
Date Received:	06/28/17	Project:	69402, F&BI 706447
Date Extracted:	06/28/17	Lab ID:	706447-24
Date Analyzed:	06/28/17	Data File:	062813.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	62	142
Toluene-d8	105	55	145
4-Bromofluorobenzene	100	65	139

Compounds:	Concentration mg/kg (ppm)
Vinyl chloride	<0.05
Chloroethane	<0.5
1,1-Dichloroethene	<0.05
Methylene chloride	<0.5
trans-1,2-Dichloroethene	<0.05
1,1-Dichloroethane	<0.05
cis-1,2-Dichloroethene	<0.05
1,2-Dichloroethane (EDC)	<0.05
1,1,1-Trichloroethane	<0.05
Trichloroethene	<0.02
Tetrachloroethene	<0.025

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	DPT-2:12.5	Client:	Environmental Partners
Date Received:	06/28/17	Project:	69402, F&BI 706447
Date Extracted:	06/28/17	Lab ID:	706447-25
Date Analyzed:	06/28/17	Data File:	062814.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	62	142
Toluene-d8	106	55	145
4-Bromofluorobenzene	100	65	139

Compounds:	Concentration mg/kg (ppm)
Vinyl chloride	<0.05
Chloroethane	<0.5
1,1-Dichloroethene	<0.05
Methylene chloride	<0.5
trans-1,2-Dichloroethene	<0.05
1,1-Dichloroethane	<0.05
cis-1,2-Dichloroethene	<0.05
1,2-Dichloroethane (EDC)	<0.05
1,1,1-Trichloroethane	<0.05
Trichloroethene	<0.02
Tetrachloroethene	<0.025

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	DPT-2:15	Client:	Environmental Partners
Date Received:	06/28/17	Project:	69402, F&BI 706447
Date Extracted:	06/28/17	Lab ID:	706447-26
Date Analyzed:	06/28/17	Data File:	062815.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	62	142
Toluene-d8	107	55	145
4-Bromofluorobenzene	98	65	139

Compounds:	Concentration mg/kg (ppm)
Vinyl chloride	<0.05
Chloroethane	<0.5
1,1-Dichloroethene	<0.05
Methylene chloride	<0.5
trans-1,2-Dichloroethene	<0.05
1,1-Dichloroethane	<0.05
cis-1,2-Dichloroethene	<0.05
1,2-Dichloroethane (EDC)	<0.05
1,1,1-Trichloroethane	<0.05
Trichloroethene	<0.02
Tetrachloroethene	<0.025

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	DPT-3:10	Client:	Environmental Partners
Date Received:	06/28/17	Project:	69402, F&BI 706447
Date Extracted:	06/28/17	Lab ID:	706447-27
Date Analyzed:	06/28/17	Data File:	062816.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	62	142
Toluene-d8	107	55	145
4-Bromofluorobenzene	99	65	139

Compounds:	Concentration mg/kg (ppm)
Vinyl chloride	<0.05
Chloroethane	<0.5
1,1-Dichloroethene	<0.05
Methylene chloride	<0.5
trans-1,2-Dichloroethene	<0.05
1,1-Dichloroethane	<0.05
cis-1,2-Dichloroethene	<0.05
1,2-Dichloroethane (EDC)	<0.05
1,1,1-Trichloroethane	<0.05
Trichloroethene	<0.02
Tetrachloroethene	<0.025

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	DPT-3:12.5	Client:	Environmental Partners
Date Received:	06/28/17	Project:	69402, F&BI 706447
Date Extracted:	06/28/17	Lab ID:	706447-28
Date Analyzed:	06/28/17	Data File:	062817.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	62	142
Toluene-d8	106	55	145
4-Bromofluorobenzene	98	65	139

Compounds:	Concentration mg/kg (ppm)
Vinyl chloride	<0.05
Chloroethane	<0.5
1,1-Dichloroethene	<0.05
Methylene chloride	<0.5
trans-1,2-Dichloroethene	<0.05
1,1-Dichloroethane	<0.05
cis-1,2-Dichloroethene	<0.05
1,2-Dichloroethane (EDC)	<0.05
1,1,1-Trichloroethane	<0.05
Trichloroethene	<0.02
Tetrachloroethene	<0.025

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	DPT-3:15	Client:	Environmental Partners
Date Received:	06/28/17	Project:	69402, F&BI 706447
Date Extracted:	06/28/17	Lab ID:	706447-29
Date Analyzed:	06/28/17	Data File:	062818.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	62	142
Toluene-d8	105	55	145
4-Bromofluorobenzene	100	65	139

Compounds:	Concentration mg/kg (ppm)
Vinyl chloride	<0.05
Chloroethane	<0.5
1,1-Dichloroethene	<0.05
Methylene chloride	<0.5
trans-1,2-Dichloroethene	<0.05
1,1-Dichloroethane	<0.05
cis-1,2-Dichloroethene	<0.05
1,2-Dichloroethane (EDC)	<0.05
1,1,1-Trichloroethane	<0.05
Trichloroethene	<0.02
Tetrachloroethene	<0.025

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Method Blank	Client:	Environmental Partners
Date Received:	Not Applicable	Project:	69402, F&BI 706447
Date Extracted:	06/28/17	Lab ID:	07-1338 mb
Date Analyzed:	06/28/17	Data File:	062806.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	62	142
Toluene-d8	105	55	145
4-Bromofluorobenzene	100	65	139

Compounds:	Concentration mg/kg (ppm)
Vinyl chloride	<0.05
Chloroethane	<0.5
1,1-Dichloroethene	<0.05
Methylene chloride	<0.5
trans-1,2-Dichloroethene	<0.05
1,1-Dichloroethane	<0.05
cis-1,2-Dichloroethene	<0.05
1,2-Dichloroethane (EDC)	<0.05
1,1,1-Trichloroethane	<0.05
Trichloroethene	<0.02
Tetrachloroethene	<0.025

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-16	Client:	Environmental Partners
Date Received:	06/28/17	Project:	69402, F&BI 706447
Date Extracted:	06/28/17	Lab ID:	706447-10
Date Analyzed:	06/29/17	Data File:	062845.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	57	121
Toluene-d8	107	63	127
4-Bromofluorobenzene	100	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-17	Client:	Environmental Partners
Date Received:	06/28/17	Project:	69402, F&BI 706447
Date Extracted:	06/28/17	Lab ID:	706447-11
Date Analyzed:	06/29/17	Data File:	062846.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	57	121
Toluene-d8	106	63	127
4-Bromofluorobenzene	99	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-18	Client:	Environmental Partners
Date Received:	06/28/17	Project:	69402, F&BI 706447
Date Extracted:	06/28/17	Lab ID:	706447-13
Date Analyzed:	06/29/17	Data File:	062847.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	57	121
Toluene-d8	106	63	127
4-Bromofluorobenzene	99	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Method Blank	Client:	Environmental Partners
Date Received:	Not Applicable	Project:	69402, F&BI 706447
Date Extracted:	06/28/17	Lab ID:	07-1339 mb
Date Analyzed:	06/28/17	Data File:	062827.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	57	121
Toluene-d8	107	63	127
4-Bromofluorobenzene	99	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 07/03/17

Date Received: 06/28/17

Project: 69402, F&BI 706447

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES
FOR VOLATILES BY EPA METHOD 8260C**

Laboratory Code: 706467-03 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Vinyl chloride	mg/kg (ppm)	2.5	<0.05	50	47	10-138	6
Chloroethane	mg/kg (ppm)	2.5	<0.5	67	63	10-176	6
1,1-Dichloroethene	mg/kg (ppm)	2.5	<0.05	72	67	10-160	7
Methylene chloride	mg/kg (ppm)	2.5	<0.5	101	92	10-156	9
trans-1,2-Dichloroethene	mg/kg (ppm)	2.5	<0.05	84	77	14-137	9
1,1-Dichloroethane	mg/kg (ppm)	2.5	<0.05	85	79	19-140	7
cis-1,2-Dichloroethene	mg/kg (ppm)	2.5	<0.05	92	84	25-135	9
1,2-Dichloroethane (EDC)	mg/kg (ppm)	2.5	<0.05	93	87	12-160	7
1,1,1-Trichloroethane	mg/kg (ppm)	2.5	<0.05	90	85	10-156	6
Trichloroethene	mg/kg (ppm)	2.5	<0.02	91	86	21-139	6
Tetrachloroethene	mg/kg (ppm)	2.5	<0.025	87	81	20-133	7

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Vinyl chloride	mg/kg (ppm)	2.5	79	22-139
Chloroethane	mg/kg (ppm)	2.5	92	10-163
1,1-Dichloroethene	mg/kg (ppm)	2.5	100	47-128
Methylene chloride	mg/kg (ppm)	2.5	107	42-132
trans-1,2-Dichloroethene	mg/kg (ppm)	2.5	109	67-127
1,1-Dichloroethane	mg/kg (ppm)	2.5	106	68-115
cis-1,2-Dichloroethene	mg/kg (ppm)	2.5	112	72-113
1,2-Dichloroethane (EDC)	mg/kg (ppm)	2.5	112	56-135
1,1,1-Trichloroethane	mg/kg (ppm)	2.5	112	62-131
Trichloroethene	mg/kg (ppm)	2.5	111	64-117
Tetrachloroethene	mg/kg (ppm)	2.5	106	72-114

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 07/03/17

Date Received: 06/28/17

Project: 69402, F&BI 706447

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER
SAMPLES FOR VOLATILES BY EPA METHOD 8260C**

Laboratory Code: 706447-10 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Acceptance Criteria
Vinyl chloride	ug/L (ppb)	50	<0.2	102	36-166
Chloroethane	ug/L (ppb)	50	<1	109	46-160
1,1-Dichloroethene	ug/L (ppb)	50	<1	106	60-136
Methylene chloride	ug/L (ppb)	50	<5	108	67-132
trans-1,2-Dichloroethene	ug/L (ppb)	50	<1	109	72-129
1,1-Dichloroethane	ug/L (ppb)	50	<1	104	70-128
cis-1,2-Dichloroethene	ug/L (ppb)	50	<1	107	71-127
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	<1	111	69-133
1,1,1-Trichloroethane	ug/L (ppb)	50	<1	110	60-146
Trichloroethene	ug/L (ppb)	50	<1	106	66-135
Tetrachloroethene	ug/L (ppb)	50	<1	98	10-226

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Vinyl chloride	ug/L (ppb)	50	95	90	50-154	5
Chloroethane	ug/L (ppb)	50	102	96	58-146	6
1,1-Dichloroethene	ug/L (ppb)	50	106	100	67-136	6
Methylene chloride	ug/L (ppb)	50	106	102	39-148	4
trans-1,2-Dichloroethene	ug/L (ppb)	50	109	103	68-128	6
1,1-Dichloroethane	ug/L (ppb)	50	103	98	79-121	5
cis-1,2-Dichloroethene	ug/L (ppb)	50	108	102	80-123	6
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	109	104	73-132	5
1,1,1-Trichloroethane	ug/L (ppb)	50	109	104	83-130	5
Trichloroethene	ug/L (ppb)	50	108	102	80-120	6
Tetrachloroethene	ug/L (ppb)	50	100	94	76-121	6

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.

706442

ME 09/28/12 of 4

SAMPLE CHAIN OF CUSTODY

Report To Josh Bernthal + C. McFadden

Company EPI

Address 1180 NW Maple St Ste 310

City, State, ZIP Issaquah, WA 98027

Phone _____ Email _____

SAMPLERS (signature) CM

PROJECT NAME 69402

PO #

REMARKS

INVOICE TO

TURNAROUND TIME

Standard Turnaround

RUSH

Rush charges authorized by: _____

SAMPLE DISPOSAL

Dispose after 30 days

Archive Samples

Other

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED							Notes	
						TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM		CVOCs
MW-16:5	01A-D	6/28/17	810	Soil	4									
MW-16:10	02		830											
MW-16:20	03		910											
MW-16:25	04		935											
MW-17:5	05		1150											
MW-17:10	06		1205											
MW-17:15	07		1225											
MW-17:20	08		1245											
MW-17:25	09		1315											

Samples received at 4 0630

Friedman & Bruya, Inc.

3012 16th Avenue West

Seattle, WA 98119-2029

Ph. (206) 285-8282

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
<u>CM</u>	<u>Charles McFadden</u>	<u>EPI</u>	<u>6/28/17</u>	<u>0630</u>
<u>MB</u>	<u>Michael McFadden</u>	<u>EPI</u>	<u>↓</u>	<u>↓</u>
Received by:				

7060447

SAMPLE CHAIN OF CUSTODY

ME 06/28/17 of 4 vwy usy

Report To Josh Bernthal + C. McFadden

Company EPI

Address 1180 NW Maple st ste 310

City, State, ZIP Issaquah, WA 98027

Phone 425-345-0016 Email Josh@epi-wa.com

SAMPLERS (signature) [Signature]

PROJECT NAME

69402

PO #

REMARKS

INVOICE TO

TURNAROUND TIME

Standard Turnaround

Rush charges authorized by:

SAMPLE DISPOSAL
 Dispose after 30 days
 Archive Samples
 Other

ANALYSES REQUESTED

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED										Notes						
						TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM	C/VOCs									
MW-16	10A-C	6/27/17	643	water	3																	
MW-17	11		1100																			
DPT-1	12		1230																			
MW-18	13		1329																			

Samples received at 4 °C

SIGNATURE

Reinquished by: [Signature]

PRINT NAME

Charles McFadden

COMPANY

EPI

DATE

6/28/17

TIME

0630

Received by: [Signature]

PRINT NAME

Michelle Endlich

COMPANY

FyBm

DATE

↓

TIME

↓

Friedman & Bruya, Inc.

3012 16th Avenue West

Seattle, WA 98119-2029

Ph. (206) 285-8282

Received by:

706447

SAMPLE CHAIN OF CUSTODY

ME 06/28/17 vuv/BSy

Report To Josh Bernthal + C. McFadden

Company EPT

Address 1180 NW Maple St Ste 310

City, State, ZIP Essaquah, WA, 98027

Phone 425-395-0010 Email Josh@epi-wa.com

SAMPLERS (signature) CM

PROJECT NAME 69402

PO #

REMARKS

INVOICE TO

TURNAROUND TIME

Standard Turnaround
 RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
 Dispose after 30 days
 Archive Samples
 Other

ANALYSES REQUESTED

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED										Notes			
						TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM	CVOCS						
MW-18:5	14A-D	6/27/17	730	soil	4														
MW-18:10	15		742																
MW-18:15	16		758																
MW-18:20	17		830																
MW-18:25	18		859																
DPT-1:5	19		1020																
DPT-1:10	20		1045																
DPT-1:12.5	21		1110																
DPT-1:15	22		1125																
DPT-1:20	23		1145																

SIGNATURE

Relinquished by: CM

PRINT NAME

Charles McFadden

COMPANY

EPT

DATE

6/28/17

TIME

0630

3012 16th Avenue West

Seattle, WA 98119-2029

Ph. (206) 285-8282

Received by: Michael Leckel

Michael Leckel

Eg

Received by:

Samples received at U OC

706447

SAMPLE CHAIN OF CUSTODY

ME 06/28/17 4 of 4 W24 V54

Report To Tosh Bertoldi + C. McFadden

Company EPT

Address 1180 NW Maple St Ste 310

City, State, ZIP Tussequah, WA, 98027

Phone 425-345-0010 Email Tosh.bertoldi@wa.com

ANALYSES REQUESTED <input type="checkbox"/> TPH-HCID <input type="checkbox"/> TPH-Diesel <input type="checkbox"/> TPH-Gasoline <input type="checkbox"/> BTEX by 8021B <input type="checkbox"/> VOCs by 8260C <input type="checkbox"/> SVOCs by 8270D <input checked="" type="checkbox"/> PAHs 8270D SIM VOCs		Turnaround Time <input checked="" type="checkbox"/> Standard Turnaround <input type="checkbox"/> RUSH Rush charges authorized by:
SAMPLE DISPOSAL <input type="checkbox"/> Dispose after 30 days <input type="checkbox"/> Archive Samples <input type="checkbox"/> Other	Invoice # PO #	Turnaround Time of

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED											Notes								
						TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM													
DPT-2:5	24A.D	6/27/17	1225	Soil	4																				
DPT-2:12.5	25		1250		1																				
DPT-2:15	26		1300		1																				
DPT-3:10	27		1345		1																				
DPT-3:12.5	28		1355		1																				
DPT-3:15	29		1410		1																				

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

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
<i>Charles McFadden</i>	Charles McFadden		6/28/17	0630
<i>Michael E. Hill</i>	Michael E. Hill	F&B	6/28/17	0630
Received by:		Samples received at	4:00	

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

August 28, 2017

Josh Bernthal, Project Manager
Environmental Partners, Inc.
1180 NW Maple St, Suite 310
Issaquah, WA 98027

RE: 69402, F&BI 708145

Dear Mr Bernthal:

Included are the results from the testing of material submitted on August 8, 2017 from the 69402, F&BI 708145 project. There are 20 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 have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
c: Cynthia Moon, Eric Koltes
EPI0828R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on August 8, 2017 by Friedman & Bruya, Inc. from the Environmental Partners 69402, F&BI 708145 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>Environmental Partners</u>
708145 -01	GW-4
708145 -02	MW-3
708145 -03	MW-16
708145 -04	MW-17

The samples were sent to Amtest for TOC, chloride, sulfate, sulfide, nitrate, nitrite, BOD, and COD analyses. In addition, the samples were sent to Fremont for carbon dioxide analysis. The results from Amtest and Fremont are included.

The RSK 175 methane concentration in sample MW-3 exceeded the calibration range of the instrument. The data were flagged accordingly.

All other quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	GW-4	Client:	Environmental Partners
Date Received:	08/08/17	Project:	69402, F&BI 708145
Date Extracted:	08/09/17	Lab ID:	708145-01
Date Analyzed:	08/10/17	Data File:	708145-01.044
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	81.6
Manganese	48.6

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	MW-3	Client:	Environmental Partners
Date Received:	08/08/17	Project:	69402, F&BI 708145
Date Extracted:	08/09/17	Lab ID:	708145-02 x10
Date Analyzed:	08/10/17	Data File:	708145-02 x10.056
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	25,100
Manganese	3,630

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	Environmental Partners
Date Received:	Not Applicable	Project:	69402, F&BI 708145
Date Extracted:	08/09/17	Lab ID:	I7-420 mb
Date Analyzed:	08/09/17	Data File:	I7-420 mb.089
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	<50
Manganese	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	GW-4	Client:	Environmental Partners
Date Received:	08/08/17	Project:	69402, F&BI 708145
Date Extracted:	08/09/17	Lab ID:	708145-01
Date Analyzed:	08/10/17	Data File:	708145-01.055
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	99.9
Manganese	91.7

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	MW-3	Client:	Environmental Partners
Date Received:	08/08/17	Project:	69402, F&BI 708145
Date Extracted:	08/09/17	Lab ID:	708145-02 x10
Date Analyzed:	08/10/17	Data File:	708145-02 x10.058
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	32,500
Manganese	3,770

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	Environmental Partners
Date Received:	Not Applicable	Project:	69402, F&BI 708145
Date Extracted:	08/09/17	Lab ID:	I7-419 mb2
Date Analyzed:	08/10/17	Data File:	I7-419 mb2.039
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	<50
Manganese	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	GW-4	Client:	Environmental Partners
Date Received:	08/08/17	Project:	69402, F&BI 708145
Date Extracted:	08/11/17	Lab ID:	708145-01
Date Analyzed:	08/11/17	Data File:	081115.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	85	117
Toluene-d8	103	91	108
4-Bromofluorobenzene	98	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	10

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-3	Client:	Environmental Partners
Date Received:	08/08/17	Project:	69402, F&BI 708145
Date Extracted:	08/11/17	Lab ID:	708145-02
Date Analyzed:	08/11/17	Data File:	081116.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	98	85	117
Toluene-d8	99	91	108
4-Bromofluorobenzene	98	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	16
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-16	Client:	Environmental Partners
Date Received:	08/08/17	Project:	69402, F&BI 708145
Date Extracted:	08/11/17	Lab ID:	708145-03
Date Analyzed:	08/11/17	Data File:	081117.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	85	117
Toluene-d8	103	91	108
4-Bromofluorobenzene	99	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-17	Client:	Environmental Partners
Date Received:	08/08/17	Project:	69402, F&BI 708145
Date Extracted:	08/11/17	Lab ID:	708145-04
Date Analyzed:	08/11/17	Data File:	081118.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	85	117
Toluene-d8	101	91	108
4-Bromofluorobenzene	99	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Method Blank	Client:	Environmental Partners
Date Received:	Not Applicable	Project:	69402, F&BI 708145
Date Extracted:	08/11/17	Lab ID:	07-1718 mb
Date Analyzed:	08/11/17	Data File:	081114.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	85	117
Toluene-d8	103	91	108
4-Bromofluorobenzene	99	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Gasses By RSK 175

Client Sample ID:	GW-4	Client:	Environmental Partners
Date Received:	08/08/17	Project:	69402, F&BI 708145
Date Extracted:	08/11/17	Lab ID:	708145-01
Date Analyzed:	08/11/17	Data File:	010F1001.D
Matrix:	Water	Instrument:	GC8
Units:	ug/L (ppb)	Operator:	JS

Compounds:	Concentration ug/L (ppb)
Methane	<5
Ethane	<10
Ethene	<10

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Gasses By RSK 175

Client Sample ID:	MW-3	Client:	Environmental Partners
Date Received:	08/08/17	Project:	69402, F&BI 708145
Date Extracted:	08/11/17	Lab ID:	708145-02
Date Analyzed:	08/11/17	Data File:	011F1101.D
Matrix:	Water	Instrument:	GC8
Units:	ug/L (ppb)	Operator:	JS

Compounds:	Concentration ug/L (ppb)
Methane	4,500 ve
Ethane	<10
Ethene	<10

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Gasses By RSK 175

Client Sample ID:	Method Blank	Client:	Environmental Partners
Date Received:	Not Applicable	Project:	69402, F&BI 708145
Date Extracted:	08/11/17	Lab ID:	07-1722 mb
Date Analyzed:	08/11/17	Data File:	005F0501.D
Matrix:	Water	Instrument:	GC8
Units:	ug/L (ppb)	Operator:	JS

Compounds:	Concentration ug/L (ppb)
Methane	<5
Ethane	<10
Ethene	<10

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/28/17

Date Received: 08/08/17

Project: 69402, F&BI 708145

**QUALITY ASSURANCE RESULTS
FOR THE ANALYSIS OF WATER SAMPLES
FOR DISSOLVED METALS USING EPA METHOD 200.8**

Laboratory Code: 708073-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Iron	ug/L (ppb)	100	1,820	0 b	147 b	70-130	200 b
Manganese	ug/L (ppb)	20	467	10 b	117 b	70-130	169 b

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Iron	ug/L (ppb)	100	105	85-115
Manganese	ug/L (ppb)	20	104	85-115

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/28/17

Date Received: 08/08/17

Project: 69402, F&BI 708145

**QUALITY ASSURANCE RESULTS
FOR THE ANALYSIS OF WATER SAMPLES
FOR TOTAL METALS USING EPA METHOD 200.8**

Laboratory Code: 708116-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Iron	ug/L (ppb)	100	7,960	385 b	139 b	70-130	94 b
Manganese	ug/L (ppb)	20	322	156 b	74 b	70-130	71 b

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Iron	ug/L (ppb)	100	103	85-115
Manganese	ug/L (ppb)	20	112	85-115

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/28/17

Date Received: 08/08/17

Project: 69402, F&BI 708145

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER
SAMPLES FOR VOLATILES BY EPA METHOD 8260C**

Laboratory Code: 708145-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent	Acceptance
				Recovery MS	Criteria
Vinyl chloride	ug/L (ppb)	50	<0.2	101	61-139
Chloroethane	ug/L (ppb)	50	<1	97	55-149
1,1-Dichloroethene	ug/L (ppb)	50	<1	91	71-123
Methylene chloride	ug/L (ppb)	50	<5	104	61-126
trans-1,2-Dichloroethene	ug/L (ppb)	50	<1	99	72-122
1,1-Dichloroethane	ug/L (ppb)	50	<1	98	79-113
cis-1,2-Dichloroethene	ug/L (ppb)	50	<1	100	63-126
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	<1	104	70-119
1,1,1-Trichloroethane	ug/L (ppb)	50	<1	94	75-121
Trichloroethene	ug/L (ppb)	50	<1	100	73-122
Tetrachloroethene	ug/L (ppb)	50	10	101	72-113

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent	Percent	Acceptance Criteria	RPD (Limit 20)
			Recovery LCS	Recovery LCSD		
Vinyl chloride	ug/L (ppb)	50	99	97	70-128	2
Chloroethane	ug/L (ppb)	50	93	93	66-149	0
1,1-Dichloroethene	ug/L (ppb)	50	87	85	75-119	2
Methylene chloride	ug/L (ppb)	50	105	104	63-132	1
trans-1,2-Dichloroethene	ug/L (ppb)	50	97	95	76-118	2
1,1-Dichloroethane	ug/L (ppb)	50	97	95	77-119	2
cis-1,2-Dichloroethene	ug/L (ppb)	50	98	96	76-119	2
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	102	100	78-114	2
1,1,1-Trichloroethane	ug/L (ppb)	50	91	89	80-116	2
Trichloroethene	ug/L (ppb)	50	101	99	72-119	2
Tetrachloroethene	ug/L (ppb)	50	101	101	78-109	0

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/28/17

Date Received: 08/08/17

Project: 69402, F&BI 708145

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF
WATER SAMPLES FOR DISSOLVED GASSES
USING METHOD RSK 175**

Laboratory Code: 708103-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference (Limit 20)
Methane	ug/L (ppb)	<5	5.2	nm
Ethane	ug/L (ppb)	<10	<10	nm
Ethene	ug/L (ppb)	<10	<10	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Methane	ug/L (ppb)	59	76	74	50-150	3
Ethane	ug/L (ppb)	110	78	74	50-150	5
Ethene	ug/L (ppb)	102	98	99	50-150	1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

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

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

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

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

cf - The sample was centrifuged prior to analysis.

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

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

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The 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.



Am Test Inc.
13600 NE 126TH PL
Suite C
Kirkland, WA 98034
(425) 885-1664

Professional
Analytical
Services

Aug 22 2017
Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Attention: MICHAEL ERDAHL

Dear MICHAEL ERDAHL:

Enclosed please find the analytical data for your project.

The following is a cross correlation of client and laboratory identifications for your convenience.

CLIENT ID	MATRIX	AMTEST ID	TEST
GW-4	Water	17-A013063	DEM, MIN, NUT, CONV
MW-3	Water	17-A013064	DEM, MIN, NUT, CONV

Your samples were received on Wednesday, August 9, 2017. At the time of receipt, the samples were logged in and properly maintained prior to the subsequent analysis.

The analytical procedures used at AmTest are well documented and are typically derived from the protocols of the EPA, USDA, FDA or the Army Corps of Engineers.

Following the analytical data you will find the Quality Control (QC) results.

Please note that the detection limits that are listed in the body of the report refer to the Practical Quantitation Limits (PQL's), as opposed to the Method Detection Limits (MDL's).

If you should have any questions pertaining to the data package, please feel free to contact me.

Sincerely,


Aaron W. Young
Laboratory Manager

Project #: 708145
PO Number: F-33

BACT = Bacteriological
CONV = Conventionals

MET = Metals
ORG = Organics

NUT=Nutrients
DEM=Demand

MIN=Minerals

Am Test Inc.
 13600 NE 126TH PL
 Suite C
 Kirkland, WA 98034
 (425) 885-1664
 www.amtestlab.com



Professional
 Analytical
 Services

ANALYSIS REPORT

Friedman & Bruya, Inc.
 3012 16th Avenue West
 Seattle, WA 98119-2029
 Attention: MICHAEL ERDAHL
 Project #: 708145
 PO Number: F-33
 All results reported on an as received basis.

Date Received: 08/09/17
 Date Reported: 8/22/17

AMTEST Identification Number 17-A013063
 Client Identification GW-4
 Sampling Date 08/08/17, 11:25

Conventionals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Total Sulfide	< 0.05	mg/l		0.05	SM 4500-S2-D	SW	08/11/17

Demand

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
BOD	< 2	mg/l		2	SM 5210B	NG	08/10/17
Total Organic Carbon	1.1	mg/l		0.5	SM 5310B	SW	08/10/17
Chemical Oxygen Demand	< 10	mg/l		10	EPA 410.4	SW	08/16/17

Minerals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Chloride	13.9	mg/l		0.05	EPA 300.0	JC	08/09/17
Sulfate	23.4	mg/l		0.1	EPA 300.0	JC	08/09/17

Nutrients

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Nitrite	< 0.005	mg/l		0.005	EPA 300.0	JC	08/09/17
Nitrate	2.50	mg/l		0.025	EPA 300.0	JC	08/09/17
Nitrate+Nitrite	2.50	mg/l		0.025	EPA 300.0	Calculated	

AMTEST Identification Number 17-A013064
Client Identification MW-3
Sampling Date 08/08/17, 12:51

Conventionals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Total Sulfide	< 0.05	mg/l		0.05	SM 4500-S2-D	SW	08/11/17

Demand

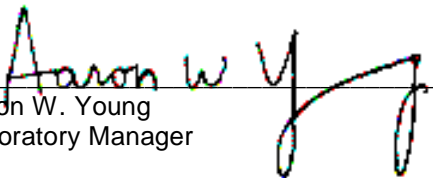
PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
BOD	56.	mg/l		2	SM 5210B	NG	08/10/17
Total Organic Carbon	36.	mg/l		0.5	SM 5310B	SW	08/10/17
Chemical Oxygen Demand	160	mg/l		10	EPA 410.4	SW	08/16/17

Minerals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Chloride	13.6	mg/l		0.05	EPA 300.0	JC	08/09/17
Sulfate	3.80	mg/l		0.1	EPA 300.0	JC	08/09/17

Nutrients

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Nitrite	< 0.005	mg/l		0.005	EPA 300.0	JC	08/09/17
Nitrate	0.090	mg/l		0.025	EPA 300.0	JC	08/09/17
Nitrate+Nitrite	0.090	mg/l		0.025	EPA 300.0	Calculated	


 Aaron W. Young
 Laboratory Manager

QC Summary for sample numbers: 17-A013063 to 17-A013064

DUPLICATES

SAMPLE #	ANALYTE	UNITS	SAMPLE VALUE	DUP VALUE	RPD
17-A013071	BOD	mg/l	< 2	< 2	
17-A013031	Total Organic Carbon	mg/l	< 0.5	< 0.5	
17-A013062	Total Organic Carbon	mg/l	2.3	2.1	9.1
17-A013095	Total Organic Carbon	mg/l	0.90	0.88	2.2
17-A013031	Chemical Oxygen Demand	mg/l	< 10	< 10	
17-A013323	Chemical Oxygen Demand	mg/l	< 10	< 10	
17-A013327	Chemical Oxygen Demand	mg/l	< 10	< 10	
17-A012827	Chloride	mg/l	25.1	23.4	7.0

MATRIX SPIKES

SAMPLE #	ANALYTE	UNITS	SAMPLE VALUE	SMPL+ SPK	SPKAMT	RECOVERY
17-A013031	Total Organic Carbon	mg/l	< 0.5	26.	25.	104.00 %
17-A013061	Total Organic Carbon	mg/l	2.5	27.	25.	98.00 %
17-A013097	Total Organic Carbon	mg/l	2.9	27.	25.	96.40 %
17-A013031	Chemical Oxygen Demand	mg/l	< 10	64.	50.	128.00 %
17-A013323	Chemical Oxygen Demand	mg/l	< 10	54.	50.	108.00 %
17-A013327	Chemical Oxygen Demand	mg/l	< 10	57.	50.	114.00 %
17-A013327	Total Sulfide	mg/l	< 0.05	0.58	0.50	116.00 %
17-A013327	Total Sulfide	mg/l	< 0.05	0.57	0.50	114.00 %

MATRIX SPIKE DUPLICATES

SAMPLE #	ANALYTE	UNITS	SAMPLE + SPK	MSD VALUE	RPD
Spike	Total Sulfide	mg/l	0.58	0.57	1.7

STANDARD REFERENCE MATERIALS

ANALYTE	UNITS	TRUE VALUE	MEASURED VALUE	RECOVERY
BOD	mg/l	200	210	105. %
Total Organic Carbon	mg/l	50.	54.	108. %
Total Organic Carbon	mg/l	25.	27.	108. %
Chemical Oxygen Demand	mg/l	100	100	100. %
Chemical Oxygen Demand	mg/l	100	100	100. %
Chloride	mg/l	5.00	5.11	102. %
Nitrate	mg/l	5.00	4.85	97.0 %
Nitrite	mg/l	5.00	4.86	97.2 %
Total Sulfide	mg/l	1.0	1.0	100. %
Sulfate	mg/l	5.00	5.26	105. %

QC Summary for sample numbers: 17-A013063 to 17-A013064...

BLANKS

ANALYTE	UNITS	RESULT
BOD	mg/l	< 2
Total Organic Carbon	mg/l	< 0.5
Total Organic Carbon	mg/l	< 0.5
Chemical Oxygen Demand	mg/l	< 10
Chemical Oxygen Demand	mg/l	< 10
Nitrate	mg/l	< 0.025
Nitrite	mg/l	< 0.005
Total Sulfide	mg/l	< 0.05

708145

SAMPLE CHAIN OF CUSTODY

ME 08-08-17

ALY/vw3

Report To Josh Bernthal + Eric Kohes

Company Environmental Partners, Inc

Address 1180 NW Maple St

City, State, ZIP Issaquah, WA 98027

Phone _____ Email _____

SAMPLERS (signature) SLP W.B. Bruga
 PROJECT NAME 69402
 PO # _____
 REMARKS _____
 INVOICE TO _____

REMARKS _____
 INVOICE TO _____

Page # 1 of 1
 TURNAROUND TIME
 Standard Turnaround
 RUSH
 Rush charges authorized by: _____
 SAMPLE DISPOSAL
 Dispose after 30 days
 Archive Samples
 Other

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED																					
						TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	eVOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM	Total Mn/Fe	Dissolved Mn/Fe	Ethene, Methane, Ethane	TOC + COP	BOD	Nitrate/Nitrite	Sulfate/Chloride	Sulfide	CO ₂						
GW-4	01 A-D	8/8/17	11:25 AM	Water	15					X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	
MW-3	02 A-D	8/8/17	12:51	Water	15					X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	
MW-16	03 A-C	8/8/17	14:24	Water	3					X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	
MW-17	04 A-C	8/8/17	14:50	Water	3					X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	

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

SIGNATURE		PRINT NAME		COMPANY		DATE	TIME
Reinquired by: <u>[Signature]</u>		<u>Elizabeth Webber-Bruga</u>		<u>EBI</u>		<u>8/8/17</u>	<u>1605</u>
Received by: <u>[Signature]</u>		<u>Jon Shipman</u>		<u>FBI</u>		<u>[Signature]</u>	<u>[Signature]</u>
Reinquired by:							
Received by:						<u>4</u>	<u>C</u>

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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

August 28, 2017

Eric Koltes, Project Manager
Environmental Partners, Inc.
1180 NW Maple St, Suite 310
Issaquah, WA 98027

RE: 69402, F&BI 708174

Dear Mr Koltes:

Included are the results from the testing of material submitted on August 9, 2017 from the 69402, F&BI 708174 project. There are 38 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 have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
c: Cynthia Moon, Josh Bernthal
EPI0828R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on August 9, 2017 by Friedman & Bruya, Inc. from the Environmental Partners 69402, F&BI 708174 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>Environmental Partners</u>
708174 -01	MW-1
708174 -02	MW-7
708174 -03	MW-15
708174 -04	MW-8
708174 -05	MW-9
708174 -06	GW-11
708174 -07	MW-2

The samples were sent to Amtest for TOC, chloride, sulfate, sulfide, nitrate, nitrite, BOD, and COD analyses. In addition, the samples were sent to Fremont for carbon dioxide analysis. The results from Amtest and Fremont are included.

All quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	MW-1	Client:	Environmental Partners
Date Received:	08/09/17	Project:	69402, F&BI 708174
Date Extracted:	08/14/17	Lab ID:	708174-01
Date Analyzed:	08/15/17	Data File:	708174-01.127
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	672
Manganese	1,720

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	MW-7	Client:	Environmental Partners
Date Received:	08/09/17	Project:	69402, F&BI 708174
Date Extracted:	08/14/17	Lab ID:	708174-02
Date Analyzed:	08/15/17	Data File:	708174-02.128
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	482
Manganese	29.0

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	MW-15	Client:	Environmental Partners
Date Received:	08/09/17	Project:	69402, F&BI 708174
Date Extracted:	08/14/17	Lab ID:	708174-03
Date Analyzed:	08/15/17	Data File:	708174-03.129
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	50.0
Manganese	3.91

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	MW-8	Client:	Environmental Partners
Date Received:	08/09/17	Project:	69402, F&BI 708174
Date Extracted:	08/14/17	Lab ID:	708174-04
Date Analyzed:	08/15/17	Data File:	708174-04.130
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	181
Manganese	454

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	MW-9	Client:	Environmental Partners
Date Received:	08/09/17	Project:	69402, F&BI 708174
Date Extracted:	08/14/17	Lab ID:	708174-05
Date Analyzed:	08/15/17	Data File:	708174-05.131
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	<50
Manganese	2.49

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	GW-11	Client:	Environmental Partners
Date Received:	08/09/17	Project:	69402, F&BI 708174
Date Extracted:	08/14/17	Lab ID:	708174-06
Date Analyzed:	08/15/17	Data File:	708174-06.132
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	4,310
Manganese	125

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	MW-2	Client:	Environmental Partners
Date Received:	08/09/17	Project:	69402, F&BI 708174
Date Extracted:	08/14/17	Lab ID:	708174-07
Date Analyzed:	08/15/17	Data File:	708174-07.133
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	144
Manganese	5.54

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	Environmental Partners
Date Received:	Not Applicable	Project:	69402, F&BI 708174
Date Extracted:	08/14/17	Lab ID:	I7-429 mb
Date Analyzed:	08/15/17	Data File:	I7-429 mb.032
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	<50
Manganese	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	MW-1	Client:	Environmental Partners
Date Received:	08/09/17	Project:	69402, F&BI 708174
Date Extracted:	08/14/17	Lab ID:	708174-01
Date Analyzed:	08/15/17	Data File:	708174-01.087
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	153
Manganese	1,870

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	MW-7	Client:	Environmental Partners
Date Received:	08/09/17	Project:	69402, F&BI 708174
Date Extracted:	08/14/17	Lab ID:	708174-02
Date Analyzed:	08/15/17	Data File:	708174-02.090
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	323
Manganese	25.5

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	MW-15	Client:	Environmental Partners
Date Received:	08/09/17	Project:	69402, F&BI 708174
Date Extracted:	08/14/17	Lab ID:	708174-03
Date Analyzed:	08/15/17	Data File:	708174-03.091
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	<50
Manganese	3.97

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	MW-8	Client:	Environmental Partners
Date Received:	08/09/17	Project:	69402, F&BI 708174
Date Extracted:	08/14/17	Lab ID:	708174-04
Date Analyzed:	08/15/17	Data File:	708174-04.092
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	66.6
Manganese	476

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	MW-9	Client:	Environmental Partners
Date Received:	08/09/17	Project:	69402, F&BI 708174
Date Extracted:	08/14/17	Lab ID:	708174-05
Date Analyzed:	08/15/17	Data File:	708174-05.093
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	<50
Manganese	2.41

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	GW-11	Client:	Environmental Partners
Date Received:	08/09/17	Project:	69402, F&BI 708174
Date Extracted:	08/14/17	Lab ID:	708174-06
Date Analyzed:	08/15/17	Data File:	708174-06.094
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	154
Manganese	3.74

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	MW-2	Client:	Environmental Partners
Date Received:	08/09/17	Project:	69402, F&BI 708174
Date Extracted:	08/14/17	Lab ID:	708174-07
Date Analyzed:	08/15/17	Data File:	708174-07.095
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	59.2
Manganese	3.39

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	Environmental Partners
Date Received:	Not Applicable	Project:	69402, F&BI 708174
Date Extracted:	08/14/17	Lab ID:	I7-430 mb
Date Analyzed:	08/15/17	Data File:	I7-430 mb.080
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	<50
Manganese	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-1	Client:	Environmental Partners
Date Received:	08/09/17	Project:	69402, F&BI 708174
Date Extracted:	08/11/17	Lab ID:	708174-01
Date Analyzed:	08/11/17	Data File:	081119.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	85	117
Toluene-d8	103	91	108
4-Bromofluorobenzene	98	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	14

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-7	Client:	Environmental Partners
Date Received:	08/09/17	Project:	69402, F&BI 708174
Date Extracted:	08/11/17	Lab ID:	708174-02
Date Analyzed:	08/11/17	Data File:	081120.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	85	117
Toluene-d8	101	91	108
4-Bromofluorobenzene	98	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	15

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-15	Client:	Environmental Partners
Date Received:	08/09/17	Project:	69402, F&BI 708174
Date Extracted:	08/11/17	Lab ID:	708174-03
Date Analyzed:	08/11/17	Data File:	081130.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	85	117
Toluene-d8	103	91	108
4-Bromofluorobenzene	98	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	1.8
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	3.0
Tetrachloroethene	120

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-8	Client:	Environmental Partners
Date Received:	08/09/17	Project:	69402, F&BI 708174
Date Extracted:	08/11/17	Lab ID:	708174-04
Date Analyzed:	08/11/17	Data File:	081121.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	85	117
Toluene-d8	100	91	108
4-Bromofluorobenzene	98	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-9	Client:	Environmental Partners
Date Received:	08/09/17	Project:	69402, F&BI 708174
Date Extracted:	08/11/17	Lab ID:	708174-05
Date Analyzed:	08/11/17	Data File:	081122.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	85	117
Toluene-d8	102	91	108
4-Bromofluorobenzene	97	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	GW-11	Client:	Environmental Partners
Date Received:	08/09/17	Project:	69402, F&BI 708174
Date Extracted:	08/11/17	Lab ID:	708174-06
Date Analyzed:	08/11/17	Data File:	081129.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	85	117
Toluene-d8	103	91	108
4-Bromofluorobenzene	99	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	19

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-2	Client:	Environmental Partners
Date Received:	08/09/17	Project:	69402, F&BI 708174
Date Extracted:	08/11/17	Lab ID:	708174-07
Date Analyzed:	08/11/17	Data File:	081123.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	85	117
Toluene-d8	103	91	108
4-Bromofluorobenzene	99	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Method Blank	Client:	Environmental Partners
Date Received:	Not Applicable	Project:	69402, F&BI 708174
Date Extracted:	08/11/17	Lab ID:	07-1718 mb
Date Analyzed:	08/11/17	Data File:	081114.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	85	117
Toluene-d8	103	91	108
4-Bromofluorobenzene	99	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Gasses By RSK 175

Client Sample ID:	MW-1	Client:	Environmental Partners
Date Received:	08/09/17	Project:	69402, F&BI 708174
Date Extracted:	08/11/17	Lab ID:	708174-01
Date Analyzed:	08/11/17	Data File:	014F1401.D
Matrix:	Water	Instrument:	GC8
Units:	ug/L (ppb)	Operator:	JS

Compounds:	Concentration ug/L (ppb)
Methane	<5
Ethane	<10
Ethene	<10

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Gasses By RSK 175

Client Sample ID:	MW-7	Client:	Environmental Partners
Date Received:	08/09/17	Project:	69402, F&BI 708174
Date Extracted:	08/11/17	Lab ID:	708174-02
Date Analyzed:	08/11/17	Data File:	015F1501.D
Matrix:	Water	Instrument:	GC8
Units:	ug/L (ppb)	Operator:	JS

Compounds:	Concentration ug/L (ppb)
Methane	<5
Ethane	<10
Ethene	<10

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Gasses By RSK 175

Client Sample ID:	MW-15	Client:	Environmental Partners
Date Received:	08/09/17	Project:	69402, F&BI 708174
Date Extracted:	08/11/17	Lab ID:	708174-03
Date Analyzed:	08/11/17	Data File:	016F1601.D
Matrix:	Water	Instrument:	GC8
Units:	ug/L (ppb)	Operator:	JS

Compounds:	Concentration ug/L (ppb)
Methane	<5
Ethane	<10
Ethene	<10

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Gasses By RSK 175

Client Sample ID:	MW-8	Client:	Environmental Partners
Date Received:	08/09/17	Project:	69402, F&BI 708174
Date Extracted:	08/11/17	Lab ID:	708174-04
Date Analyzed:	08/11/17	Data File:	017F1701.D
Matrix:	Water	Instrument:	GC8
Units:	ug/L (ppb)	Operator:	JS

Compounds:	Concentration ug/L (ppb)
Methane	<5
Ethane	<10
Ethene	<10

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Gasses By RSK 175

Client Sample ID:	MW-9	Client:	Environmental Partners
Date Received:	08/09/17	Project:	69402, F&BI 708174
Date Extracted:	08/11/17	Lab ID:	708174-05
Date Analyzed:	08/11/17	Data File:	018F1801.D
Matrix:	Water	Instrument:	GC8
Units:	ug/L (ppb)	Operator:	JS

Compounds:	Concentration ug/L (ppb)
Methane	<5
Ethane	<10
Ethene	<10

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Gasses By RSK 175

Client Sample ID:	GW-11	Client:	Environmental Partners
Date Received:	08/09/17	Project:	69402, F&BI 708174
Date Extracted:	08/11/17	Lab ID:	708174-06
Date Analyzed:	08/11/17	Data File:	019F1901.D
Matrix:	Water	Instrument:	GC8
Units:	ug/L (ppb)	Operator:	JS

Compounds:	Concentration ug/L (ppb)
Methane	<5
Ethane	<10
Ethene	<10

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Gasses By RSK 175

Client Sample ID:	MW-2	Client:	Environmental Partners
Date Received:	08/09/17	Project:	69402, F&BI 708174
Date Extracted:	08/11/17	Lab ID:	708174-07
Date Analyzed:	08/11/17	Data File:	020F2001.D
Matrix:	Water	Instrument:	GC8
Units:	ug/L (ppb)	Operator:	JS

Compounds:	Concentration ug/L (ppb)
Methane	<5
Ethane	<10
Ethene	<10

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Gasses By RSK 175

Client Sample ID:	Method Blank	Client:	Environmental Partners
Date Received:	Not Applicable	Project:	69402, F&BI 708174
Date Extracted:	08/11/17	Lab ID:	07-1722 mb
Date Analyzed:	08/11/17	Data File:	005F0501.D
Matrix:	Water	Instrument:	GC8
Units:	ug/L (ppb)	Operator:	JS

Compounds:	Concentration ug/L (ppb)
Methane	<5
Ethane	<10
Ethene	<10

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/28/17

Date Received: 08/09/17

Project: 69402, F&BI 708174

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

Laboratory Code: 708198-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Iron	ug/L (ppb)	100	649	79 b	0 b	75-125	200 b
Manganese	ug/L (ppb)	20	5,230	0 b	0 b	75-125	0 b

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Iron	ug/L (ppb)	100	104	80-120
Manganese	ug/L (ppb)	20	106	80-120

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/28/17

Date Received: 08/09/17

Project: 69402, F&BI 708174

**QUALITY ASSURANCE RESULTS
FOR THE ANALYSIS OF WATER SAMPLES
FOR DISSOLVED METALS USING EPA METHOD 200.8**

Laboratory Code: 708174-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Iron	ug/L (ppb)	100	153	85 b	120 b	70-130	34 b
Manganese	ug/L (ppb)	20	1,870	0 b	507 b	70-130	200 b

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Iron	ug/L (ppb)	100	105	85-115
Manganese	ug/L (ppb)	20	96	85-115

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/28/17

Date Received: 08/09/17

Project: 69402, F&BI 708174

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER
SAMPLES FOR VOLATILES BY EPA METHOD 8260C**

Laboratory Code: 708145-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent	Acceptance Criteria
				Recovery MS	
Vinyl chloride	ug/L (ppb)	50	<0.2	101	61-139
Chloroethane	ug/L (ppb)	50	<1	97	55-149
1,1-Dichloroethene	ug/L (ppb)	50	<1	91	71-123
Methylene chloride	ug/L (ppb)	50	<5	104	61-126
trans-1,2-Dichloroethene	ug/L (ppb)	50	<1	99	72-122
1,1-Dichloroethane	ug/L (ppb)	50	<1	98	79-113
cis-1,2-Dichloroethene	ug/L (ppb)	50	<1	100	63-126
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	<1	104	70-119
1,1,1-Trichloroethane	ug/L (ppb)	50	<1	94	75-121
Trichloroethene	ug/L (ppb)	50	<1	100	73-122
Tetrachloroethene	ug/L (ppb)	50	10	101	72-113

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent	Percent	Acceptance Criteria	RPD (Limit 20)
			Recovery LCS	Recovery LCSD		
Vinyl chloride	ug/L (ppb)	50	99	97	70-128	2
Chloroethane	ug/L (ppb)	50	93	93	66-149	0
1,1-Dichloroethene	ug/L (ppb)	50	87	85	75-119	2
Methylene chloride	ug/L (ppb)	50	105	104	63-132	1
trans-1,2-Dichloroethene	ug/L (ppb)	50	97	95	76-118	2
1,1-Dichloroethane	ug/L (ppb)	50	97	95	77-119	2
cis-1,2-Dichloroethene	ug/L (ppb)	50	98	96	76-119	2
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	102	100	78-114	2
1,1,1-Trichloroethane	ug/L (ppb)	50	91	89	80-116	2
Trichloroethene	ug/L (ppb)	50	101	99	72-119	2
Tetrachloroethene	ug/L (ppb)	50	101	101	78-109	0

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/28/17

Date Received: 08/09/17

Project: 69402, F&BI 708174

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF
WATER SAMPLES FOR DISSOLVED GASSES
USING METHOD RSK 175**

Laboratory Code: 708103-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference (Limit 20)
Methane	ug/L (ppb)	<5	5.2	nm
Ethane	ug/L (ppb)	<10	<10	nm
Ethene	ug/L (ppb)	<10	<10	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Methane	ug/L (ppb)	59	76	74	50-150	3
Ethane	ug/L (ppb)	110	78	74	50-150	5
Ethene	ug/L (ppb)	102	98	99	50-150	1

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.

Am Test Inc.
13600 NE 126TH PL
Suite C
Kirkland, WA 98034
(425) 885-1664

Aug 22 2017
Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Attention: MICHAEL ERDAHL

Dear MICHAEL ERDAHL:

Enclosed please find the analytical data for your project.

The following is a cross correlation of client and laboratory identifications for your convenience.

CLIENT ID	MATRIX	AMTEST ID	TEST
MW-1	Water	17-A013321	DEM, MIN, NUT, CONV
MW-7	Water	17-A013322	DEM, MIN, NUT, CONV
MW-15	Water	17-A013323	DEM, MIN, NUT, CONV
MW-8	Water	17-A013324	DEM, MIN, NUT, CONV
MW-9	Water	17-A013325	DEM, MIN, NUT, CONV
GW-11	Water	17-A013326	DEM, MIN, NUT, CONV
MW-2	Water	17-A013327	DEM, MIN, NUT, CONV

Your samples were received on Thursday, August 10, 2017. At the time of receipt, the samples were logged in and properly maintained prior to the subsequent analysis.

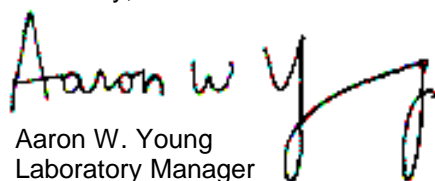
The analytical procedures used at AmTest are well documented and are typically derived from the protocols of the EPA, USDA, FDA or the Army Corps of Engineers.

Following the analytical data you will find the Quality Control (QC) results.

Please note that the detection limits that are listed in the body of the report refer to the Practical Quantitation Limits (PQL's), as opposed to the Method Detection Limits (MDL's).

If you should have any questions pertaining to the data package, please feel free to contact me.

Sincerely,



Aaron W. Young
Laboratory Manager

Project #: 708174
PO Number: F-36

BACT = Bacteriological
CONV = Conventionals

MET = Metals
ORG = Organics

NUT=Nutrients
DEM=Demand

MIN=Minerals

Am Test Inc.
 13600 NE 126TH PL
 Suite C
 Kirkland, WA 98034
 (425) 885-1664
 www.amtestlab.com



*Professional
 Analytical
 Services*

ANALYSIS REPORT

Friedman & Bruya, Inc.
 3012 16th Avenue West
 Seattle, WA 98119-2029
 Attention: MICHAEL ERDAHL
 Project #: 708174
 PO Number: F-36
 All results reported on an as received basis.

Date Received: 08/10/17
 Date Reported: 8/22/17

AMTEST Identification Number 17-A013321
Client Identification MW-1
Sampling Date 08/09/17, 07:18

Conventionals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Total Sulfide	< 0.05	mg/l		0.05	SM 4500-S2-D	SW	08/11/17

Demand

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
BOD	< 2	mg/l		2	SM 5210B	NG	08/11/17
Total Organic Carbon	4.0	mg/l		0.5	SM 5310B	SW	08/16/17
Chemical Oxygen Demand	11.	mg/l		10	EPA 410.4	SW	08/16/17

Minerals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Chloride	18.0	mg/l		0.05	EPA 300.0	JC	08/11/17
Sulfate	9.70	mg/l		0.1	EPA 300.0	JC	08/10/17

Nutrients

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Nitrite	< 0.005	mg/l		0.005	EPA 300.0	JC	08/10/17
Nitrate	2.60	mg/l		0.025	EPA 300.0	JC	08/10/17

AMTEST Identification Number 17-A013322
Client Identification MW-7
Sampling Date 08/09/17, 08:22

Conventionals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Total Sulfide	< 0.05	mg/l		0.05	SM 4500-S2-D	SW	08/11/17

Demand

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
BOD	< 2	mg/l		2	SM 5210B	NG	08/11/17
Total Organic Carbon	0.92	mg/l		0.5	SM 5310B	SW	08/16/17
Chemical Oxygen Demand	< 10	mg/l		10	EPA 410.4	SW	08/16/17

Minerals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Chloride	482.	mg/l		0.05	EPA 300.0	JC	08/11/17
Sulfate	8.90	mg/l		0.1	EPA 300.0	JC	08/11/17

Nutrients

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Nitrite	< 0.005	mg/l		0.005	EPA 300.0	JC	08/10/17
Nitrate	3.00	mg/l		0.025	EPA 300.0	JC	08/10/17

Friedman & Bruya, Inc.
Project Name:
AmTest ID: 17-A013323

AMTEST Identification Number 17-A013323
Client Identification MW-15
Sampling Date 08/09/17, 09:44

Conventionals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Total Sulfide	< 0.05	mg/l		0.05	SM 4500-S2-D	SW	08/11/17

Demand

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
BOD	< 2	mg/l		2	SM 5210B	NG	08/11/17
Total Organic Carbon	0.81	mg/l		0.5	SM 5310B	SW	08/16/17
Chemical Oxygen Demand	< 10	mg/l		10	EPA 410.4	SW	08/16/17

Minerals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Chloride	11.8	mg/l		0.05	EPA 300.0	JC	08/11/17
Sulfate	17.2	mg/l		0.1	EPA 300.0	JC	08/11/17

Nutrients

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Nitrite	< 0.005	mg/l		0.005	EPA 300.0	JC	08/10/17
Nitrate	0.612	mg/l		0.025	EPA 300.0	JC	08/10/17

Friedman & Bruya, Inc.
Project Name:
AmTest ID: 17-A013324

AMTEST Identification Number 17-A013324
Client Identification MW-8
Sampling Date 08/09/17, 11:02

Conventionals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Total Sulfide	< 0.05	mg/l		0.05	SM 4500-S2-D	SW	08/11/17

Demand

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
BOD	< 2	mg/l		2	SM 5210B	NG	08/11/17
Total Organic Carbon	1.0	mg/l		0.5	SM 5310B	SW	08/16/17
Chemical Oxygen Demand	200	mg/l		10	EPA 410.4	SW	08/16/17

Minerals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Chloride	3.40	mg/l		0.05	EPA 300.0	JC	08/10/17
Sulfate	24.0	mg/l		0.1	EPA 300.0	JC	08/11/17

Nutrients

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Nitrite	< 0.005	mg/l		0.005	EPA 300.0	JC	08/10/17
Nitrate	0.777	mg/l		0.025	EPA 300.0	JC	08/10/17

Friedman & Bruya, Inc.
Project Name:
AmTest ID: 17-A013325

AMTEST Identification Number 17-A013325
Client Identification MW-9
Sampling Date 08/09/17, 12:27

Conventionals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Total Sulfide	< 0.05	mg/l		0.05	SM 4500-S2-D	SW	08/11/17

Demand

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
BOD	< 2	mg/l		2	SM 5210B	NG	08/11/17
Total Organic Carbon	0.58	mg/l		0.5	SM 5310B	SW	08/16/17
Chemical Oxygen Demand	< 10	mg/l		10	EPA 410.4	SW	08/16/17

Minerals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Chloride	2.90	mg/l		0.05	EPA 300.0	JC	08/10/17
Sulfate	12.9	mg/l		0.1	EPA 300.0	JC	08/11/17

Nutrients

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Nitrite	< 0.005	mg/l		0.005	EPA 300.0	JC	08/10/17
Nitrate	2.00	mg/l		0.025	EPA 300.0	JC	08/10/17

Friedman & Bruya, Inc.
Project Name:
AmTest ID: 17-A013326

AMTEST Identification Number 17-A013326
Client Identification GW-11
Sampling Date 08/09/17, 13:39

Conventionals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Total Sulfide	< 0.05	mg/l		0.05	SM 4500-S2-D	SW	08/11/17

Demand

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
BOD	< 2	mg/l		2	SM 5210B	NG	08/11/17
Total Organic Carbon	0.92	mg/l		0.5	SM 5310B	SW	08/16/17
Chemical Oxygen Demand	< 10	mg/l		10	EPA 410.4	SW	08/16/17

Minerals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Chloride	45.1	mg/l		0.05	EPA 300.0	JC	08/11/17
Sulfate	14.3	mg/l		0.1	EPA 300.0	JC	08/11/17

Nutrients

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Nitrite	< 0.005	mg/l		0.005	EPA 300.0	JC	08/10/17
Nitrate	3.30	mg/l		0.025	EPA 300.0	JC	08/10/17

AMTEST Identification Number 17-A013327
Client Identification MW-2
Sampling Date 08/09/17, 15:04

Conventionals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Total Sulfide	< 0.05	mg/l		0.05	SM 4500-S2-D	SW	08/11/17

Demand


PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
BOD	< 2	mg/l		2	SM 5210B	NG	08/11/17
Total Organic Carbon	0.61	mg/l		0.5	SM 5310B	SW	08/16/17
Chemical Oxygen Demand	< 10	mg/l		10	EPA 410.4	SW	08/16/17

Minerals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Chloride	6.30	mg/l		0.05	EPA 300.0	JC	08/10/17
Sulfate	10.7	mg/l		0.1	EPA 300.0	JC	08/10/17

Nutrients

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Nitrite	< 0.005	mg/l		0.005	EPA 300.0	JC	08/10/17
Nitrate	5.40	mg/l		0.025	EPA 300.0	JC	08/10/17


Aaron W. Young
Laboratory Manager

QC Summary for sample numbers: 17-A013321 to 17-A013327

DUPLICATES

SAMPLE #	ANALYTE	UNITS	SAMPLE VALUE	DUP VALUE	RPD
17-A013301	BOD	mg/l	88.	82.	7.1
17-A013771	Total Organic Carbon	mg/l	1.9	1.9	0.00
17-A013031	Chemical Oxygen Demand	mg/l	< 10	< 10	
17-A013323	Chemical Oxygen Demand	mg/l	< 10	< 10	
17-A013327	Chemical Oxygen Demand	mg/l	< 10	< 10	
17-A013326	Nitrate	mg/l	3.30	3.20	3.1
17-A013326	Nitrite	mg/l	< 0.005	< 0.005	

MATRIX SPIKES

SAMPLE #	ANALYTE	UNITS	SAMPLE VALUE	SMPL+ SPK	SPK AMT	RECOVERY
17-A013772	Total Organic Carbon	mg/l	1.9	27.	25.	100.40 %
17-A013031	Chemical Oxygen Demand	mg/l	< 10	64.	50.	128.00 %
17-A013323	Chemical Oxygen Demand	mg/l	< 10	54.	50.	108.00 %
17-A013327	Chemical Oxygen Demand	mg/l	< 10	57.	50.	114.00 %
17-A013326	Nitrate	mg/l	3.30	5.11	2.00	90.50 %
17-A013326	Nitrite	mg/l	< 0.005	1.60	2.00	80.00 %
17-A013327	Total Sulfide	mg/l	< 0.05	0.58	0.50	116.00 %
17-A013327	Total Sulfide	mg/l	< 0.05	0.57	0.50	114.00 %

MATRIX SPIKE DUPLICATES

SAMPLE #	ANALYTE	UNITS	SAMPLE + SPK	MSD VALUE	RPD
Spike	Total Sulfide	mg/l	0.58	0.57	1.7

STANDARD REFERENCE MATERIALS

ANALYTE	UNITS	TRUE VALUE	MEASURED VALUE	RECOVERY
BOD	mg/l	200	190	95.0 %
Total Organic Carbon	mg/l	50.	52.	104. %
Chemical Oxygen Demand	mg/l	100	100	100. %
Chemical Oxygen Demand	mg/l	100	100	100. %
Chloride	mg/l	5.00	4.92	98.4 %
Chloride	mg/l	5.00	4.83	96.6 %
Chloride	mg/l	5.00	4.90	98.0 %
Nitrate	mg/l	5.00	4.78	95.6 %
Nitrate	mg/l	5.00	4.68	93.6 %
Nitrite	mg/l	5.00	4.84	96.8 %
Nitrite	mg/l	5.00	4.73	94.6 %
Total Sulfide	mg/l	1.0	1.0	100. %
Sulfate	mg/l	5.00	5.14	103. %
Sulfate	mg/l	5.00	5.11	102. %
Sulfate	mg/l	5.00	5.14	103. %

QC Summary for sample numbers: 17-A013321 to 17-A013327...

BLANKS

ANALYTE	UNITS	RESULT
BOD	mg/l	< 2
Total Organic Carbon	mg/l	< 0.5
Chemical Oxygen Demand	mg/l	< 10
Chemical Oxygen Demand	mg/l	< 10
Chloride	mg/l	< 0.05
Chloride	mg/l	< 0.05
Chloride	mg/l	0.09
Nitrate	mg/l	< 0.025
Nitrate	mg/l	< 0.025
Nitrite	mg/l	< 0.005
Nitrite	mg/l	< 0.005
Total Sulfide	mg/l	< 0.05
Sulfate	mg/l	< 0.1
Sulfate	mg/l	< 0.1
Sulfate	mg/l	< 0.1

SUBCONTRACT SAMPLE CHAIN OF CUSTODY

Send Report To Michael Erdahl

Company Friedman and Bruya, Inc.

Address 3012 16th Ave W

City, State, ZIP Seattle, WA 98119

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

SUBCONTRACTOR Amtest

PROJECT NAME/NO. 708174

PO # F-36

REMARKS

Please Email Results

Page # 1 of 1

TURNAROUND TIME

Standard (2 Weeks)

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							Notes	
						Dioxins/Furans	EPH	VPH	Nitrite/Nitrate	Sulfate Chloride Alkalinity	TOC-9060M	COD		BOD
MW-1		8/9/17	7:19	water					X	X	X	X		
MW-7			8:22						X	X	X	X		
MW-15			9:44						X	X	X	X		
MW-8			11:02						X	X	X	X		
MW-9			12:21						X	X	X	X		
GW-11			13:35						X	X	X	X		
MW-2			15:04						X	X	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
<i>[Signature]</i>	Michael Erdahl	Friedman and Bruya	8/10/17	0720 AM
Received by: <i>[Signature]</i>				
Relinquished by: <i>[Signature]</i>				
Received by:				

Relinquished by: *[Signature]* Michael Erdahl
 Received by: *[Signature]* Friedman and Bruya
 Relinquished by: *[Signature]*
 Received by:

Received by: *[Signature]* Friedman and Bruya
 Received by:

Notaric

708174

SAMPLE CHAIN OF CUSTODY

NE 08/09/17

ATU/VW5

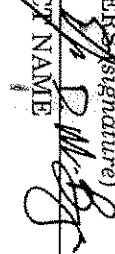
Report To Eric Voltes - Josh Bernthal

Company Environmental Partners Inc.

Address 180 NW Maple St

City, State, ZIP Issaquah, WA

Phone _____ Email _____

SAMPLERS (signature) 	
PROJECT NAME	PO #
69402	
REMARKS	INVOICE TO

Page # _____ of _____

TURNAROUND TIME

Standard Turnaround

RUSH

Rush charges authorized by: _____

SAMPLE DISPOSAL



Dispose after 30 days

Archive Samples

Other _____

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED															
						TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM	Total Dissolved Merhane, Ethane Ethene	TOC and COD	Nitrate/Nitrite	Sulfate/Chloride	BOD	Sulfide	CO ₂		
MW-1	01 A-P	8/9/17	718	Water	16					X		X	X	X	X	X	X	X	X	X	X
MW-7	02		822	Water	16					X		X	X	X	X	X	X	X	X	X	X
MW-15	03		944	Water	16					X		X	X	X	X	X	X	X	X	X	X
MW-8	04		1102	Water	16					X		X	X	X	X	X	X	X	X	X	X
MW-9	05		1227	Water	16					X		X	X	X	X	X	X	X	X	X	X
GW-11	06		1339	Water	16					X		X	X	X	X	X	X	X	X	X	X
MW-2	07		1504	Water	16					X		X	X	X	X	X	X	X	X	X	X

Samples received at 5 OC

SIGNATURE		PRINT NAME		COMPANY		DATE	TIME
Relinquished by:		Elizabeth Weber	-Braya	EP1		8/9/17	1640
Received by:		Jon Shimura		EB3		8/9/17	1640
Relinquished by:							
Received by:							

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

3012 16th Avenue West
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(206) 285-8282
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www.friedmanandbruya.com

August 18, 2017

Josh Bernthal, Project Manager
Environmental Partners, Inc.
1180 NW Maple St, Suite 310
Issaquah, WA 98027

RE: 69402, F&BI 708197

Dear Mr Bernthal:

Included are the results from the testing of material submitted on August 10, 2017 from the 69402, F&BI 708197 project. There are 21 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 have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
c: Cynthia Moon, Eric Koltes
EPI0818R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on August 10, 2017 by Friedman & Bruya, Inc. from the Environmental Partners 69402, F&BI 708197 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>Environmental Partners</u>
708197 -01	MW-13
708197 -02	GW-10
708197 -03	MW-12:Bag
708197 -04	MW-6:Bag
708197 -05	MW-18
708197 -06	MW-5:Bag
708197 -07	MW-10:Bag
708197 -08	MW-14:Bag
708197 -09	MW-11:Bag
708197 -10	MW-4:Bag
708197 -11	GW-1:Bag
708197 -12	GW-7:Bag
708197 -13	GW-3:Bag
708197 -14	GW-6:Bag
708197 -15	GW-5:Bag
708197 -16	GW-9:Bag
708197 -17	GW-8:Bag

All quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-13	Client:	Environmental Partners
Date Received:	08/10/17	Project:	69402, F&BI 708197
Date Extracted:	08/14/17	Lab ID:	708197-01
Date Analyzed:	08/14/17	Data File:	081416.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	85	117
Toluene-d8	102	91	108
4-Bromofluorobenzene	98	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	2.5

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	GW-10	Client:	Environmental Partners
Date Received:	08/10/17	Project:	69402, F&BI 708197
Date Extracted:	08/14/17	Lab ID:	708197-02
Date Analyzed:	08/14/17	Data File:	081417.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	85	117
Toluene-d8	100	91	108
4-Bromofluorobenzene	97	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	0.23
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	22
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-12:Bag	Client:	Environmental Partners
Date Received:	08/10/17	Project:	69402, F&BI 708197
Date Extracted:	08/14/17	Lab ID:	708197-03
Date Analyzed:	08/14/17	Data File:	081418.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	85	117
Toluene-d8	99	91	108
4-Bromofluorobenzene	98	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	2.5

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-6:Bag	Client:	Environmental Partners
Date Received:	08/10/17	Project:	69402, F&BI 708197
Date Extracted:	08/14/17	Lab ID:	708197-04
Date Analyzed:	08/14/17	Data File:	081419.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	85	117
Toluene-d8	100	91	108
4-Bromofluorobenzene	100	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-18	Client:	Environmental Partners
Date Received:	08/10/17	Project:	69402, F&BI 708197
Date Extracted:	08/14/17	Lab ID:	708197-05
Date Analyzed:	08/14/17	Data File:	081420.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	85	117
Toluene-d8	101	91	108
4-Bromofluorobenzene	99	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-5:Bag	Client:	Environmental Partners
Date Received:	08/10/17	Project:	69402, F&BI 708197
Date Extracted:	08/14/17	Lab ID:	708197-06
Date Analyzed:	08/14/17	Data File:	081434.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	85	117
Toluene-d8	99	91	108
4-Bromofluorobenzene	97	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	1.2
Tetrachloroethene	21

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-10:Bag	Client:	Environmental Partners
Date Received:	08/10/17	Project:	69402, F&BI 708197
Date Extracted:	08/14/17	Lab ID:	708197-07
Date Analyzed:	08/14/17	Data File:	081435.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	85	117
Toluene-d8	101	91	108
4-Bromofluorobenzene	97	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	1.3
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	19
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	60
Tetrachloroethene	22

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-14:Bag	Client:	Environmental Partners
Date Received:	08/10/17	Project:	69402, F&BI 708197
Date Extracted:	08/14/17	Lab ID:	708197-08
Date Analyzed:	08/14/17	Data File:	081424.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	85	117
Toluene-d8	101	91	108
4-Bromofluorobenzene	98	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-11:Bag	Client:	Environmental Partners
Date Received:	08/10/17	Project:	69402, F&BI 708197
Date Extracted:	08/14/17	Lab ID:	708197-09
Date Analyzed:	08/14/17	Data File:	081425.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	85	117
Toluene-d8	102	91	108
4-Bromofluorobenzene	97	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	1.7
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	3.6
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-4:Bag	Client:	Environmental Partners
Date Received:	08/10/17	Project:	69402, F&BI 708197
Date Extracted:	08/14/17	Lab ID:	708197-10
Date Analyzed:	08/14/17	Data File:	081426.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	85	117
Toluene-d8	101	91	108
4-Bromofluorobenzene	100	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	0.51
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	6.2
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	GW-1:Bag	Client:	Environmental Partners
Date Received:	08/10/17	Project:	69402, F&BI 708197
Date Extracted:	08/14/17	Lab ID:	708197-11
Date Analyzed:	08/14/17	Data File:	081427.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	85	117
Toluene-d8	99	91	108
4-Bromofluorobenzene	98	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	GW-7:Bag	Client:	Environmental Partners
Date Received:	08/10/17	Project:	69402, F&BI 708197
Date Extracted:	08/14/17	Lab ID:	708197-12
Date Analyzed:	08/14/17	Data File:	081428.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	85	117
Toluene-d8	102	91	108
4-Bromofluorobenzene	98	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	2.0

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	GW-3:Bag	Client:	Environmental Partners
Date Received:	08/10/17	Project:	69402, F&BI 708197
Date Extracted:	08/14/17	Lab ID:	708197-13
Date Analyzed:	08/14/17	Data File:	081429.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	85	117
Toluene-d8	100	91	108
4-Bromofluorobenzene	97	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	2.9

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	GW-6:Bag	Client:	Environmental Partners
Date Received:	08/10/17	Project:	69402, F&BI 708197
Date Extracted:	08/14/17	Lab ID:	708197-14
Date Analyzed:	08/14/17	Data File:	081430.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	85	117
Toluene-d8	103	91	108
4-Bromofluorobenzene	98	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	9.2

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	GW-5:Bag	Client:	Environmental Partners
Date Received:	08/10/17	Project:	69402, F&BI 708197
Date Extracted:	08/14/17	Lab ID:	708197-15
Date Analyzed:	08/14/17	Data File:	081431.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	85	117
Toluene-d8	102	91	108
4-Bromofluorobenzene	98	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	3.2

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	GW-9:Bag	Client:	Environmental Partners
Date Received:	08/10/17	Project:	69402, F&BI 708197
Date Extracted:	08/14/17	Lab ID:	708197-16
Date Analyzed:	08/14/17	Data File:	081432.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	85	117
Toluene-d8	102	91	108
4-Bromofluorobenzene	98	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	1.4
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	GW-8:Bag	Client:	Environmental Partners
Date Received:	08/10/17	Project:	69402, F&BI 708197
Date Extracted:	08/14/17	Lab ID:	708197-17
Date Analyzed:	08/14/17	Data File:	081433.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	85	117
Toluene-d8	99	91	108
4-Bromofluorobenzene	97	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	26

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Method Blank	Client:	Environmental Partners
Date Received:	Not Applicable	Project:	69402, F&BI 708197
Date Extracted:	08/14/17	Lab ID:	07-1725 mb
Date Analyzed:	08/14/17	Data File:	081408.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	85	117
Toluene-d8	101	91	108
4-Bromofluorobenzene	98	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/18/17

Date Received: 08/10/17

Project: 69402, F&BI 708197

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER
SAMPLES FOR VOLATILES BY EPA METHOD 8260C**

Laboratory Code: 708197-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Acceptance Criteria
Vinyl chloride	ug/L (ppb)	50	<0.2	94	61-139
Chloroethane	ug/L (ppb)	50	<1	91	55-149
1,1-Dichloroethene	ug/L (ppb)	50	<1	87	71-123
Methylene chloride	ug/L (ppb)	50	<5	100	61-126
trans-1,2-Dichloroethene	ug/L (ppb)	50	<1	94	72-122
1,1-Dichloroethane	ug/L (ppb)	50	<1	93	79-113
cis-1,2-Dichloroethene	ug/L (ppb)	50	<1	95	63-126
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	<1	98	70-119
1,1,1-Trichloroethane	ug/L (ppb)	50	<1	89	75-121
Trichloroethene	ug/L (ppb)	50	<1	97	73-122
Tetrachloroethene	ug/L (ppb)	50	2.5	100	72-113

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Vinyl chloride	ug/L (ppb)	50	100	99	70-128	1
Chloroethane	ug/L (ppb)	50	94	96	66-149	2
1,1-Dichloroethene	ug/L (ppb)	50	94	95	75-119	1
Methylene chloride	ug/L (ppb)	50	110	109	63-132	1
trans-1,2-Dichloroethene	ug/L (ppb)	50	99	100	76-118	1
1,1-Dichloroethane	ug/L (ppb)	50	98	99	77-119	1
cis-1,2-Dichloroethene	ug/L (ppb)	50	100	101	76-119	1
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	101	103	78-114	2
1,1,1-Trichloroethane	ug/L (ppb)	50	98	99	80-116	1
Trichloroethene	ug/L (ppb)	50	100	103	72-119	3
Tetrachloroethene	ug/L (ppb)	50	103	102	78-109	1

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.

708197

SAMPLE CHAIN OF CUSTODY

ME 8/10/17 WY

Report To Josh Bernthal and Eric Kohler

Company Environmental Partners Inc

Address 1180 NW Maple Street

City, State, ZIP Issaquah, WA

Phone _____ Email _____

SAMPLES (signature)

J.P.M. Bernthal

PO #

PROJECT NAME

REMARKS

INVOICE TO

Page # 1 of 2

TURNAROUND TIME

Standard Turnaround
 RUSH

Rush charges authorized by: _____

SAMPLE DISPOSAL

Dispose after 30 days
 Archive Samples
 Other

ANALYSES REQUESTED

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED										Notes				
						TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM								
MW-13	01	A-C 8/10/17	904	Water	3															
GW-10	02		940		3															
MW-12: Bag	03		956		3															
MW-6: Bag	04		1004		3															
MW-18	05		1107		3															
MW-5: Bag	06		1148		3															
MW-10: Bag	07		1212		3															
MW-14: Bag	08		1223		3															
MW-11: Bag	09		1234		3															
MW-4: Bag	10		1240		3															

SIGNATURE

Friedman & Bruya, Inc.

3012 16th Avenue West

Seattle, WA 98119-2029

Ph. (206) 285-8282

Relinquished by: J.P.M. Bernthal

Received by: M.H. Langston

PRINT NAME

Elizabeth Weber - Bruya

M.H. Langston

COMPANY

ERI

FRS Inc

DATE

8/10/17

8/10/17

TIME

1525

1525

Received by:

Samples received at 3 o'clock

708197

SAMPLE CHAIN OF CUSTODY
 ME 8/10/17 V04

Report To Josh Bernthal + Eric Kaites

Company ERI

Address 1180 NW Maple St

City, State, ZIP Issaquah, WA

Phone _____ Email _____

SAMPLES (signature) <u>J.D.W.B.S.</u>	
PROJECT NAME <u>69402</u>	PO #
REMARKS	INVOICE TO

Page # 2 of 2

TURNAROUND TIME
 Standard Turnaround
 RUSH
 Rush charges authorized by: _____

SAMPLE DISPOSAL
 Dispose after 30 days
 Archive Samples
 Other _____

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED						Notes		
						TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D		PAHs 8270D SIM	
GW-1: Bag	11A-C	8/10/17	1330	Water	3					X				
GW-7: Bag	12		1338		3					X				
GW-3: Bag	13		1345		3					X				
GW-6: Bag	14		1352		3					X				
GW-5: Bag	15		1400		3					X				
GW-9: Bag	16		1406		3					X				
GW-8: Bag	17		1412		3					X				

Relinquished by: <u>[Signature]</u>	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Received by: <u>[Signature]</u>		<u>Elizabeth Weber-Dry</u>	<u>ERI</u>	<u>8/10/17</u>	<u>1525</u>
Relinquished by: <u>[Signature]</u>		<u>Mark Langston</u>	<u>ERInc</u>	<u>8/10/17</u>	<u>1525</u>
Received by: _____				Samples received at: <u>3</u>	°C

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
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

November 20, 2017

Josh Bernthal, Project Manager
Environmental Partners, Inc.
1180 NW Maple St, Suite 310
Issaquah, WA 98027

RE: 69402

Dear Mr Bernthal:

Included are the results from the testing of material submitted on November 14, 2017 from the 69402, F&BI 711264 project. There are 10 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 have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
c: Cynthia Moon
EPI1120R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on November 14, 2017 by Friedman & Bruya, Inc. from the Environmental Partners 69402 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>Environmental Partners</u>
711264 -01	IJ-13:20
711264 -02	IJ-13:25
711264 -03	IJ-13:30
711264 -04	IJ-14:15
711264 -05	IJ-14:25

All quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID: IJ-13:20	Client: Environmental Partners
Date Received: 11/14/17	Project: 69402, F&BI 711264
Date Extracted: 11/15/17	Lab ID: 711264-01
Date Analyzed: 11/15/17	Data File: 111533.D
Matrix: Soil	Instrument: GCMS4
Units: mg/kg (ppm) Dry Weight	Operator: JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	62	142
Toluene-d8	103	55	145
4-Bromofluorobenzene	109	65	139

Compounds:	Concentration mg/kg (ppm)	Compounds:	Concentration mg/kg (ppm)
Dichlorodifluoromethane	<0.5	1,3-Dichloropropane	<0.05
Chloromethane	<0.5	Tetrachloroethene	<0.025
Vinyl chloride	<0.05	Dibromochloromethane	<0.05
Bromomethane	<0.5	1,2-Dibromoethane (EDB)	<0.05
Chloroethane	<0.5	Chlorobenzene	<0.05
Trichlorofluoromethane	<0.5	Ethylbenzene	<0.05
Acetone	<0.5	1,1,1,2-Tetrachloroethane	<0.05
1,1-Dichloroethene	<0.05	m,p-Xylene	<0.1
Hexane	<0.25	o-Xylene	<0.05
Methylene chloride	<0.5	Styrene	<0.05
Methyl t-butyl ether (MTBE)	<0.05	Isopropylbenzene	<0.05
trans-1,2-Dichloroethene	<0.05	Bromoform	<0.05
1,1-Dichloroethane	<0.05	n-Propylbenzene	<0.05
2,2-Dichloropropane	<0.05	Bromobenzene	<0.05
cis-1,2-Dichloroethene	<0.05	1,3,5-Trimethylbenzene	<0.05
Chloroform	<0.05	1,1,2,2-Tetrachloroethane	<0.05
2-Butanone (MEK)	<0.5	1,2,3-Trichloropropane	<0.05
1,2-Dichloroethane (EDC)	<0.05	2-Chlorotoluene	<0.05
1,1,1-Trichloroethane	<0.05	4-Chlorotoluene	<0.05
1,1-Dichloropropene	<0.05	tert-Butylbenzene	<0.05
Carbon tetrachloride	<0.05	1,2,4-Trimethylbenzene	<0.05
Benzene	<0.03	sec-Butylbenzene	<0.05
Trichloroethene	<0.02	p-Isopropyltoluene	<0.05
1,2-Dichloropropane	<0.05	1,3-Dichlorobenzene	<0.05
Bromodichloromethane	<0.05	1,4-Dichlorobenzene	<0.05
Dibromomethane	<0.05	1,2-Dichlorobenzene	<0.05
4-Methyl-2-pentanone	<0.5	1,2-Dibromo-3-chloropropane	<0.5
cis-1,3-Dichloropropene	<0.05	1,2,4-Trichlorobenzene	<0.25
Toluene	<0.05	Hexachlorobutadiene	<0.25
trans-1,3-Dichloropropene	<0.05	Naphthalene	<0.05
1,1,2-Trichloroethane	<0.05	1,2,3-Trichlorobenzene	<0.25
2-Hexanone	<0.5		

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	IJ-13:25	Client:	Environmental Partners
Date Received:	11/14/17	Project:	69402, F&BI 711264
Date Extracted:	11/15/17	Lab ID:	711264-02
Date Analyzed:	11/15/17	Data File:	111534.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	62	142
Toluene-d8	103	55	145
4-Bromofluorobenzene	109	65	139

Compounds:	Concentration mg/kg (ppm)	Compounds:	Concentration mg/kg (ppm)
Dichlorodifluoromethane	<0.5	1,3-Dichloropropane	<0.05
Chloromethane	<0.5	Tetrachloroethene	<0.025
Vinyl chloride	<0.05	Dibromochloromethane	<0.05
Bromomethane	<0.5	1,2-Dibromoethane (EDB)	<0.05
Chloroethane	<0.5	Chlorobenzene	<0.05
Trichlorofluoromethane	<0.5	Ethylbenzene	<0.05
Acetone	<0.5	1,1,1,2-Tetrachloroethane	<0.05
1,1-Dichloroethene	<0.05	m,p-Xylene	<0.1
Hexane	<0.25	o-Xylene	<0.05
Methylene chloride	<0.5	Styrene	<0.05
Methyl t-butyl ether (MTBE)	<0.05	Isopropylbenzene	<0.05
trans-1,2-Dichloroethene	<0.05	Bromoform	<0.05
1,1-Dichloroethane	<0.05	n-Propylbenzene	<0.05
2,2-Dichloropropane	<0.05	Bromobenzene	<0.05
cis-1,2-Dichloroethene	<0.05	1,3,5-Trimethylbenzene	<0.05
Chloroform	<0.05	1,1,2,2-Tetrachloroethane	<0.05
2-Butanone (MEK)	<0.5	1,2,3-Trichloropropane	<0.05
1,2-Dichloroethane (EDC)	<0.05	2-Chlorotoluene	<0.05
1,1,1-Trichloroethane	<0.05	4-Chlorotoluene	<0.05
1,1-Dichloropropene	<0.05	tert-Butylbenzene	<0.05
Carbon tetrachloride	<0.05	1,2,4-Trimethylbenzene	<0.05
Benzene	<0.03	sec-Butylbenzene	<0.05
Trichloroethene	<0.02	p-Isopropyltoluene	<0.05
1,2-Dichloropropane	<0.05	1,3-Dichlorobenzene	<0.05
Bromodichloromethane	<0.05	1,4-Dichlorobenzene	<0.05
Dibromomethane	<0.05	1,2-Dichlorobenzene	<0.05
4-Methyl-2-pentanone	<0.5	1,2-Dibromo-3-chloropropane	<0.5
cis-1,3-Dichloropropene	<0.05	1,2,4-Trichlorobenzene	<0.25
Toluene	<0.05	Hexachlorobutadiene	<0.25
trans-1,3-Dichloropropene	<0.05	Naphthalene	<0.05
1,1,2-Trichloroethane	<0.05	1,2,3-Trichlorobenzene	<0.25
2-Hexanone	<0.5		

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	IJ-13:30	Client:	Environmental Partners
Date Received:	11/14/17	Project:	69402, F&BI 711264
Date Extracted:	11/15/17	Lab ID:	711264-03
Date Analyzed:	11/15/17	Data File:	111535.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	62	142
Toluene-d8	104	55	145
4-Bromofluorobenzene	109	65	139

Compounds:	Concentration mg/kg (ppm)	Compounds:	Concentration mg/kg (ppm)
Dichlorodifluoromethane	<0.5	1,3-Dichloropropane	<0.05
Chloromethane	<0.5	Tetrachloroethene	0.028
Vinyl chloride	<0.05	Dibromochloromethane	<0.05
Bromomethane	<0.5	1,2-Dibromoethane (EDB)	<0.05
Chloroethane	<0.5	Chlorobenzene	<0.05
Trichlorofluoromethane	<0.5	Ethylbenzene	<0.05
Acetone	<0.5	1,1,1,2-Tetrachloroethane	<0.05
1,1-Dichloroethene	<0.05	m,p-Xylene	<0.1
Hexane	<0.25	o-Xylene	<0.05
Methylene chloride	<0.5	Styrene	<0.05
Methyl t-butyl ether (MTBE)	<0.05	Isopropylbenzene	<0.05
trans-1,2-Dichloroethene	<0.05	Bromoform	<0.05
1,1-Dichloroethane	<0.05	n-Propylbenzene	<0.05
2,2-Dichloropropane	<0.05	Bromobenzene	<0.05
cis-1,2-Dichloroethene	<0.05	1,3,5-Trimethylbenzene	<0.05
Chloroform	<0.05	1,1,2,2-Tetrachloroethane	<0.05
2-Butanone (MEK)	<0.5	1,2,3-Trichloropropane	<0.05
1,2-Dichloroethane (EDC)	<0.05	2-Chlorotoluene	<0.05
1,1,1-Trichloroethane	<0.05	4-Chlorotoluene	<0.05
1,1-Dichloropropene	<0.05	tert-Butylbenzene	<0.05
Carbon tetrachloride	<0.05	1,2,4-Trimethylbenzene	<0.05
Benzene	<0.03	sec-Butylbenzene	<0.05
Trichloroethene	<0.02	p-Isopropyltoluene	<0.05
1,2-Dichloropropane	<0.05	1,3-Dichlorobenzene	<0.05
Bromodichloromethane	<0.05	1,4-Dichlorobenzene	<0.05
Dibromomethane	<0.05	1,2-Dichlorobenzene	<0.05
4-Methyl-2-pentanone	<0.5	1,2-Dibromo-3-chloropropane	<0.5
cis-1,3-Dichloropropene	<0.05	1,2,4-Trichlorobenzene	<0.25
Toluene	<0.05	Hexachlorobutadiene	<0.25
trans-1,3-Dichloropropene	<0.05	Naphthalene	<0.05
1,1,2-Trichloroethane	<0.05	1,2,3-Trichlorobenzene	<0.25
2-Hexanone	<0.5		

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	IJ-14:15	Client:	Environmental Partners
Date Received:	11/14/17	Project:	69402, F&BI 711264
Date Extracted:	11/15/17	Lab ID:	711264-04
Date Analyzed:	11/16/17	Data File:	111536.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	62	142
Toluene-d8	102	55	145
4-Bromofluorobenzene	108	65	139

Compounds:	Concentration mg/kg (ppm)	Compounds:	Concentration mg/kg (ppm)
Dichlorodifluoromethane	<0.5	1,3-Dichloropropane	<0.05
Chloromethane	<0.5	Tetrachloroethene	<0.025
Vinyl chloride	<0.05	Dibromochloromethane	<0.05
Bromomethane	<0.5	1,2-Dibromoethane (EDB)	<0.05
Chloroethane	<0.5	Chlorobenzene	<0.05
Trichlorofluoromethane	<0.5	Ethylbenzene	<0.05
Acetone	<0.5	1,1,1,2-Tetrachloroethane	<0.05
1,1-Dichloroethene	<0.05	m,p-Xylene	<0.1
Hexane	<0.25	o-Xylene	<0.05
Methylene chloride	<0.5	Styrene	<0.05
Methyl t-butyl ether (MTBE)	<0.05	Isopropylbenzene	<0.05
trans-1,2-Dichloroethene	<0.05	Bromoform	<0.05
1,1-Dichloroethane	<0.05	n-Propylbenzene	<0.05
2,2-Dichloropropane	<0.05	Bromobenzene	<0.05
cis-1,2-Dichloroethene	<0.05	1,3,5-Trimethylbenzene	<0.05
Chloroform	<0.05	1,1,2,2-Tetrachloroethane	<0.05
2-Butanone (MEK)	<0.5	1,2,3-Trichloropropane	<0.05
1,2-Dichloroethane (EDC)	<0.05	2-Chlorotoluene	<0.05
1,1,1-Trichloroethane	<0.05	4-Chlorotoluene	<0.05
1,1-Dichloropropene	<0.05	tert-Butylbenzene	<0.05
Carbon tetrachloride	<0.05	1,2,4-Trimethylbenzene	<0.05
Benzene	<0.03	sec-Butylbenzene	<0.05
Trichloroethene	<0.02	p-Isopropyltoluene	<0.05
1,2-Dichloropropane	<0.05	1,3-Dichlorobenzene	<0.05
Bromodichloromethane	<0.05	1,4-Dichlorobenzene	<0.05
Dibromomethane	<0.05	1,2-Dichlorobenzene	<0.05
4-Methyl-2-pentanone	<0.5	1,2-Dibromo-3-chloropropane	<0.5
cis-1,3-Dichloropropene	<0.05	1,2,4-Trichlorobenzene	<0.25
Toluene	<0.05	Hexachlorobutadiene	<0.25
trans-1,3-Dichloropropene	<0.05	Naphthalene	<0.05
1,1,2-Trichloroethane	<0.05	1,2,3-Trichlorobenzene	<0.25
2-Hexanone	<0.5		

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	IJ-14:25	Client:	Environmental Partners
Date Received:	11/14/17	Project:	69402, F&BI 711264
Date Extracted:	11/15/17	Lab ID:	711264-05
Date Analyzed:	11/16/17	Data File:	111537.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	62	142
Toluene-d8	104	55	145
4-Bromofluorobenzene	109	65	139

Compounds:	Concentration mg/kg (ppm)	Compounds:	Concentration mg/kg (ppm)
Dichlorodifluoromethane	<0.5	1,3-Dichloropropane	<0.05
Chloromethane	<0.5	Tetrachloroethene	<0.025
Vinyl chloride	<0.05	Dibromochloromethane	<0.05
Bromomethane	<0.5	1,2-Dibromoethane (EDB)	<0.05
Chloroethane	<0.5	Chlorobenzene	<0.05
Trichlorofluoromethane	<0.5	Ethylbenzene	<0.05
Acetone	<0.5	1,1,1,2-Tetrachloroethane	<0.05
1,1-Dichloroethene	<0.05	m,p-Xylene	<0.1
Hexane	<0.25	o-Xylene	<0.05
Methylene chloride	<0.5	Styrene	<0.05
Methyl t-butyl ether (MTBE)	<0.05	Isopropylbenzene	<0.05
trans-1,2-Dichloroethene	<0.05	Bromoform	<0.05
1,1-Dichloroethane	<0.05	n-Propylbenzene	<0.05
2,2-Dichloropropane	<0.05	Bromobenzene	<0.05
cis-1,2-Dichloroethene	<0.05	1,3,5-Trimethylbenzene	<0.05
Chloroform	<0.05	1,1,2,2-Tetrachloroethane	<0.05
2-Butanone (MEK)	<0.5	1,2,3-Trichloropropane	<0.05
1,2-Dichloroethane (EDC)	<0.05	2-Chlorotoluene	<0.05
1,1,1-Trichloroethane	<0.05	4-Chlorotoluene	<0.05
1,1-Dichloropropene	<0.05	tert-Butylbenzene	<0.05
Carbon tetrachloride	<0.05	1,2,4-Trimethylbenzene	<0.05
Benzene	<0.03	sec-Butylbenzene	<0.05
Trichloroethene	<0.02	p-Isopropyltoluene	<0.05
1,2-Dichloropropane	<0.05	1,3-Dichlorobenzene	<0.05
Bromodichloromethane	<0.05	1,4-Dichlorobenzene	<0.05
Dibromomethane	<0.05	1,2-Dichlorobenzene	<0.05
4-Methyl-2-pentanone	<0.5	1,2-Dibromo-3-chloropropane	<0.5
cis-1,3-Dichloropropene	<0.05	1,2,4-Trichlorobenzene	<0.25
Toluene	<0.05	Hexachlorobutadiene	<0.25
trans-1,3-Dichloropropene	<0.05	Naphthalene	<0.05
1,1,2-Trichloroethane	<0.05	1,2,3-Trichlorobenzene	<0.25
2-Hexanone	<0.5		

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Method Blank	Client:	Environmental Partners
Date Received:	Not Applicable	Project:	69402, F&BI 711264
Date Extracted:	11/15/17	Lab ID:	07-2563 mb2
Date Analyzed:	11/15/17	Data File:	111520.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	62	142
Toluene-d8	102	55	145
4-Bromofluorobenzene	109	65	139

Compounds:	Concentration mg/kg (ppm)	Compounds:	Concentration mg/kg (ppm)
Dichlorodifluoromethane	<0.5	1,3-Dichloropropane	<0.05
Chloromethane	<0.5	Tetrachloroethene	<0.025
Vinyl chloride	<0.05	Dibromochloromethane	<0.05
Bromomethane	<0.5	1,2-Dibromoethane (EDB)	<0.05
Chloroethane	<0.5	Chlorobenzene	<0.05
Trichlorofluoromethane	<0.5	Ethylbenzene	<0.05
Acetone	<0.5	1,1,1,2-Tetrachloroethane	<0.05
1,1-Dichloroethene	<0.05	m,p-Xylene	<0.1
Hexane	<0.25	o-Xylene	<0.05
Methylene chloride	<0.5	Styrene	<0.05
Methyl t-butyl ether (MTBE)	<0.05	Isopropylbenzene	<0.05
trans-1,2-Dichloroethene	<0.05	Bromoform	<0.05
1,1-Dichloroethane	<0.05	n-Propylbenzene	<0.05
2,2-Dichloropropane	<0.05	Bromobenzene	<0.05
cis-1,2-Dichloroethene	<0.05	1,3,5-Trimethylbenzene	<0.05
Chloroform	<0.05	1,1,2,2-Tetrachloroethane	<0.05
2-Butanone (MEK)	<0.5	1,2,3-Trichloropropane	<0.05
1,2-Dichloroethane (EDC)	<0.05	2-Chlorotoluene	<0.05
1,1,1-Trichloroethane	<0.05	4-Chlorotoluene	<0.05
1,1-Dichloropropene	<0.05	tert-Butylbenzene	<0.05
Carbon tetrachloride	<0.05	1,2,4-Trimethylbenzene	<0.05
Benzene	<0.03	sec-Butylbenzene	<0.05
Trichloroethene	<0.02	p-Isopropyltoluene	<0.05
1,2-Dichloropropane	<0.05	1,3-Dichlorobenzene	<0.05
Bromodichloromethane	<0.05	1,4-Dichlorobenzene	<0.05
Dibromomethane	<0.05	1,2-Dichlorobenzene	<0.05
4-Methyl-2-pentanone	<0.5	1,2-Dibromo-3-chloropropane	<0.5
cis-1,3-Dichloropropene	<0.05	1,2,4-Trichlorobenzene	<0.25
Toluene	<0.05	Hexachlorobutadiene	<0.25
trans-1,3-Dichloropropene	<0.05	Naphthalene	<0.05
1,1,2-Trichloroethane	<0.05	1,2,3-Trichlorobenzene	<0.25
2-Hexanone	<0.5		

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/20/17

Date Received: 11/14/17

Project: 69402, F&BI 711264

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR VOLATILES BY EPA METHOD 8260C

Laboratory Code: 711266-05 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Dichlorodifluoromethane	mg/kg (ppm)	2.5	<0.5	24	25	10-142	4
Chloromethane	mg/kg (ppm)	2.5	<0.5	48	47	10-126	2
Vinyl chloride	mg/kg (ppm)	2.5	<0.05	49	50	10-138	2
Bromomethane	mg/kg (ppm)	2.5	<0.5	56	59	10-163	5
Chloroethane	mg/kg (ppm)	2.5	<0.5	54	55	10-176	2
Trichlorofluoromethane	mg/kg (ppm)	2.5	<0.5	53	54	10-176	2
Acetone	mg/kg (ppm)	12.5	<0.5	74	75	10-163	1
1,1-Dichloroethene	mg/kg (ppm)	2.5	<0.05	65	64	10-160	2
Hexane	mg/kg (ppm)	2.5	<0.25	54	58	10-137	7
Methylene chloride	mg/kg (ppm)	2.5	<0.5	78	79	10-156	1
Methyl t-butyl ether (MTBE)	mg/kg (ppm)	2.5	<0.05	78	77	21-145	1
trans-1,2-Dichloroethene	mg/kg (ppm)	2.5	<0.05	72	73	14-137	1
1,1-Dichloroethane	mg/kg (ppm)	2.5	<0.05	77	76	19-140	1
2,2-Dichloropropane	mg/kg (ppm)	2.5	<0.05	101	100	10-158	1
cis-1,2-Dichloroethene	mg/kg (ppm)	2.5	<0.05	80	79	25-135	1
Chloroform	mg/kg (ppm)	2.5	<0.05	79	78	21-145	1
2-Butanone (MEK)	mg/kg (ppm)	12.5	<0.5	88	89	19-147	1
1,2-Dichloroethane (EDC)	mg/kg (ppm)	2.5	<0.05	79	79	12-160	0
1,1,1-Trichloroethane	mg/kg (ppm)	2.5	<0.05	86	84	10-156	2
1,1-Dichloropropene	mg/kg (ppm)	2.5	<0.05	78	78	17-140	0
Carbon tetrachloride	mg/kg (ppm)	2.5	<0.05	90	90	9-164	0
Benzene	mg/kg (ppm)	2.5	<0.03	78	79	29-129	1
Trichloroethene	mg/kg (ppm)	2.5	<0.02	80	79	21-139	1
1,2-Dichloropropane	mg/kg (ppm)	2.5	<0.05	87	87	30-135	0
Bromodichloromethane	mg/kg (ppm)	2.5	<0.05	90	88	23-155	2
Dibromomethane	mg/kg (ppm)	2.5	<0.05	84	84	23-145	0
4-Methyl-2-pentanone	mg/kg (ppm)	12.5	<0.5	93	93	24-155	0
cis-1,3-Dichloropropene	mg/kg (ppm)	2.5	<0.05	95	95	28-144	0
Toluene	mg/kg (ppm)	2.5	<0.05	84	83	35-130	1
trans-1,3-Dichloropropene	mg/kg (ppm)	2.5	<0.05	101	102	26-149	1
1,1,2-Trichloroethane	mg/kg (ppm)	2.5	<0.05	90	89	10-205	1
2-Hexanone	mg/kg (ppm)	12.5	<0.5	97	97	15-166	0
1,3-Dichloropropane	mg/kg (ppm)	2.5	<0.05	89	89	31-137	0
Tetrachloroethene	mg/kg (ppm)	2.5	<0.025	85	85	20-133	0
Dibromochloromethane	mg/kg (ppm)	2.5	<0.05	100	99	28-150	1
1,2-Dibromoethane (EDB)	mg/kg (ppm)	2.5	<0.05	98	97	28-142	1
Chlorobenzene	mg/kg (ppm)	2.5	<0.05	86	86	32-129	0
Ethylbenzene	mg/kg (ppm)	2.5	<0.05	86	86	32-137	0
1,1,1,2-Tetrachloroethane	mg/kg (ppm)	2.5	<0.05	95	93	31-143	2
m,p-Xylene	mg/kg (ppm)	5	<0.1	87	87	34-136	0
o-Xylene	mg/kg (ppm)	2.5	<0.05	83	83	33-134	0
Styrene	mg/kg (ppm)	2.5	<0.05	88	87	35-137	1
Isopropylbenzene	mg/kg (ppm)	2.5	<0.05	86	85	31-142	1
Bromoform	mg/kg (ppm)	2.5	<0.05	106	105	21-156	1
n-Propylbenzene	mg/kg (ppm)	2.5	<0.05	90	90	23-146	0
Bromobenzene	mg/kg (ppm)	2.5	<0.05	92	90	34-130	2
1,3,5-Trimethylbenzene	mg/kg (ppm)	2.5	<0.05	88	89	18-149	1
1,1,2,2-Tetrachloroethane	mg/kg (ppm)	2.5	<0.05	91	90	28-140	1
1,2,3-Trichloropropane	mg/kg (ppm)	2.5	<0.05	88	88	25-144	0
2-Chlorotoluene	mg/kg (ppm)	2.5	<0.05	88	88	31-134	0
4-Chlorotoluene	mg/kg (ppm)	2.5	<0.05	89	89	31-136	0
tert-Butylbenzene	mg/kg (ppm)	2.5	<0.05	88	89	30-137	1
1,2,4-Trimethylbenzene	mg/kg (ppm)	2.5	<0.05	88	88	10-182	0
sec-Butylbenzene	mg/kg (ppm)	2.5	<0.05	90	90	23-145	0
p-Isopropyltoluene	mg/kg (ppm)	2.5	<0.05	89	89	21-149	0
1,3-Dichlorobenzene	mg/kg (ppm)	2.5	<0.05	88	88	30-131	0
1,4-Dichlorobenzene	mg/kg (ppm)	2.5	<0.05	88	88	29-129	0
1,2-Dichlorobenzene	mg/kg (ppm)	2.5	<0.05	88	88	31-132	0
1,2-Dibromo-3-chloropropane	mg/kg (ppm)	2.5	<0.5	98	100	11-161	2
1,2,4-Trichlorobenzene	mg/kg (ppm)	2.5	<0.25	88	88	22-142	0
Hexachlorobutadiene	mg/kg (ppm)	2.5	<0.25	91	91	10-142	0
Naphthalene	mg/kg (ppm)	2.5	<0.05	87	88	14-157	1
1,2,3-Trichlorobenzene	mg/kg (ppm)	2.5	<0.25	87	87	20-144	0

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/20/17

Date Received: 11/14/17

Project: 69402, F&BI 711264

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES
FOR VOLATILES BY EPA METHOD 8260C**

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Dichlorodifluoromethane	mg/kg (ppm)	2.5	53	10-146
Chloromethane	mg/kg (ppm)	2.5	65	27-133
Vinyl chloride	mg/kg (ppm)	2.5	74	22-139
Bromomethane	mg/kg (ppm)	2.5	71	38-114
Chloroethane	mg/kg (ppm)	2.5	76	10-163
Trichlorofluoromethane	mg/kg (ppm)	2.5	79	10-196
Acetone	mg/kg (ppm)	12.5	90	52-141
1,1-Dichloroethene	mg/kg (ppm)	2.5	84	47-128
Hexane	mg/kg (ppm)	2.5	90	43-142
Methylene chloride	mg/kg (ppm)	2.5	94	42-132
Methyl t-butyl ether (MTBE)	mg/kg (ppm)	2.5	90	60-123
trans-1,2-Dichloroethene	mg/kg (ppm)	2.5	91	67-127
1,1-Dichloroethane	mg/kg (ppm)	2.5	91	68-115
2,2-Dichloropropane	mg/kg (ppm)	2.5	119	52-170
cis-1,2-Dichloroethene	mg/kg (ppm)	2.5	94	72-113
Chloroform	mg/kg (ppm)	2.5	91	66-120
2-Butanone (MEK)	mg/kg (ppm)	12.5	97	57-123
1,2-Dichloroethane (EDC)	mg/kg (ppm)	2.5	92	56-135
1,1,1-Trichloroethane	mg/kg (ppm)	2.5	101	62-131
1,1-Dichloropropene	mg/kg (ppm)	2.5	95	69-128
Carbon tetrachloride	mg/kg (ppm)	2.5	109	60-139
Benzene	mg/kg (ppm)	2.5	91	68-114
Trichloroethene	mg/kg (ppm)	2.5	93	64-117
1,2-Dichloropropane	mg/kg (ppm)	2.5	98	72-127
Bromodichloromethane	mg/kg (ppm)	2.5	101	72-130
Dibromomethane	mg/kg (ppm)	2.5	96	70-120
4-Methyl-2-pentanone	mg/kg (ppm)	12.5	102	45-145
cis-1,3-Dichloropropene	mg/kg (ppm)	2.5	107	75-136
Toluene	mg/kg (ppm)	2.5	96	66-126
trans-1,3-Dichloropropene	mg/kg (ppm)	2.5	112	72-132
1,1,2-Trichloroethane	mg/kg (ppm)	2.5	98	75-113
2-Hexanone	mg/kg (ppm)	12.5	101	33-152
1,3-Dichloropropane	mg/kg (ppm)	2.5	98	72-130
Tetrachloroethene	mg/kg (ppm)	2.5	100	72-114
Dibromochloromethane	mg/kg (ppm)	2.5	112	74-125
1,2-Dibromoethane (EDB)	mg/kg (ppm)	2.5	107	74-132
Chlorobenzene	mg/kg (ppm)	2.5	96	76-111
Ethylbenzene	mg/kg (ppm)	2.5	98	64-123
1,1,1,2-Tetrachloroethane	mg/kg (ppm)	2.5	110	69-135
m,p-Xylene	mg/kg (ppm)	5	98	78-122
o-Xylene	mg/kg (ppm)	2.5	96	77-124
Styrene	mg/kg (ppm)	2.5	99	74-126
Isopropylbenzene	mg/kg (ppm)	2.5	98	76-127
Bromoform	mg/kg (ppm)	2.5	118	56-132
n-Propylbenzene	mg/kg (ppm)	2.5	99	74-124
Bromobenzene	mg/kg (ppm)	2.5	101	72-122
1,3,5-Trimethylbenzene	mg/kg (ppm)	2.5	98	76-126
1,1,2,2-Tetrachloroethane	mg/kg (ppm)	2.5	98	56-143
1,2,3-Trichloropropane	mg/kg (ppm)	2.5	95	61-137
2-Chlorotoluene	mg/kg (ppm)	2.5	98	74-121
4-Chlorotoluene	mg/kg (ppm)	2.5	97	75-122
tert-Butylbenzene	mg/kg (ppm)	2.5	100	73-130
1,2,4-Trimethylbenzene	mg/kg (ppm)	2.5	98	76-125
sec-Butylbenzene	mg/kg (ppm)	2.5	99	71-130
p-Isopropyltoluene	mg/kg (ppm)	2.5	100	70-132
1,3-Dichlorobenzene	mg/kg (ppm)	2.5	99	75-121
1,4-Dichlorobenzene	mg/kg (ppm)	2.5	99	74-117
1,2-Dichlorobenzene	mg/kg (ppm)	2.5	99	76-121
1,2-Dibromo-3-chloropropane	mg/kg (ppm)	2.5	112	58-138
1,2,4-Trichlorobenzene	mg/kg (ppm)	2.5	100	64-135
Hexachlorobutadiene	mg/kg (ppm)	2.5	104	50-153
Naphthalene	mg/kg (ppm)	2.5	98	63-140
1,2,3-Trichlorobenzene	mg/kg (ppm)	2.5	102	63-138

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.
- c - The presence of the analyte may be due to carryover from previous sample injections.
- cf - The sample was centrifuged prior to analysis.
- d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.
- dv - Insufficient sample volume was available to achieve normal reporting limits.
- f - The sample was laboratory filtered prior to analysis.
- fb - The analyte was detected in the method blank.
- fc - The 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.

71264

SAMPLE CHAIN OF CUSTODY

ME 11-14-17

VS4

Report To Josh Benkeal

Company Environmental Partners Inc

Address 1180 NW Maple St

City, State, ZIP Issaquah, WA

Phone _____ Email _____

SAMPLES (signature) [Signature]
 PROJECT NAME 69402
 REMARKS
 INVOICE TO
 ANALYSES REQUESTED
 TURNAROUND TIME
 Standard Turnaround
 RUSH
 Rush charges authorized by:
 SAMPLE DISPOSAL
 Dispose after 30 days
 Archive Samples
 Other

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM	Notes
IS-13:20	01A-D	11/8/17	935	Soil	4					X			
IS-B:25	02		945							X			
IS-13:30	03		954							X			
IS-14:15	04		1454							X			
IS-14:25	05		1500							X			

Samples received at 4 oc

Received by: [Signature] SIGNATURE
 PRINT NAME
 COMPANY
 DATE
 TIME

Received by: [Signature] SIGNATURE
 PRINT NAME
 COMPANY
 DATE
 TIME

Received by: [Signature] SIGNATURE
 PRINT NAME
 COMPANY
 DATE
 TIME

Friedman & Bruya, Inc.

3012 16th Avenue West

Seattle, WA 98119-2029

Ph. (206) 285-8282

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

3012 16th Avenue West
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fbi@isomedia.com
www.friedmanandbruya.com

December 1, 2017

Josh Bernthal, Project Manager
Environmental Partners, Inc.
1180 NW Maple St, Suite 310
Issaquah, WA 98027

RE: 69402, F&BI 711416

Dear Mr Bernthal:

Included are the results from the testing of material submitted on November 21, 2017 from the 69402, F&BI 711416 project. There are 26 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 have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
c: Cynthia Moon
EPI1201R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on November 21, 2017 by Friedman & Bruya, Inc. from the Environmental Partners 69402, F&BI 711416 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>Environmental Partners</u>
711416-01	GW-11
711416-02	MW-1
711416-03	MW-8
711416-04	MW-9
711416-05	MW-17
711416-06	MW-2
711416-07	MW-16:Bag
711416-08	MW-18:Bag
711416-09	MW-5:Bag
711416-10	GW-3:Bag
711416-11	GW-9:Bag
711416-12	GW-4
711416-13	GW-8:Bag
711416-14	GW-7:Bag
711416-15	GW-1:Bag
711416-16	MW-6:Bag
711416-17	MW-12:Bag
711416-18	MW-13
711416-19	GW-10:Bag
711416-20	MW-10:Bag
711416-21	MW-4:Bag
711416-22	MW-14:Bag

All quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	GW-11	Client:	Environmental Partners
Date Received:	11/21/17	Project:	69402, F&BI 711416
Date Extracted:	11/22/17	Lab ID:	711416-01
Date Analyzed:	11/22/17	Data File:	112233.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	85	117
Toluene-d8	99	91	108
4-Bromofluorobenzene	99	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	21

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-1	Client:	Environmental Partners
Date Received:	11/21/17	Project:	69402, F&BI 711416
Date Extracted:	11/22/17	Lab ID:	711416-02
Date Analyzed:	11/22/17	Data File:	112234.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	85	117
Toluene-d8	99	91	108
4-Bromofluorobenzene	102	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	19

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-8	Client:	Environmental Partners
Date Received:	11/21/17	Project:	69402, F&BI 711416
Date Extracted:	11/22/17	Lab ID:	711416-03
Date Analyzed:	11/22/17	Data File:	112235.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	85	117
Toluene-d8	99	91	108
4-Bromofluorobenzene	101	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-9	Client:	Environmental Partners
Date Received:	11/21/17	Project:	69402, F&BI 711416
Date Extracted:	11/22/17	Lab ID:	711416-04
Date Analyzed:	11/22/17	Data File:	112236.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	85	117
Toluene-d8	100	91	108
4-Bromofluorobenzene	104	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	1.3

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-2	Client:	Environmental Partners
Date Received:	11/21/17	Project:	69402, F&BI 711416
Date Extracted:	11/22/17	Lab ID:	711416-06
Date Analyzed:	11/22/17	Data File:	112237.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	85	117
Toluene-d8	99	91	108
4-Bromofluorobenzene	102	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-5:Bag	Client:	Environmental Partners
Date Received:	11/21/17	Project:	69402, F&BI 711416
Date Extracted:	11/22/17	Lab ID:	711416-09
Date Analyzed:	11/22/17	Data File:	112238.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	85	117
Toluene-d8	100	91	108
4-Bromofluorobenzene	102	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	1.5
Tetrachloroethene	25

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	GW-3:Bag	Client:	Environmental Partners
Date Received:	11/21/17	Project:	69402, F&BI 711416
Date Extracted:	11/22/17	Lab ID:	711416-10
Date Analyzed:	11/22/17	Data File:	112239.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	98	85	117
Toluene-d8	99	91	108
4-Bromofluorobenzene	101	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	1.3

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	GW-9:Bag	Client:	Environmental Partners
Date Received:	11/21/17	Project:	69402, F&BI 711416
Date Extracted:	11/22/17	Lab ID:	711416-11
Date Analyzed:	11/22/17	Data File:	112240.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	85	117
Toluene-d8	99	91	108
4-Bromofluorobenzene	100	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	GW-4	Client:	Environmental Partners
Date Received:	11/21/17	Project:	69402, F&BI 711416
Date Extracted:	11/22/17	Lab ID:	711416-12
Date Analyzed:	11/22/17	Data File:	112241.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	85	117
Toluene-d8	98	91	108
4-Bromofluorobenzene	99	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	6.8

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	GW-8:Bag	Client:	Environmental Partners
Date Received:	11/21/17	Project:	69402, F&BI 711416
Date Extracted:	11/22/17	Lab ID:	711416-13
Date Analyzed:	11/22/17	Data File:	112242.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	85	117
Toluene-d8	100	91	108
4-Bromofluorobenzene	103	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	13

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	GW-7:Bag	Client:	Environmental Partners
Date Received:	11/21/17	Project:	69402, F&BI 711416
Date Extracted:	11/22/17	Lab ID:	711416-14
Date Analyzed:	11/22/17	Data File:	112243.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	85	117
Toluene-d8	98	91	108
4-Bromofluorobenzene	100	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	1.3

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	GW-1: Bag	Client:	Environmental Partners
Date Received:	11/21/17	Project:	69402, F&BI 711416
Date Extracted:	11/22/17	Lab ID:	711416-15
Date Analyzed:	11/22/17	Data File:	112244.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	85	117
Toluene-d8	99	91	108
4-Bromofluorobenzene	102	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-6:Bag	Client:	Environmental Partners
Date Received:	11/21/17	Project:	69402, F&BI 711416
Date Extracted:	11/22/17	Lab ID:	711416-16
Date Analyzed:	11/22/17	Data File:	112245.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	85	117
Toluene-d8	100	91	108
4-Bromofluorobenzene	102	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-12:Bag	Client:	Environmental Partners
Date Received:	11/21/17	Project:	69402, F&BI 711416
Date Extracted:	11/22/17	Lab ID:	711416-17
Date Analyzed:	11/23/17	Data File:	112246.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	97	85	117
Toluene-d8	98	91	108
4-Bromofluorobenzene	101	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	3.8

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-13	Client:	Environmental Partners
Date Received:	11/21/17	Project:	69402, F&BI 711416
Date Extracted:	11/22/17	Lab ID:	711416-18
Date Analyzed:	11/23/17	Data File:	112247.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	85	117
Toluene-d8	100	91	108
4-Bromofluorobenzene	101	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	2.4

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	GW-10:Bag	Client:	Environmental Partners
Date Received:	11/21/17	Project:	69402, F&BI 711416
Date Extracted:	11/22/17	Lab ID:	711416-19
Date Analyzed:	11/23/17	Data File:	112248.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	85	117
Toluene-d8	98	91	108
4-Bromofluorobenzene	100	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	32
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-10:Bag	Client:	Environmental Partners
Date Received:	11/21/17	Project:	69402, F&BI 711416
Date Extracted:	11/22/17	Lab ID:	711416-20
Date Analyzed:	11/23/17	Data File:	112249.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	85	117
Toluene-d8	99	91	108
4-Bromofluorobenzene	104	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	5.9
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	52
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	110
Tetrachloroethene	280 ve

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-10:Bag	Client:	Environmental Partners
Date Received:	11/21/17	Project:	69402, F&BI 711416
Date Extracted:	11/22/17	Lab ID:	711416-20 1/10
Date Analyzed:	11/27/17	Data File:	112708.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	85	117
Toluene-d8	100	91	108
4-Bromofluorobenzene	100	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	6.4
Chloroethane	<10
1,1-Dichloroethene	<10
Methylene chloride	<50
trans-1,2-Dichloroethene	<10
1,1-Dichloroethane	<10
cis-1,2-Dichloroethene	54
1,2-Dichloroethane (EDC)	<10
1,1,1-Trichloroethane	<10
Trichloroethene	110
Tetrachloroethene	270

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-4:Bag	Client:	Environmental Partners
Date Received:	11/21/17	Project:	69402, F&BI 711416
Date Extracted:	11/22/17	Lab ID:	711416-21
Date Analyzed:	11/23/17	Data File:	112250.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	101	85	117
Toluene-d8	99	91	108
4-Bromofluorobenzene	103	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	0.24
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	2.2
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-14:Bag	Client:	Environmental Partners
Date Received:	11/21/17	Project:	69402, F&BI 711416
Date Extracted:	11/22/17	Lab ID:	711416-22
Date Analyzed:	11/23/17	Data File:	112251.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	85	117
Toluene-d8	100	91	108
4-Bromofluorobenzene	104	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Method Blank	Client:	Environmental Partners
Date Received:	Not Applicable	Project:	69402, F&BI 711416
Date Extracted:	11/22/17	Lab ID:	07-2611 mb2
Date Analyzed:	11/22/17	Data File:	112223.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	85	117
Toluene-d8	99	91	108
4-Bromofluorobenzene	100	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Method Blank	Client:	Environmental Partners
Date Received:	Not Applicable	Project:	69402, F&BI 711416
Date Extracted:	11/22/17	Lab ID:	07-2649 mb
Date Analyzed:	11/22/17	Data File:	112222.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	85	117
Toluene-d8	100	91	108
4-Bromofluorobenzene	102	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 12/01/17

Date Received: 11/21/17

Project: 69402, F&BI 711416

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER
SAMPLES FOR VOLATILES BY EPA METHOD 8260C**

Laboratory Code: 711402-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Acceptance Criteria
Vinyl chloride	ug/L (ppb)	50	<0.2	92	61-139
Chloroethane	ug/L (ppb)	50	<1	91	55-149
1,1-Dichloroethene	ug/L (ppb)	50	<1	94	71-123
Methylene chloride	ug/L (ppb)	50	<5	99	61-126
trans-1,2-Dichloroethene	ug/L (ppb)	50	<1	94	72-122
1,1-Dichloroethane	ug/L (ppb)	50	<1	97	79-113
cis-1,2-Dichloroethene	ug/L (ppb)	50	<1	95	63-126
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	<1	98	70-119
1,1,1-Trichloroethane	ug/L (ppb)	50	<1	96	75-121
Trichloroethene	ug/L (ppb)	50	<1	95	73-122
Tetrachloroethene	ug/L (ppb)	50	<1	90	72-113

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Vinyl chloride	ug/L (ppb)	50	96	94	70-128	2
Chloroethane	ug/L (ppb)	50	96	94	66-149	2
1,1-Dichloroethene	ug/L (ppb)	50	95	94	75-119	1
Methylene chloride	ug/L (ppb)	50	104	103	63-132	1
trans-1,2-Dichloroethene	ug/L (ppb)	50	96	95	76-118	1
1,1-Dichloroethane	ug/L (ppb)	50	99	99	77-119	0
cis-1,2-Dichloroethene	ug/L (ppb)	50	97	95	76-119	2
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	99	100	78-114	1
1,1,1-Trichloroethane	ug/L (ppb)	50	98	98	80-116	0
Trichloroethene	ug/L (ppb)	50	97	97	72-119	0
Tetrachloroethene	ug/L (ppb)	50	93	92	78-109	1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 12/01/17

Date Received: 11/21/17

Project: 69402, F&BI 711416

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER
SAMPLES FOR VOLATILES BY EPA METHOD 8260C**

Laboratory Code: 711416-16 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Acceptance Criteria
Vinyl chloride	ug/L (ppb)	50	<0.2	93	61-139
Chloroethane	ug/L (ppb)	50	<1	94	55-149
1,1-Dichloroethene	ug/L (ppb)	50	<1	92	71-123
Methylene chloride	ug/L (ppb)	50	<5	100	61-126
trans-1,2-Dichloroethene	ug/L (ppb)	50	<1	96	72-122
1,1-Dichloroethane	ug/L (ppb)	50	<1	99	79-113
cis-1,2-Dichloroethene	ug/L (ppb)	50	<1	96	63-126
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	<1	98	70-119
1,1,1-Trichloroethane	ug/L (ppb)	50	<1	97	75-121
Trichloroethene	ug/L (ppb)	50	<1	95	73-122
Tetrachloroethene	ug/L (ppb)	50	<1	91	72-113

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Vinyl chloride	ug/L (ppb)	50	96	94	70-128	2
Chloroethane	ug/L (ppb)	50	96	94	66-149	2
1,1-Dichloroethene	ug/L (ppb)	50	95	94	75-119	1
Methylene chloride	ug/L (ppb)	50	104	103	63-132	1
trans-1,2-Dichloroethene	ug/L (ppb)	50	96	95	76-118	1
1,1-Dichloroethane	ug/L (ppb)	50	99	99	77-119	0
cis-1,2-Dichloroethene	ug/L (ppb)	50	97	95	76-119	2
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	99	100	78-114	1
1,1,1-Trichloroethane	ug/L (ppb)	50	98	98	80-116	0
Trichloroethene	ug/L (ppb)	50	97	97	72-119	0
Tetrachloroethene	ug/L (ppb)	50	93	92	78-109	1

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.

711416

SAMPLE CHAIN OF CUSTODY

ME 11-21-17

Wdy

Report To Josh Bennett

Company Environmental Partners Inc

Address 1180 NW Maple St

City, State, ZIP Issaquah, WA

Phone _____ Email _____

Page # 1 of 3

SAMPLES (signature) <u>[Signature]</u> PROJECT NAME <u>69402</u>		PO #
REMARKS	CVOCs per LW2 <u>11/29/17 #4</u>	INVOICE TO

TURNAROUND TIME

Standard Turnaround

RUSH

Rush charges authorized by: _____

SAMPLE DISPOSAL

Dispose after 30 days

Archive Samples

Other

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED							Notes		
						TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM			
GW-11	OIA-C	11/21/17	7:10	Water	3					X					
MW-1	02		7:46							X					
MW-8	03		8:31							X					
MW-9	04		9:05							X					
MW-17	05		10:01											Archive	
MW-17	06		10:48							X					
MW-16 Bag	07		10:56											Archive	
MW-18 Bag	08		11:08											Archive	
MW-5 Bag	09		11:17							X					
GW-5 Bag	10		11:42							X					

SIGNATURE		PRINT NAME		COMPANY		DATE	TIME
Reinquired by: <u>[Signature]</u>		<u>Elizabeth Weber Bag</u>		<u>EP1</u>		11/21/17	
Received by: <u>[Signature]</u>		<u>Jan Schwarz</u>		<u>FBI</u>		11/21/17	18:45
Received by: _____							

Samples received at 4 °C

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

711416

SAMPLE CHAIN OF CUSTODY ME 11-21-17

Page # 2 of 3 wry

Report To Josh Bernthal

Company Environmental Resources Inc

Address 1180 New Maple St

City, State, ZIP Issaquah, WA

Phone Email

SAMPLERS (signature) JWP WBS
PROJECT NAME 69402

PO #

REMARKS

INVOICE TO

TURNAROUND TIME
Standard Turnaround
RUSH
Rush charges authorized by:
SAMPLE DISPOSAL
Dispose after 30 days
Archive Samples
Other

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED							Notes	
						TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM		
GW-9 Bag	11 AC	11/21/17	1158	Water	3					X				
GW-4	12		1202							X				
GW-8 Bag	13		1219							X				
GW-7 Bag	14		1226							X				
GW-1 Bag	15		1235							X				
MW-6 Bag	16		1300							X				
MW-12 Bag	17		1322							X				
MW-13	18		1324							X				
GW-10 Bag	19		1339							X				
MW-10 Bag	20		1445							X				

Friedman & Bryya, Inc.

3012 16th Avenue West

Seattle, WA 98119-2029

Ph. (206) 285-8282

SIGNATURE		PRINT NAME		COMPANY	DATE	TIME
Reinquired by: <i>[Signature]</i>	<i>[Signature]</i>	Elizabeth Webber-Bryya	EPI		11/21/17	
Received by: <i>[Signature]</i>	<i>[Signature]</i>	Son Sharma	FBI		11/21/17	18:45
Received by:				Samples received at	4	00

711400

SAMPLE CHAIN OF CUSTODY

ME 11-21-17

Page # 3 of 3

Report To Josh Bennett

Company Environmental Partners Inc

Address 1152 NW Maple St

City, State, ZIP Issaquah

Phone _____ Email _____

SAMPLERS (signature) <u>MD Webb</u>		TURNAROUND TIME
PROJECT NAME <u>69402</u>	PO #	
REMARKS	INVOICE TO	SAMPLE DISPOSAL
		<input type="checkbox"/> Standard Turnaround
		<input type="checkbox"/> RUSH
		Rush charges authorized by:
		<input type="checkbox"/> Dispose after 30 days
		<input type="checkbox"/> Archive Samples
		<input type="checkbox"/> Other

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED							Notes		
						TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM			
MW-4: Bag	RLAC	11/21/17	1456	water	3					X					
MW-14: Bag	RLAC	11/21/17	1555	water	3					X					

Reinquished by: <u>MD Webb</u>	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Received by: <u>Jen Shimazu</u>		<u>Elizabeth Webb, Boyce</u>	<u>EP</u>	<u>11/21/17</u>	
Reinquished by: <u>Jen Shimazu</u>		<u>Jen Shimazu</u>	<u>EBI</u>	<u>11/21/17</u>	<u>18:45</u>
Received by: _____					Samples received at <u>4</u> °C

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
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

December 12, 2017

Josh Bernthal, Project Manager
Environmental Partners, Inc.
1180 NW Maple St, Suite 310
Issaquah, WA 98027

RE: 69402, F&BI 711417

Dear Mr Bernthal:

Included are the results from the testing of material submitted on November 21, 2017 from the 69402, F&BI 711417 project. There are 23 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 have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
c: Cynthia Moon
EPI1212R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on November 21, 2017 by Friedman & Bruya, Inc. from the Environmental Partners 69402, F&BI 711417 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>Environmental Partners</u>
711417-01	MW-3
711417-02	MW-15
711417-03	MW-7

The samples were sent to Amtest for TOC, COD, BOD, sulfate, sulfide, nitrate, nitrite, chloride, and carbon dioxide analyses. The report is enclosed.

All quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	MW-3 f	Client:	Environmental Partners
Date Received:	11/21/17	Project:	69402, F&BI 711417
Date Extracted:	12/05/17	Lab ID:	711417-01 x10
Date Analyzed:	12/05/17	Data File:	711417-01 x10.128
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	19,500
Manganese	3,480

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	MW-15 f	Client:	Environmental Partners
Date Received:	11/21/17	Project:	69402, F&BI 711417
Date Extracted:	12/05/17	Lab ID:	711417-02
Date Analyzed:	12/05/17	Data File:	711417-02.034
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	<50
Manganese	11.1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	MW-7 f	Client:	Environmental Partners
Date Received:	11/21/17	Project:	69402, F&BI 711417
Date Extracted:	12/05/17	Lab ID:	711417-03
Date Analyzed:	12/05/17	Data File:	711417-03.037
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	236
Manganese	30.6

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Metals By EPA Method 200.8

Client ID:	Method Blank f	Client:	Environmental Partners
Date Received:	Not Applicable	Project:	69402, F&BI 711417
Date Extracted:	12/05/17	Lab ID:	I7-676 mb
Date Analyzed:	12/05/17	Data File:	I7-676 mb.031
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	<50
Manganese	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	MW-3	Client:	Environmental Partners
Date Received:	11/21/17	Project:	69402, F&BI 711417
Date Extracted:	11/28/17	Lab ID:	711417-01 x10
Date Analyzed:	11/29/17	Data File:	711417-01 x10.050
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	25,100
Manganese	3,920

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	MW-15	Client:	Environmental Partners
Date Received:	11/21/17	Project:	69402, F&BI 711417
Date Extracted:	11/28/17	Lab ID:	711417-02
Date Analyzed:	11/28/17	Data File:	711417-02.089
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	66.1
Manganese	11.3

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	MW-7	Client:	Environmental Partners
Date Received:	11/21/17	Project:	69402, F&BI 711417
Date Extracted:	11/28/17	Lab ID:	711417-03
Date Analyzed:	11/28/17	Data File:	711417-03.090
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	322
Manganese	31.4

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	Environmental Partners
Date Received:	Not Applicable	Project:	69402, F&BI 711417
Date Extracted:	11/28/17	Lab ID:	I7-662 mb
Date Analyzed:	11/28/17	Data File:	I7-662 mb.065
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Iron	<50
Manganese	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-3	Client:	Environmental Partners
Date Received:	11/21/17	Project:	69402, F&BI 711417
Date Extracted:	11/22/17	Lab ID:	711417-01
Date Analyzed:	11/22/17	Data File:	112230.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	98	85	117
Toluene-d8	98	91	108
4-Bromofluorobenzene	101	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	5.6
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-15	Client:	Environmental Partners
Date Received:	11/21/17	Project:	69402, F&BI 711417
Date Extracted:	11/22/17	Lab ID:	711417-02
Date Analyzed:	11/22/17	Data File:	112231.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	85	117
Toluene-d8	99	91	108
4-Bromofluorobenzene	99	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	2.4
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	2.6
Tetrachloroethene	96

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW-7	Client:	Environmental Partners
Date Received:	11/21/17	Project:	69402, F&BI 711417
Date Extracted:	11/22/17	Lab ID:	711417-03
Date Analyzed:	11/22/17	Data File:	112232.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	85	117
Toluene-d8	101	91	108
4-Bromofluorobenzene	103	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	20

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Method Blank	Client:	Environmental Partners
Date Received:	Not Applicable	Project:	69402, F&BI 711417
Date Extracted:	11/22/17	Lab ID:	07-2611 mb2
Date Analyzed:	11/22/17	Data File:	112223.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	85	117
Toluene-d8	99	91	108
4-Bromofluorobenzene	100	76	126

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Gasses By RSK 175

Client Sample ID:	MW-3	Client:	Environmental Partners
Date Received:	11/21/17	Project:	69402, F&BI 711417
Date Extracted:	12/01/17	Lab ID:	711417-01
Date Analyzed:	12/01/17	Data File:	006F0601.D
Matrix:	Water	Instrument:	GC8
Units:	ug/L (ppb)	Operator:	JS

Compounds:	Concentration ug/L (ppb)
Methane	3,400 ve
Ethane	<10
Ethene	<10

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Gasses By RSK 175

Client Sample ID:	MW-3	Client:	Environmental Partners
Date Received:	11/21/17	Project:	69402, F&BI 711417
Date Extracted:	12/01/17	Lab ID:	711417-01 1/20
Date Analyzed:	12/04/17	Data File:	004F0401.D
Matrix:	Water	Instrument:	GC8
Units:	ug/L (ppb)	Operator:	JS

Compounds:	Concentration ug/L (ppb)
Methane	3,800

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Gasses By RSK 175

Client Sample ID:	MW-15	Client:	Environmental Partners
Date Received:	11/21/17	Project:	69402, F&BI 711417
Date Extracted:	12/01/17	Lab ID:	711417-02
Date Analyzed:	12/01/17	Data File:	007F0701.D
Matrix:	Water	Instrument:	GC8
Units:	ug/L (ppb)	Operator:	JS

Compounds:	Concentration ug/L (ppb)
Methane	<5
Ethane	<10
Ethene	<10

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Gasses By RSK 175

Client Sample ID:	MW-7	Client:	Environmental Partners
Date Received:	11/21/17	Project:	69402, F&BI 711417
Date Extracted:	12/01/17	Lab ID:	711417-03
Date Analyzed:	12/01/17	Data File:	008F0801.D
Matrix:	Water	Instrument:	GC8
Units:	ug/L (ppb)	Operator:	JS

Compounds:	Concentration ug/L (ppb)
Methane	<5
Ethane	<10
Ethene	<10

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Dissolved Gasses By RSK 175

Client Sample ID:	Method Blank	Client:	Environmental Partners
Date Received:	Not Applicable	Project:	69402, F&BI 711417
Date Extracted:	12/01/17	Lab ID:	07-2680 mb
Date Analyzed:	12/01/17	Data File:	005F0501.D
Matrix:	Water	Instrument:	GC8
Units:	ug/L (ppb)	Operator:	JS

Compounds:	Concentration ug/L (ppb)
Methane	<5
Ethane	<10
Ethene	<10

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 12/12/17

Date Received: 11/21/17

Project: 69402, F&BI 711417

**QUALITY ASSURANCE RESULTS
FOR THE ANALYSIS OF WATER SAMPLES
FOR DISSOLVED METALS USING EPA METHOD 200.8**

Laboratory Code: 711417-02 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Iron	ug/L (ppb)	100	<50	98	99	70-130	1
Manganese	ug/L (ppb)	20	11.1	96	100	70-130	4

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Iron	ug/L (ppb)	100	98	85-115
Manganese	ug/L (ppb)	20	100	85-115

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 12/12/17

Date Received: 11/21/17

Project: 69402, F&BI 711417

**QUALITY ASSURANCE RESULTS
FOR THE ANALYSIS OF WATER SAMPLES
FOR TOTAL METALS USING EPA METHOD 200.8**

Laboratory Code: 711413-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Iron	ug/L (ppb)	100	3,420	257 b	223 b	70-130	14 b
Manganese	ug/L (ppb)	20	82.9	117	113	70-130	3

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Iron	ug/L (ppb)	100	102	85-115
Manganese	ug/L (ppb)	20	103	85-115

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 12/12/17

Date Received: 11/21/17

Project: 69402, F&BI 711417

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER
SAMPLES FOR VOLATILES BY EPA METHOD 8260C**

Laboratory Code: 711402-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Acceptance Criteria
Vinyl chloride	ug/L (ppb)	50	<0.2	92	61-139
Chloroethane	ug/L (ppb)	50	<1	91	55-149
1,1-Dichloroethene	ug/L (ppb)	50	<1	94	71-123
Methylene chloride	ug/L (ppb)	50	<5	99	61-126
trans-1,2-Dichloroethene	ug/L (ppb)	50	<1	94	72-122
1,1-Dichloroethane	ug/L (ppb)	50	<1	97	79-113
cis-1,2-Dichloroethene	ug/L (ppb)	50	<1	95	63-126
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	<1	98	70-119
1,1,1-Trichloroethane	ug/L (ppb)	50	<1	96	75-121
Trichloroethene	ug/L (ppb)	50	<1	95	73-122
Tetrachloroethene	ug/L (ppb)	50	<1	90	72-113

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Vinyl chloride	ug/L (ppb)	50	96	94	70-128	2
Chloroethane	ug/L (ppb)	50	96	94	66-149	2
1,1-Dichloroethene	ug/L (ppb)	50	95	94	75-119	1
Methylene chloride	ug/L (ppb)	50	104	103	63-132	1
trans-1,2-Dichloroethene	ug/L (ppb)	50	96	95	76-118	1
1,1-Dichloroethane	ug/L (ppb)	50	99	99	77-119	0
cis-1,2-Dichloroethene	ug/L (ppb)	50	97	95	76-119	2
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	99	100	78-114	1
1,1,1-Trichloroethane	ug/L (ppb)	50	98	98	80-116	0
Trichloroethene	ug/L (ppb)	50	97	97	72-119	0
Tetrachloroethene	ug/L (ppb)	50	93	92	78-109	1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 12/12/17

Date Received: 11/21/17

Project: 69402, F&BI 711417

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF
WATER SAMPLES FOR DISSOLVED GASSES
USING METHOD RSK 175**

Laboratory Code: (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference (Limit 20)
Methane	ug/L (ppb)	<5	<5	nm
Ethane	ug/L (ppb)	<10	<10	nm
Ethene	ug/L (ppb)	<10	<10	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Methane	ug/L (ppb)	59	84	83	50-150	2
Ethane	ug/L (ppb)	110	80	77	50-150	5
Ethene	ug/L (ppb)	102	104	100	50-150	4

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

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

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

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

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

cf - The sample was centrifuged prior to analysis.

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

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

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The 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.

Am Test Inc.
 13600 NE 126TH PL
 Suite C
 Kirkland, WA 98034
 (425) 885-1664

**Professional
 Analytical
 Services**

Dec 8 2017
 Friedman & Bruya, Inc.
 3012 16th Avenue West
 Seattle, WA 98119-2029
 Attention: MICHAEL ERDAHL

Dear MICHAEL ERDAHL:

Enclosed please find the analytical data for your project.

The following is a cross correlation of client and laboratory identifications for your convenience.

CLIENT ID	MATRIX	AMTEST ID	TEST
MW-3	Water	17-A020722	CONV, MIN, DEM, CO2-tot, NUT
MW-15	Water	17-A020723	CONV, MIN, DEM, CO2-tot, NUT
MW-7	Water	17-A020724	CONV, MIN, DEM, CO2-tot, NUT

Your samples were received on Wednesday, November 22, 2017. At the time of receipt, the samples were logged in and properly maintained prior to the subsequent analysis.

The analytical procedures used at AmTest are well documented and are typically derived from the protocols of the EPA, USDA, FDA or the Army Corps of Engineers.

Following the analytical data you will find the Quality Control (QC) results.

Please note that the detection limits that are listed in the body of the report refer to the Practical Quantitation Limits (PQL's), as opposed to the Method Detection Limits (MDL's).

If you should have any questions pertaining to the data package, please feel free to contact me.

Sincerely,


 Aaron W. Young
 Laboratory Manager

Project #: 711417
 PO Number: F-176

BACT = Bacteriological
 CONV = Conventionals

MET = Metals
 ORG = Organics

NUT=Nutrients
 DEM=Demand

MIN=Minerals

Am Test Inc.
 13600 NE 126TH PL
 Suite C
 Kirkland, WA 98034
 (425) 885-1664
 www.amtestlab.com



**Professional
 Analytical
 Services**

ANALYSIS REPORT

Friedman & Bruya, Inc.
 3012 16th Avenue West
 Seattle, WA 98119-2029
 Attention: MICHAEL ERDAHL
 Project #: 711417
 PO Number: F-176
 All results reported on an as received basis.

Date Received: 11/22/17
 Date Reported: 12/ 8/17

AMTEST Identification Number 17-A020722
Client Identification MW-3
Sampling Date 11/21/17, 15:05

Conventionals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
pH	5.44	unit	*	0.1	SM 4500H B	DB	11/22/17
Total Sulfide	< 0.05	mg/l		0.05	SM 4500-S2-D	MJ	11/27/17
Total Carbon Dioxide	120	mg/l		1	SM 2320B	SRW	11/28/17

Demand

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
BOD	12.	mg/l		2	SM 5210B	JM	11/22/17
Total Organic Carbon	35.	mg/l		0.5	SM 5310B	NNL	12/07/17
Chemical Oxygen Demand	38.	mg/l		10	EPA 410.4	MJ	11/28/17

Minerals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Alkalinity (as CaCO3)	130	mg/l		1	SM 2320B	SRW	11/28/17
Chloride	9.10	mg/l		0.05	EPA 300.0	JC	11/22/17
Sulfate	5.70	mg/l		0.1	EPA 300.0	JC	11/22/17

Friedman & Bruya, Inc.
 Project Name:
 AmTest ID: 17-A020722

Nutrients

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Nitrite	< 0.005	mg/l		0.005	EPA 300.0	JC	11/22/17
Nitrate	0.086	mg/l		0.025	EPA 300.0	JC	11/22/17

AMTEST Identification Number 17-A020723
Client Identification MW-15
Sampling Date 11/21/17, 15:58

Conventionals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
pH	5.36	unit	*	0.1	SM 4500H B	DB	11/22/17
Total Sulfide	< 0.05	mg/l		0.05	SM 4500-S2-D	MJ	11/27/17
Total Carbon Dioxide	41.	mg/l		1	SM 2320B	SRW	11/28/17

Demand

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
BOD	< 2	mg/l		2	SM 5210B	JM	11/22/17
Total Organic Carbon	3.1	mg/l		0.5	SM 5310B	NNL	12/07/17
Chemical Oxygen Demand	< 10	mg/l		10	EPA 410.4	MJ	11/28/17

Minerals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Alkalinity (as CaCO3)	46.	mg/l		1	SM 2320B	SRW	11/28/17
Chloride	12.6	mg/l		0.05	EPA 300.0	JC	11/28/17
Sulfate	15.3	mg/l		0.1	EPA 300.0	JC	11/28/17

Nutrients

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Nitrite	< 0.005	mg/l		0.005	EPA 300.0	JC	11/22/17
Nitrate	0.768	mg/l		0.025	EPA 300.0	JC	11/22/17

AMTEST Identification Number 17-A020724
Client Identification MW-7
Sampling Date 11/21/17, 16:47

Conventionals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
pH	5.46	unit	*	0.1	SM 4500H B	DB	11/22/17
Total Sulfide	< 0.05	mg/l		0.05	SM 4500-S2-D	MJ	11/27/17
Total Carbon Dioxide	23.	mg/l		1	SM 2320B	SRW	11/28/17

Demand

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
BOD	< 2	mg/l		2	SM 5210B	JM	11/22/17
Total Organic Carbon	2.4	mg/l		0.5	SM 5310B	NNL	12/07/17
Chemical Oxygen Demand	< 10	mg/l		10	EPA 410.4	MJ	11/28/17


Minerals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Alkalinity (as CaCO3)	26.	mg/l		1	SM 2320B	SRW	11/28/17
Chloride	10.6	mg/l		0.05	EPA 300.0	JC	11/28/17
Sulfate	425.	mg/l		0.1	EPA 300.0	JC	11/28/17

Nutrients

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Nitrite	< 0.005	mg/l		0.005	EPA 300.0	JC	11/22/17
Nitrate	2.90	mg/l		0.025	EPA 300.0	JC	11/22/17

* = The method specifies the test is to be performed in the field; therefore the result is an estimate.


 Aaron W. Young
 Laboratory Manager

QC Summary for sample numbers: 17-A020722 to 17-A020724

DUPLICATES

SAMPLE #	ANALYTE	UNITS	SAMPLE VALUE	DUP VALUE	RPD
17-A020730	pH	unit	6.93	7.01	1.1
17-A020256	Alkalinity (as CaCO3)	mg/l	110	110	0.00
17-A020426	Alkalinity (as CaCO3)	mg/l	18.	18.	0.00
17-A020742	Alkalinity (as CaCO3)	mg/l	16.	16.	0.00
17-A020714	BOD	mg/l	< 2	< 2	
17-A020664	Chloride	mg/l	< 0.05	< 0.05	
17-A020740	Chloride	mg/l	2.70	2.60	3.8

MATRIX SPIKES

SAMPLE #	ANALYTE	UNITS	SAMPLE VALUE	SMPL+ SPK	SPK AMT	RECOVERY
17-A020980	Total Organic Carbon	mg/l	< 0.5	23.	25.	92.00 %
17-A021329	Total Organic Carbon	mg/l	0.51	24.	25.	93.96 %
17-A021500	Total Organic Carbon	mg/l	8.6	28.	25.	77.60 %
17-A020468	Chemical Oxygen Demand	mg/l	11.	100	100	89.00 %
17-A020468	Chemical Oxygen Demand	mg/l	11.	98.	100	87.00 %
17-A020664	Chloride	mg/l	< 0.05	1.94	2.00	97.00 %
17-A020740	Chloride	mg/l	2.70	4.43	2.00	86.50 %
17-A020724	Total Sulfide	mg/l	< 0.05	0.27	0.25	108.00 %
17-A020724	Total Sulfide	mg/l	< 0.05	0.27	0.25	108.00 %

MATRIX SPIKE DUPLICATES

SAMPLE #	ANALYTE	UNITS	SAMPLE + SPK	MSD VALUE	RPD
Spike	Chemical Oxygen Demand	mg/l	100	98.	2.0
Spike	Total Sulfide	mg/l	0.27	0.27	0.00

STANDARD REFERENCE MATERIALS

ANALYTE	UNITS	TRUE VALUE	MEASURED VALUE	RECOVERY
pH	unit	6.86	6.81	99.3 %
pH	unit	6.86	6.81	99.3 %
Alkalinity (as CaCO3)	mg/l	240	250	104. %
Alkalinity (as CaCO3)	mg/l	240	250	104. %
BOD	mg/l	200	170	85.0 %
Total Organic Carbon	mg/l	50.	47.	94.0 %
Total Organic Carbon	mg/l	50.	49.	98.0 %
Total Organic Carbon	mg/l	50.	46.	92.0 %
Total Organic Carbon	mg/l	50.	47.	94.0 %
Chemical Oxygen Demand	mg/l	100	110	110. %
Chloride	mg/l	5.00	4.96	99.2 %
Chloride	mg/l	5.00	4.81	96.2 %
Nitrate	mg/l	5.00	4.78	95.6 %
Nitrite	mg/l	5.00	4.99	99.8 %

QC Summary for sample numbers: 17-A020722 to 17-A020724...

STANDARD REFERENCE MATERIALS continued....

ANALYTE	UNITS	TRUE VALUE	MEASURED VALUE	RECOVERY
Total Sulfide	mg/l	0.50	0.47	94.0 %
Sulfate	mg/l	5.00	5.40	108. %
Sulfate	mg/l	5.00	5.08	102. %

BLANKS

ANALYTE	UNITS	RESULT
Alkalinity (as CaCO3)	mg/l	< 1
Alkalinity (as CaCO3)	mg/l	< 1
BOD	mg/l	< 2
Total Organic Carbon	mg/l	< 0.5
Total Organic Carbon	mg/l	< 0.5
Total Organic Carbon	mg/l	< 0.5
Total Organic Carbon	mg/l	< 0.5
Chemical Oxygen Demand	mg/l	< 10
Chloride	mg/l	< 0.05
Chloride	mg/l	< 0.05
Nitrate	mg/l	< 0.025
Nitrite	mg/l	< 0.005
Total Sulfide	mg/l	< 0.05
Sulfate	mg/l	< 0.1
Sulfate	mg/l	< 0.1

SUBCONTRACT SAMPLE CHAIN OF CUSTODY

Send Report To Michael Erdahl
 Company Friedman and Bruya, Inc.
 Address 3012 16th Ave W
 City, State, ZIP Seattle, WA 98119
 Phone # (206) 285-8282 Fax # (206) 283-5044

SUBCONTRACTER <i>Anstest</i>	PROJECT NAME/NO. <i>711417</i>
PO #	<i>F-176</i>
REMARKS Please Email Results	

Page # 1 of 1

TURNAROUND TIME
 Standard (2 Weeks)
 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							Notes	
						Total Organic Carbon	410.4 COD	5210 BOD	300.0 Chloride	300.0 Sulfate	5m4500-S2-D Sulfide	Nitrate/Nitrite 300.0		CO ₂
MW-3	20122	11/21/17	1505	w	6	X	X	X	X	X	X	X	X	8.3
MW-15	23	1	1558		6	X	X	X	X	X	X	X	X	
MW-7	24	1	1647		6	X	X	X	X	X	X	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
<i>Michael Erdahl</i>	Michael Erdahl	Friedman and Bruya	11/22/17	10am
Received by:			11/22/17	12:30
Relinquished by:				
Received by:				

711417

SAMPLE CHAIN OF CUSTODY

ME 11-21-17

VWY/ADY
Page # 1 of 1

Report To: Josh Bernhart

Company: Environmental Partners Inc

Address: 1150 NW Maple St

City, State, ZIP: Issaquah, WA

Phone: _____ Email: _____

SAMPLERS (signature)
JD M. B...

PROJECT NAME
69402

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

REMARKS
INVOICE TO

SAMPLE DISPOSAL
 Dispose after 30 days
 Archive Samples
 Other

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED																
						TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM	TCC, CO ₂ , BOD	Total + Dissolved Fe, Mn	Sulfate/Sulfide	Nitrate/Nitrite	(Chloride)	Methane, ethane, propane, CO ₂ notes				
MW-3	01A-0	11/21/17	1505	Water	15					X											X	
MW-15	6X		1558		1					X											X	
MW-7	63		1647		1					X											X	

Samples received at 4 °C

SIGNATURE		PRINT NAME		COMPANY		DATE	TIME
Retinquished by: <u>[Signature]</u>							
Received by: <u>[Signature]</u>		Elizabeth Weber-Bryk	EP			11/21/17	
Retinquished by: <u>[Signature]</u>		Jon Shimizu	EP			11/21/17	18:45
Received by: _____							

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



2655 Park Center Dr., Suite A
Simi Valley, CA 93065
T: +1 805 526 7161
F: +1 805 526 7270
www.alsglobal.com

LABORATORY REPORT

March 14, 2017

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

RE: 702293

Dear Mike:

Enclosed are the results of the samples submitted to our laboratory on March 7, 2017. For your reference, these analyses have been assigned our service request number P1701103.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

By Kate Kaneko at 3:57 pm, 03/14/17

For Sue Anderson
Project Manager



2655 Park Center Dr., Suite A
Simi Valley, CA 93065
T: +1 805 526 7161
F: +1 805 526 7270
www.alsglobal.com

Client: Friedman & Bruya, Inc.
Project: 702293

Service Request No: P1701103

CASE NARRATIVE

The samples were received intact under chain of custody on March 7, 2017 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Carbon Dioxide Analysis

The samples were analyzed for carbon dioxide using a gas chromatograph equipped with a thermal conductivity detector (TCD). A known amount of liquid was displaced by injecting 8.0 milliliters of helium creating a headspace in the sample vial. Each sample vial was agitated using a sonic disrupter for fifteen minutes and then allowed to equilibrate for at least four hours. A volume of the headspace was withdrawn using a gas-tight syringe and analyzed using a manual injection technique. The amount of dissolved gas (carbon dioxide) in the original sample was calculated using Henry's Law. This method was performed with guidance from RSK 175 as described in laboratory SOP VOA-DISGAS. This analyte is included on the laboratory's NELAP and DoD-ELAP scope of accreditation.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.



2655 Park Center Dr., Suite A
 Simi Valley, CA 93065
 T: +1 805 526 7161
 F: +1 805 526 7270
www.alsglobal.com

ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
Arizona DHS	http://www.azdhs.gov/preparedness/state-laboratory/lab-licensure-certification/index.php#laboratory-licensure-home	AZ0694
Florida DOH (NELAP)	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E871020
Louisiana DEQ (NELAP)	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	05071
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/labcert.htm	2016036
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	1177034
New Jersey DEP (NELAP)	http://www.nj.gov/dep/oqa/	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-004
Pennsylvania DEP	http://www.depweb.state.pa.us/labs	68-03307 (Registration)
PJLA (DoD ELAP)	http://www.pjlabs.com/search-accredited-labs	65818 (Testing)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704413-16-7
Utah DOH (NELAP)	http://health.utah.gov/lab/environmental-lab-certification/	CA01627201 6-6
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at www.alsglobal.com, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

Client: Friedman & Bruya, Inc.
Project ID: 702293

Service Request: P1701103

Date Received: 3/7/2017
Time Received: 10:25

RSK 175 - CO2

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	
GW-11	P1701103-001	Water	2/20/2017	11:25	X
MW-3	P1701103-002	Water	2/20/2017	15:18	X

P1701103

SUBCONTRACT SAMPLE CHAIN OF CUSTODY

Send Report To Michael Erdahl
 Company Friedman and Bruya, Inc.
 Address 3012 16th Ave W
 City, State, ZIP Seattle, WA 98119
 Phone # (206) 285-8282 Fax # (206) 283-5044

SUBCONTRACTER <i>ALS - Simi Valley</i>	
PROJECT NAME/NO. <i>702293</i>	PO # <i>E-524</i>
REMARKS <i>Please Email Results</i>	

Page # 1 of 1

TURNAROUND TIME

Standard (2 Weeks)
 RUSH 1-Week

Rush charges authorized by:
MC

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										Notes	
						Dioxins/Furans	EPH	VPH	Nitrate	Sulfate	Alkalinity	TOC-9060M	Dissolved CO ₂				
<i>Gw-11</i>	<i>Q</i>	<i>2/10/17</i>	<i>1125</i>	<i>water</i>	<i>2</i>												
<i>MW-3</i>	<i>Q</i>	<i>↓</i>	<i>1518</i>	<i>↓</i>	<i>2</i>												

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
<i>[Signature]</i>	Michael Erdahl	Friedman and Bruya	<i>3/6/17</i>	<i>1120</i>
<i>[Signature]</i>	<i>AL DAVIS</i>	<i>ALS</i>	<i>3/7/17</i>	<i>1025</i>
Relinquished by:				
Received by:				
Relinquished by:				
Received by:				

PL

**ALS Environmental
Sample Acceptance Check Form**

Client: Friedman & Bruya, Inc.
 Project: 702293
 Sample(s) received on: 3/7/17

Work order: P1701103
 Date opened: 3/7/17 by: ADAVID

Note: This form is used for all samples received by ALS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

- | | Yes | No | N/A |
|--|-------------------------------------|-------------------------------------|-------------------------------------|
| 1 Were sample containers properly marked with client sample ID? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2 Did sample containers arrive in good condition? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3 Were chain-of-custody papers used and filled out? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4 Did sample container labels and/or tags agree with custody papers? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5 Was sample volume received adequate for analysis? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6 Are samples within specified holding times? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7 Was proper temperature (thermal preservation) of cooler at receipt adhered to?
Cooler Temperature: 4° C Blank Temperature: ° C | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Gel Packs | | | |
| 8 Were custody seals on outside of cooler/Box/Container?
Location of seal(s)? _____ Sealing Lid? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Were signature and date included? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Were seals intact? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 9 Do containers have appropriate preservation , according to method/SOP or Client specified information?
Is there a client indication that the submitted samples are pH preserved?
Were VOA vials checked for presence/absence of air bubbles?
Does the client/method/SOP require that the analyst check the sample pH and <u>if necessary</u> alter it? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 10 Tubes: Are the tubes capped and intact? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 11 Badges: Are the badges properly capped and intact?
Are dual bed badges separated and individually capped and intact? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1701103-001.01	40mL VOA NP		7		A	MC 3/09/2017
P1701103-001.02	40mL VOA NP				A	
P1701103-002.01	40mL VOA NP		7		A	MC 3/09/2017
P1701103-002.02	40mL VOA NP				A	

Explain any discrepancies: (include lab sample ID numbers): _____

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 1 of 1

Client: Friedman & Bruya, Inc.
Client Project ID: 702293

ALS Project ID: P1701103

Carbon Dioxide

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD
Analyst: Mike Conejo
Matrix: Water
Test Notes:

Date(s) Collected: 2/20/17
Date Received: 3/7/17
Date Analyzed: 3/9/17

Client Sample ID	ALS Sample ID	Injection Volume ml(s)	Result µg/L	MRL µg/L	Data Qualifier
GW-11	P1701103-001	0.10	130,000	1,000	
MW-3	P1701103-002	0.10	130,000	1,000	
Method Control Sample	P170309-MB	0.10	ND	1,000	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Page 1 of 1

Client: Friedman & Bruya, Inc.
Client Sample ID: Duplicate Lab Control Sample
Client Project ID: 702293

ALS Project ID: P1701103
 ALS Sample ID: P170309-DLCS

Test Code: RSK 175
 Instrument ID: HP5890A/GC10/TCD
 Analyst: Mike Conejo
 Matrix: Water
 Test Notes:

Date Collected: NA
 Date Received: NA
 Date Analyzed: 3/09/17
 Volume(s) Analyzed: NA ml(s)


CAS #	Compound	Spike Amount		Result _i		% Recovery		ALS	RPD	RPD	Data
		LCS / DLCS	LCS	DLCS	LCS	DLCS	Acceptance	RPD			
		ug/L	ug/L	ug/L	LCS	DLCS	Limits		Limit	Qualifier	
124-38-9	Carbon Dioxide	22,900	20,300	19,900	89	87	62-123	2	20		

_i = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.

Attachment B
Bore Logs



SITE ADDRESS 1419 Avenue D, Snohomish, Wa		CLIENT: Skotdal Real Estate	CASING MATERIAL AND SIZE: Temporary 2-Inch PVC
DRILLING CONTRACTOR: Steadfast		PROJECT #: 69402.4	SCREEN SIZE: 0.010-Inch Slot
DRILLING EQUIPMENT: Truck Mounted CME-55		DATE: 6/27/17	SCREEN INTERVAL: 10'-20' bgs
DRILLING METHOD: Hollow-Stem Auger		GROUND SURFACE ELEV. FT AMSL:	FILTER PACK: Native
LOGGED BY: C. McFadden	BOREHOLE SIZE: 8-Inch	TOTAL DEPTH: 20' bgs	FILTER PACK INTERVAL: N/A

Depth (feet)	USCS	Description USCS name; Color; Moisture; Density; Plasticity; Dilatency; EPI description; Other	Interval & % Recovery	Blows per 6"	Sample	PID (ppm)	Well Construction
0		Asphalt Surface					 <p>2-Inch Temporary Well</p>
2	ML	SANDY SILT WITH GRAVEL; gray; moist; medium plasticity; mostly silt with minor fine sand and minor gravel; no odor.					
4							
6			33	9-50/2"	DPT-1:5	0.1	
8			2	50/6"		0.1	
10			5	50/3"	DPT-1:10	0.1	
12				Odor at 12.5' bgs			
14			33	50/4"	DPT-1:12.5	67	
16			1	50/3"	DPT-1:15	1.7	
18			0	60/2"			
20			33	50/6"	DPT-1:20	0.4	
22				End of Borehole			
24							
26							

NOTES:



SITE ADDRESS 1419 Avenue D, Snohomish, Wa		CLIENT: Skotdal Real Estate
DRILLING CONTRACTOR: Steadfast		PROJECT #: 69402.4
DRILLING EQUIPMENT: Truck Mounted CME-55		DATE: 6/27/17
DRILLING METHOD: Hollow-Stem Auger		GROUND SURFACE ELEV. FT AMSL: Hydrated Bentonite
LOGGED BY: C. McFadden		TOTAL DEPTH: 15' bgs
		BOREHOLE SIZE: 8-Inch

Depth (feet)	USCS	Description USCS name; Color; Moisture; Density; Plasticity; Dilatency; EPI description; Other	Interval & % Recovery	Blows per 6"	Sample	PID (ppm)	Comments
0		Gravel Surface					
2		SANDY SILT; brown; damp; dense; low plasticity; mostly fine sand with some silt and trace gravel; no odor.					
4							
6			66	15-24-37	DPT-2:5	0.1	
8		No recovery	0	50/3"		0	
10		No recovery	0	35-50/6"		0	
12		Odor; auger flights moist with odor; softer drilling compared to DPT-1					
14			66	50/6"	DPT-2:12.5	72	
16		End of Borehole	33	60/6"	DPT-2:15	3.5	
18							
20							
22							
24							
26							

NOTES:



SITE ADDRESS

1419 Avenue D, Snohomish, Wa

CLIENT:

Skotdal Real Estate

DRILLING CONTRACTOR:

Steadfast

PROJECT #:

69402.4

DRILLING EQUIPMENT:

Truck Mounted CME-55

DATE:

6/27/17

DRILLING METHOD:

Hollow-Stem Auger

GROUND SURFACE ELEV. FT AMSL:

DECOMMISSIONING MATERIAL:

Hydrated Bentonite

LOGGED BY:

C. McFadden

TOTAL DEPTH:

15' bgs

BOREHOLE SIZE:

8-Inch

Depth (feet)	USCS	Description USCS name; Color; Moisture; Density; Plasticity; Dilatency; EPI description; Other	Interval & % Recovery	Blows per 6"	Sample	PID (ppm)	Comments
0		Asphalt Surface					
2	ML	SANDY SILT WITH GRAVEL; gray; moist; medium plasticity; mostly silt with minor fine sand and minor gravel; no odor.	66	09-15-27		0.3	
4							
6							
8							
10	ML	SANDY SILT; gray; moist; mostly silt with minor fine sand; no odor.	33	27-50/6"	DPT-3:10	0.9	
12							
14							
16			33	35-50/6"	DPT-3:12.5	1.7	
16			33	50/6"	DPT-3:15	0	
18							
20							
22							
24							
26							

NOTES:

SITE ADDRESS 1419 Avenue D, Snohomish, Wa		CLIENT: Skotdal Real Estate	CASING MATERIAL AND SIZE: 2-Inch PVC
DRILLING CONTRACTOR: Steadfast		PROJECT #: 69402.4	SCREEN SIZE: 0.010-Inch Slot
DRILLING EQUIPMENT: Truck Mounted CME-55		DATE: 6/26/17	SCREEN INTERVAL: 15'-25' bgs
DRILLING METHOD: Hollow-Stem Auger		GROUND SURFACE ELEV. FT AMSL:	FILTER PACK: Silica Sand
LOGGED BY: C. McFadden	BOREHOLE SIZE: 8-Inch	TOTAL DEPTH: 25' bgs	FILTER PACK INTERVAL: 13'-25' bgs

Depth (feet)	USCS	Description USCS name; Color; Moisture; Density; Plasticity; Dilatency; EPI description; Other	Interval & % Recovery	Blows per 6"	Sample	PID (ppm)	Well Construction
0		Gravel Surface					Traffic Rated Monument Cement
2							
4	SM	SILTY SAND WITH GRAVEL; bluish gray; dry; dense; mostly fine sand; with some gravel and minor silt; no odor.			MW-16:5	0	2-Inch PVC
6			2	60/6"			
8		WELL-GRADED GRAVEL; gray; damp; dense; mostly fine-coarse gravel with minor sand and trace silt; no odor.			MW-16:10	0	Hydrated Bentonite
10	GW						
12			33	42-50/6"			
14		POORLY-GRADED GRAVEL; increased moisture; dense; limited recovery; no odor.					
16	GP					0	
18		WELL-GRADED GRAVEL WITH SILT AND SAND; gray; wet; dense; mostly fine-coarse gravel with minor sand and minor silt; no odor.			MW-16:20	0	0.010"- Slot Screen
20	GW-GM						
22			33	65/6"			
24	SM	SILTY SAND; bluish gray; moist; dense; mostly fine sand with minor silt and trace gravel; no odor.			MW-16:25	0	Silica Sand Filter Pack
26		End of Borehole	10	65/6"			

NOTES:



SITE ADDRESS 1419 Avenue D, Snohomish, Wa		CLIENT: Skotdal Real Estate	CASING MATERIAL AND SIZE: 2-Inch PVC
DRILLING CONTRACTOR: Steadfast		PROJECT #: 69402.4	SCREEN SIZE: 0.010-Inch Slot
DRILLING EQUIPMENT: Truck Mounted CME-55		DATE: 6/26/17	SCREEN INTERVAL: 15'-25' bgs
DRILLING METHOD: Hollow-Stem Auger		GROUND SURFACE ELEV. FT AMSL:	FILTER PACK: Silica Sand
LOGGED BY: C. McFadden	BOREHOLE SIZE: 8-Inch	TOTAL DEPTH: 25' bgs	FILTER PACK INTERVAL: 13'-25' bgs

Depth (feet)	USCS	Description USCS name; Color; Moisture; Density; Plasticity; Dilatency; EPI description; Other	Interval & % Recovery	Blows per 6"	Sample	PID (ppm)	Well Construction
0		Gravel Surface					Traffic Rated Monument Cement
2		SILTY SAND; brown; damp; dense; mostly fine sand with minor silt and trace gravel; no odor.					2-Inch PVC
4					MW-17:5	0.1	
6			66	32-42-47			
8							
10	SM	Rock in sampler; limited recovery	1	25-50/6"	MW-17:10	0	
12							
14		Rock in sampler; limited recovery; increased moisture to moist, soil very close to saturated	1	60/6"	MW-17:15	0	
16							
18		SANDY SILT; brown; moist; dense; mostly silt with some fine sand and trace gravel; no odor.					0.010"- Slot Screen
20		Wet auger flights from approximately 17' - 24' bgs					Silica Sand Filter Pack
22	ML		6	80/3"	MW-17:20	0	
24		Decreased moisture					
26		End of Borehole	3	60/3"	MW-17:25	0	

NOTES:



SITE ADDRESS 1419 Avenue D, Snohomish, Wa		CLIENT: Skotdal Real Estate	CASING MATERIAL AND SIZE: 2-Inch PVC
DRILLING CONTRACTOR: Steadfast		PROJECT #: 69402.4	SCREEN SIZE: 0.010-Inch Slot
DRILLING EQUIPMENT: Truck Mounted CME-55		DATE: 6/27/17	SCREEN INTERVAL: 15'-25' bgs
DRILLING METHOD: Hollow-Stem Auger		GROUND SURFACE ELEV. FT AMSL:	FILTER PACK: Silica Sand
LOGGED BY: C. McFadden	BOREHOLE SIZE: 8-Inch	TOTAL DEPTH: 25' bgs	FILTER PACK INTERVAL: 13'-25' bgs

Depth (feet)	USCS	Description USCS name; Color; Moisture; Density; Plasticity; Dilatency; EPI description; Other	Interval & % Recovery	Blows per 6"	Sample	PID (ppm)	Well Construction
0		Gravel Surface					Traffic Rated Monument Cement
2		SANDY SILT; brown; damp; dense; low plasticity; mostly fine sand with some silt and trace gravel; no odor.					2-Inch PVC
4					MW-18:5	0.1	
6			66	11-15-27			Hydrated Bentonite
8							
10			66	31-50/3"	MW-18:10	0	0.010" - Slot Screen
12							
14	ML	Increased moisture to moist; increased gravel content to few; limited recovery in sampler at 15' bgs; wet auger flights 15'-20' bgs					Silica Sand Filter Pack
16			2	100/5"	MW-18:15	0.1	
18							
20			33	50/6"	MW-18:20	0.1	
22							
24		Decreased moisture					
26		End of Borehole	10	50/6"	MW-18:25	0	

NOTES: