



*Environmental & Geotechnical Solutions*

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# **2015 GROUNDWATER MONITORING & WELL INSTALLATION REPORT**

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**Former Norgetown Laundry Site  
Anchorage, Alaska**

*Prepared for:*

EEB Ltd.  
Bellevue, Washington

**February 2016**

## 2015 GROUNDWATER MONITORING & WELL INSTALLATION REPORT

Former Norgetown Laundry Site  
Anchorage, Alaska

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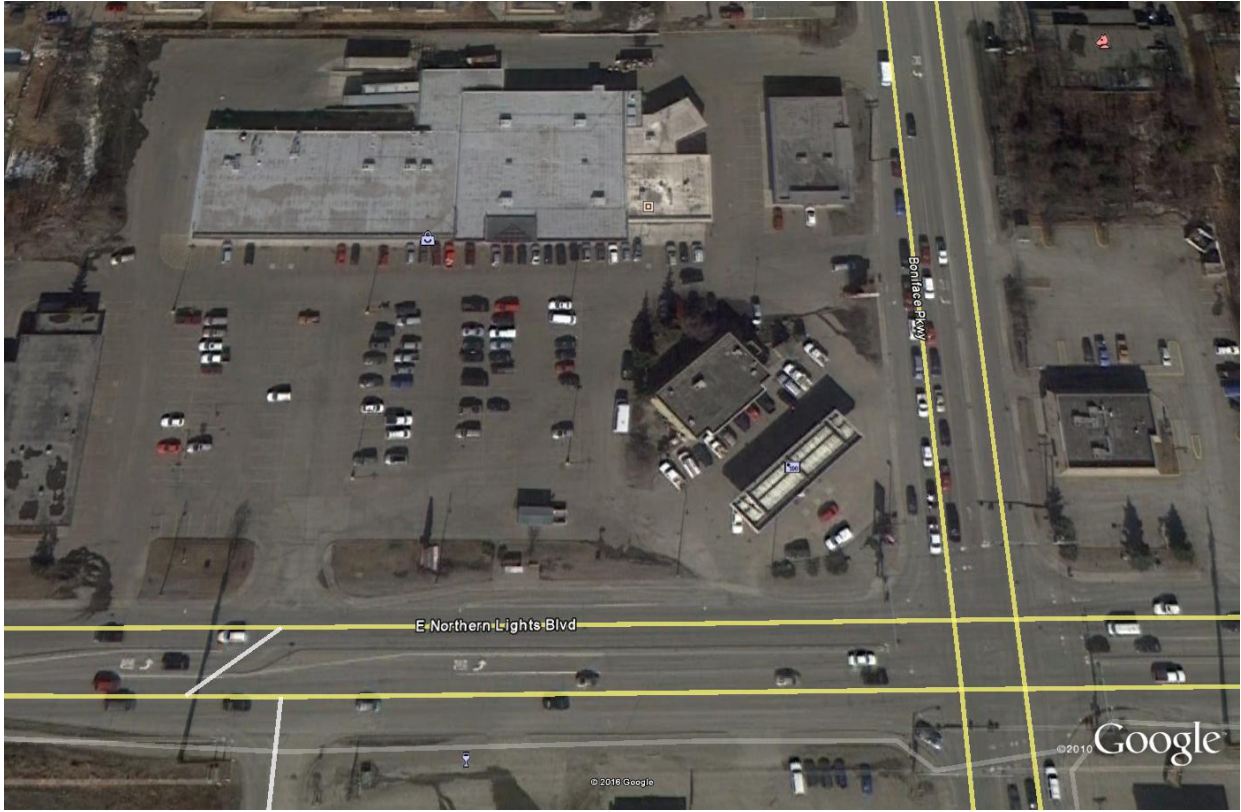
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**FORMER NORGETOWN LAUNDRY SITE**

*Source: Google Earth*

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## **1.0 INTRODUCTION**

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This document was prepared by ALTA Geosciences, Inc. (ALTA) of Bothell, Washington for the former Norgetown Laundry Site (Site). The Site is located at 5477 East Northern Lights Boulevard, northwest of the intersection of Boniface Parkway and Northern Lights Boulevard (Figure 1). Numerous past investigations have been performed at this and adjacent sites as described in the *Data Summary Report* (ALTA, July, 1997) and in the *Site Characterization Report* (July, 2000). These investigations have resulted in numerous soil borings and monitoring wells at and near the Norgetown Laundry Site.

### **1.1 BACKGROUND**

Low but elevated levels of tetrachloroethylene (PCE) have been documented in soil and groundwater in and near the Former Norgetown Laundry Site. Soil concentrations have, in a few samples, ranged up to 4 mg/kg PCE, but are most typically less than 0.5 mg/kg. Groundwater concentrations up to 1.2 mg/L PCE have been reported in the past, although April 1998 sampling results were less than 0.2 mg/L, and are most typically 0.01 to 0.06 mg/L. Reported groundwater concentrations have been steadily declining with time. No evidence of non-aqueous phase liquids (NAPL) has been found in any of the explorations at the Site, and concentrations of PCE in soil, groundwater, and soil gas are so low that the existence of NAPL at the Site is highly unlikely.

During the 1999 and 2000 sewer pipe remediation work at the Site, it was determined that the 4-inch cast-iron, bell and spigot sewer pipe outside the Laundry had apparently leaked through its joints. This pipe extended from the north building door, westward, then south across the front of the building, then westward again to the Value Village Mall building. Subgrade soil samples below the joints along this 140-foot length indicated elevated levels of PCE, and sludge samples from inside the pipe indicated PCE had been disposed of through the sewer pipe. Also during the 2000 pipe remediation, an abandoned 6-inch sewer pipe was found running northward from a tee at the north building door area. This pipe was approximately 43 feet long and capped at the far end. It contained sludge with very high values of PCE, indicated prior disposal of that chemical through the sewer. Subgrade soils below this section of pipe indicate some leakage of PCE through the pipe joints. Both the 4-inch and 6-inch pipes were removed, disposed of offsite, and the 4-inch pipe was replaced with new pipe.

No other specific source (or sources) or release mechanisms have been discovered to date. Aside from this sewer pipe area, no specific areas of significantly elevated soil concentrations of PCE have been discovered, despite numerous soil borings and sample analyses and an extensive soil gas survey (see *Site Characterization Report*).

There is a possibility that sources offsite and unrelated to the laundry may be contributing to the observed contaminant distributions. At present, the relative contribution of such sources and previously leaking sewer pipes cannot be assessed.

The laundry/dry cleaning operation at the site was discontinued many years ago and the building is currently in use as a retail clothing store. No further environmental work has been performed at the site since 2011.

## **1.2 PURPOSE AND SCOPE**

The *Work Plan for Well Installation, Groundwater Monitoring, and Vapor Intrusion Preliminary Assessment* (ALTA, June 28, 2015, hereafter referred to as the Work Plan) specified the work that was to be completed for at the Site in 2015, defined the sampling and data-gathering methods to be used for the field work, the sample handling methods, the chemical analysis methods, and quality assurance requirements. The well installation and groundwater monitoring portions of that work are described in this report. The vapor intrusion assessment will be described in a separate report.

## **1.3 HYDROGEOLOGIC CONDITIONS**

Subsurface conditions are quite consistent in all explorations and consist of a two-layer system as described below:

1. From the ground surface to about 20 feet below ground surface (bgs), soils consist of relatively clean, dense sandy gravel.
2. Underlying the gravel is very dense glacial till consisting primarily of sandy silt with cobbles.

A layer of stiff sandy silt is described in the boring log for MW-44 from 4.5 to 7.5 feet bgs, but is absent from other boring logs and is therefore apparently a feature of only limited extent.

The glacial till layer represents a substantial barrier to downward migration of groundwater and contaminants. The glacial till is present at 20 to 30 feet bgs across the site, at an elevation of 170 to 175 feet above mean sea level (msl). The top of the till surface appears to be somewhat irregular, but the surface generally appears to slope gently downward to the south.

Groundwater beneath the site is typically encountered at 8 to 12 feet bgs; with a 1- to 3-foot change between dry season low groundwater levels (midwinter) and wet season high groundwater levels (early summer). High groundwater elevations are about elevation 183 feet, while wintertime groundwater elevations are typically near 180 feet.

Historical groundwater gradients across the site are very flat, typically 0.001 to 0.0007



feet per foot to the southwest.

## **2.0 WELL INSTALLATION & MAINTENANCE**

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The Work Plan called for installation of two replacement monitoring wells:

- **MW-11.** MW-11 had been located on the south side of East Northern Lights Blvd., in an unpaved alley. How the well was destroyed is unknown, but it had not been able to be located since last sampled in 2008. Due to the insecure nature of the former location, the replacement well was placed just north of East Northern Lights Blvd., on the paved parking lot owned by EEB. The new well was to be designated MW-115.
- **MW-109.** MW-109 had been located on the west side of Rose Street. We had been unable to locate the well despite numerous attempts since last sampled in 2007. In 2007 a new house was being constructed on the residential lot immediately west of the well and it was assumed the well had been destroyed by construction activities.

All wells were also inspected for condition (such as evidence of frost jacking) and any needed maintenance was to be performed.

### **2.1 MW-115**

MW-115 was installed on August 24, 2015 at the location shown on Figure 2. The drilling contractor was Discovery Drilling of Anchorage, Alaska, using a hollow stem auger drill rig. The well construction diagram is presented in Appendix A. The well was fitted with a flush monument and the top of casing elevation determined as 193.10 feet by survey methods using back sights to wells MW-113 and MW-44A. The well was developed on August 24 by surging and bailing approximately 20 gallons of water. Development water was placed in a Department of Transportation approved drum for subsequent disposal (see Section 4.0). A sample of the purge water was collected and submitted for laboratory analysis (see laboratory report 1154773 in Appendix C). The purge water was found to contain 2.55 ug/L PCE. Soil cuttings from well installation were placed in a separate Department of Transportation approved drum for subsequent disposal (see Section 4.0). A sample of the soil was collected and submitted for laboratory analysis (see laboratory report 1154773 in Appendix C). The soil was found to contain 0.00179 mg/kg PCE.

### **2.2 MW-109**

When we arrived to install the replacement well we were surprised to be able to locate the existing MW-109 well. The monument had been destroyed, but the well cap was still in place. We opened the well and sounded it, and found it was still clear to the bottom. We reconstructed a new flush monument and resurveyed the top of casing using a back sight to well MW-110. The top of casing elevation was found to be 189.65



feet.

### **2.3 WELL INSPECTION AND MAINTENANCE**

All wells were sounded for depth and inspected for evidence of damage. No evidence of frost jacking was noted. The monument for well MW-44A was found to be damaged and was replaced with a new steel flush monument. The monument replacement did not result in any change to the top of casing elevation of the well.

## **3.0 2009 GROUNDWATER SAMPLING AND ANALYSIS**

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### **3.1 GROUNDWATER MONITORING LEVELS**

The depth to groundwater in monitored wells was measured to the nearest 0.01 foot using a well sounder. The elevations relative to mean sea level (MSL) are shown in Table 1 along with historical water elevation data from the site. Water levels were consistent with prior observations. Figure 2 shows the water elevations on a site map and our interpretation of these data regarding the potentiometric groundwater surface and flow direction. As has been previously noted, the groundwater gradient across the site is extremely flat.

### **3.2 SAMPLING PROCEDURES**

Groundwater samples obtained using Passive Diffusion Bag Samplers (PDBs) as described in *User's Guide for Polyethylene-Based Passive Diffusion Bag Samplers to Obtain Volatile Organic Compound Concentration in Wells* (U.S. Geological Survey Water-Resource Investigation Report 01-4060, 2001). Twenty-four inch ("standard") PDBs were supplied by ALS Environmental, prefilled with 220 milliliters of deionized water. PDBs were deployed on August 25, 2015. The bottom of the PDBs were suspended approximately one foot above the bottom of the wells.

The PDBs were retrieved on September 11, 2015. The water in the PDBs was then transferred to laboratory supplied VOA vials. Note that MW-44A is incorrectly identified on the chain of custody and laboratory report as MW-44B.

In addition, following retrieval of the PDBs, a groundwater sample was also collected from well MW-44A using a peristaltic pump for comparison purposes. This is identified as sample MW-44BDB on the laboratory report. Sampling equipment consisted of a peristaltic pump with vinyl intake and discharge tubing. The well was purged at a rate of 0.5 to 1.5 liters per minute with the intake tubing set within the screened interval. The parameters pH, temperature and were monitored and recorded throughout the purging process. The well was purged until the readings stabilized within 10 percent. Approximately 3 gallons were purged prior to sample collection. The purge water placed in the drum with the development water from MW-115.

Samples were stored in a cooler with synthetic ice and transported to the analytical laboratory under chain of custody procedures.

### **3.3 ANALYTICAL PROCEDURES**

Samples were analyzed by SGS Environmental Services of Anchorage, Alaska. All samples were submitted to the laboratory for analysis of halogenated volatile organic compounds (HVOCs) by EPA Method 8260B including vinyl chloride. The laboratory

analysis report is contained in Appendix C.

### **3.4 QUALITY ASSURANCE SUMMARY**

This QA summary includes a review, where appropriate, of holding times, blanks, matrix spike (MS) and laboratory control sample (LCS) recoveries, duplicate sample relative percent differences (RPDs), reporting limits, and overall assessment of data in the sample event. Each analysis that was performed is evaluated in the following subsections. The Data Quality Report and the ADEC Laboratory Data Review Checklist is contained in Appendix C.

Field samples were reviewed to determine overall precision of sampling and analysis as well as matrix heterogeneity for Halogenated Volatile Organic Compounds (HVOCs).

Laboratory data were evaluated using laboratory-supplied control criteria. In the following method-specific discussions, only the criteria exceedances that impact data qualification or require assessment beyond laboratory documentation are discussed.

#### **HVOCs by SW8260B:**

All data elements/indicators are in conformance with the project criteria, with the following exception:

- The RPDs for chloroform (40.6%) and tetrachloroethene (43.8%) in parent sample/field duplicate pair MW-44B/MW-44BDB are above QC limits (<30%). The chloroform and tetrachloroethene results in these samples are qualified as estimated (J)

#### **Overall Assessment**

The following summary highlights the data evaluation findings for this sampling event:

- No data are rejected.
- The completeness objectives (greater than 85 percent complete) for this project are met.
- The precision and accuracy of the laboratory data, as measured by laboratory quality control indicators, suggest that the data are useable as qualified for the purposes of this project.
- The precision measurements for result comparisons between primary and duplicate field samples are acceptable as qualified for the purpose of this project.

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## **4.0 INVESTIGATION DERIVED WASTES**

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Soil cuttings from monitoring well development and development and purge water from the monitoring wells were placed in separate DOT approved drums pending laboratory analysis. The detection of PCE in both media resulted in characterization as F002 Hazardous Waste for transportation and disposal purposes. The materials were then transported under Hazardous Waste Manifest for disposal by Waste Management, Inc. Copies of the Hazardous Waste Manifests are contained in Appendix B.

## **5.0 CONCLUSIONS AND RECOMMENDATIONS**

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Groundwater elevation data are shown on Table 1 and Figure 2. Groundwater analysis results are presented on Table 2 and Figure 3.

From these data the following conclusions can be drawn:

- The groundwater flow regime remains unchanged from prior monitoring events.
- The use of PDBs for groundwater sampling is justified. The sample collected from MW-44A using a peristaltic pump actually contained a lower concentration of PCE than did the sample collected using the PDB (7.13 ug/L for the PDB vs. 4.57 ug/L for the peristaltic). The peristaltic sample did contain trichloroethene which was not detected in any of the PDB samples, however the concentration (1.17 ug/L) was well below the ADEC cleanup level for that compound (5 ug/L).
- Vinyl chloride was not detected in any sample.
- Concentration of PCE in groundwater samples ranged from non-detect to 10.3 ug/L, slightly exceeding the ADEC cleanup level (5 ug/L).
- All the monitoring wells in the original source area around the former Norgetown Laundry building are below the ADEC cleanup level. This fact documents the effectiveness of past remediation measures taken at the site.
- Offsite monitoring wells MW-109 and MW-110 contained 7.77 ug/L PCE and 7.16 ug/L PCE, slightly exceeding the ADEC cleanup level (5 ug/L). These levels will likely continue to decline as water flushes through the system. However, the very flat groundwater gradient results in slow progress in down gradient areas.

Based on these results, we make the following recommendations:

- Groundwater monitoring should be repeated in 2017. At that time, the need for further monitoring should be evaluated. If the results in 2017 are consistent with those from 2015, groundwater monitoring might next be warranted in 2022.
- The wells to be retained for future monitoring should be considered following the 2017 monitoring event.
- Unneeded monitoring and former remediation wells should be considered for proper abandonment in accordance with ADEC guidance.

## **6.0 REFERENCES**

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- ALTA Geosciences, Inc., July 1997. Data Summary Report, Norgetown Laundry Site, Anchorage, Alaska.
- ALTA Geosciences, Inc., July 2000. Site Characterization Report, Norgetown Laundry Site, Anchorage, Alaska.
- ALTA Geosciences, Inc., September 2000. Construction Summary Report, Norgetown Laundry Site, Anchorage, Alaska
- ALTA Geosciences, Inc., June 28, 2015. Work Plan for Well Installation, Groundwater Monitoring, and Vapor Intrusion Preliminary Assessment
- U.S. Geological Survey, 2001. User's Guide for Polyethylene-Based Passive Diffusion Bag Samplers to Obtain Volatile Organic Compound Concentration in Wells. Water-Resource Investigation Report 01-4060.



## **TABLES**

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**Table 1 - Goundwater Levels in Sampled Wells**

Well ID	TOC ELEVATION (ft MSL)	Sep-15 DEPTH TO WATER	GROUNDWATER ELEVATION (ft., msl)													
			Sep-15	Jun-09	Oct-08	Jun-08	Oct-07	Jun-07	May-07	Sep-06	Jun-06	Oct-05	Jul-05	Oct-04	Jul-04	Oct-03
MW-11	192.13	--	--	--	--	181.83	--	181.34	--	--	181.34	--	181.06	--	182.23	181.13
MW-12	195.01	--	--	--	--	--	--	--	--	--	182.91	--	--	--	--	--
MW-13	193.20	--	--	--	--	181.78	181.73	181.27	--	182.62	181.30	181.22	181.02	183.61	182.27	181.35
MW-43A	194.36	12.85	181.51	180.98	181.42	182.03	181.50	181.46	182.52	182.94	181.24	181.43	181.22	184.06	182.66	181.45
MW-44A	192.62	11.18	181.44	180.97	181.45	182.02	181.98	181.50	182.62	182.96	181.54	181.47	181.25	184.12	182.59	181.40
MW-107	195.40	--	--	--	--	--	182.06	181.56	182.67	183.06	181.62	181.50	181.30	184.27	182.72	181.49
MW-108	195.08	--	--	--	--	182.14	182.13	181.62	184.70	183.06	181.65	181.52	181.33	184.21	182.69	181.44
MW-109	189.65	8.62	181.03	--	--	--	--	181.18	--	--	181.23	--	180.98	--	182.08	181.06
MW-110	188.88	7.90	180.98	180.65	--	181.55	--	181.15	--	--	181.15	--	180.92	--	181.93	180.96
MW-112	193.73	12.27	181.46	181.31	181.50	182.09	182.04	181.55	182.56	182.98	181.58	181.50	181.28	184.14	182.61	181.41
MW-113	192.87	11.42	181.45	181.24	181.73	182.32	182.12	--	182.72	182.99	181.65	181.52	181.32	184.19	182.72	181.43
MW-114	192.71	--	--	181.17	181.82	182.27	--	181.69	182.79	183.12	181.70	181.56	181.36	184.22	--	181.44
MW-115	193.10	11.85	181.25													

-- Not measured.



**Table 2 - Groundwater Analytical Results**

WELL:	MW-107 <i>Upgradient</i>			MW-43A <i>Front of laundry</i>			MW-108 <i>South of laundry</i>			MW-112 <i>Downgradient Of Laundry</i>			MW-113 <i>Downgradient Of Laundry</i>			MW-114/R-3 <sup>1</sup> <i>Downgradient Of Laundry</i>				MW-44A <i>South Property Line</i>				MW-13 <i>N. of Northern Lights</i>			MW-11/115 <sup>2</sup> <i>S. of Northern Lights</i>				MW-109 <i>Rose St.</i>			MW-110 <i>E. 30th Ave.</i>				
	DATE	DCE	PCE	TCE	DCE	PCE	TCE	DCE	PCE	TCE	DCE	PCE	TCE	DCE	PCE	TCE	DCE	PCE	TCE	VC	DCE	PCE	TCE	VC	DCE	PCE	TCE	DCE	PCE	TCE	DCE	PCE	TCE	DCE	PCE	TCE		
Apr-00	nd	nd	nd	nd	<b>38.1</b>	nd	nd	<b>6.83</b>	nd	--	--	--	--	--	--	nd	<b>16.2</b>	nd	nd	nd	<b>22.5</b>	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Jul-00	nd	4.1	nd	nd	<b>23.3</b>	nd	nd	2.6	nd	--	--	--	--	--	--	nd	<b>13.7</b>	nd	nd	nd	<b>20.1</b>	nd	2.5	<b>35</b>	3.4	3.3	<b>35.3</b>	3.8	0.6 J	<b>6.6</b>	0.5 J	nd	nd	nd	nd			
Sep-00	nd	4.83	nd	nd	<b>32</b>	nd	nd	4.99	nd	nd	<b>9.9</b>	nd	nd	<b>16.1</b>	nd	nd	<b>39.7</b>	nd	nd	nd	nd	<b>22</b>	nd	2.47	<b>39</b>	3.16	3.77	<b>37.9</b>	3.87	nd	2.58	nd	nd	nd	nd	nd		
May-01	nd	3.45	nd	nd	<b>32.7</b>	nd	nd	3.34	nd	--	--	--	nd	<b>19.2</b>	nd	nd	<b>39.6</b>	nd	nd	nd	nd	<b>23.1</b>	nd	nd	--	--	10	<b>34.6</b>	1.35	2.84	<b>37.2</b>	3	1.1	<b>9.24</b>	nd	nd		
Aug-01	nd	3.0	nd	nd	<b>46.3</b>	nd	nd	4.3	nd	nd	<b>7.9</b>	nd	nd	<b>21.2</b>	nd	nd	<b>43.5</b>	nd	nd	nd	nd	<b>12.9</b>	nd	nd	--	--	--	--	--	3.1	<b>39.6</b>	3.7	nd	<b>8.4</b>	nd	nd		
Nov-01	--	--	--	nd	<b>44.4</b>	nd	nd	<b>6.12</b>	nd	nd	<b>11.7</b>	nd	nd	<b>25.4</b>	nd	nd	<b>47.4</b>	nd	nd	nd	nd	<b>16.2</b>	nd	nd	nd	<b>25.3</b>	nd	3.17	<b>38.1</b>	3.12	--	--	--	--	--	--		
May-02	nd	4	nd	nd	<b>29</b>	nd	nd	<b>6</b>	nd	nd	<b>24</b>	nd	nd	<b>27</b>	nd	nd	<b>32</b>	nd	nd	nd	nd	nd	nd	nd	nd	nd	1 J	<b>36</b>	1 J	--	--	--	3	<b>18</b>	2	nd		
Aug-02	nd	5	nd	nd	<b>44</b>	nd	nd	<b>5</b>	nd	nd	<b>12</b>	nd	nd	<b>37</b>	nd	nd	<b>96</b>	nd	nd	nd	nd	<b>28</b>	nd	nd	nd	<b>63</b>	nd	1 J	<b>40</b>	2 J	3	<b>40</b>	3	2	<b>17</b>	2 J	nd	
Oct-02	nd	5	nd	nd	<b>30</b>	nd	nd	3	nd	nd	<b>13</b>	nd	nd	<b>23</b>	nd	nd	<b>47</b>	nd	nd	nd	nd	<b>14</b>	nd	nd	nd	<b>42</b>	nd	3	<b>42</b>	3	nd	<b>17</b>	nd	nd	nd	nd		
Jul-03	nd	2.16	nd	nd	<b>18.3</b>	nd	nd	2.2	nd	nd	<b>7.31</b>	nd	nd	<b>24.7</b>	nd	nd	<b>38.9</b>	nd	nd	nd	nd	<b>28.9</b>	nd	nd	nd	<b>9.05</b>	nd	nd	<b>25.3</b>	1.14	nd	<b>25.9</b>	1.75	nd	<b>12.4</b>	0.9 J	nd	
Oct-03	nd	1.7	nd	nd	<b>19.3</b>	nd	nd	2.61	nd	nd	<b>15.1</b>	nd	nd	<b>15.4</b>	nd	nd	<b>36.3</b>	nd	nd	1.67	<b>31.5</b>	<b>1.47</b>	nd	<b>10.3</b>	nd	nd	<b>27.3</b>	1.0	nd	<b>21.7</b>	1.51	nd	<b>14.5</b>	1.11	nd	nd		
Jul-04	nd	3	nd	3.3	<b>12.4</b>	nd	nd	1.6	nd	nd	<b>16.8</b>	nd	nd	<b>14.1</b>	nd	nd	<b>19.3</b>	nd	nd	6.72	<b>8.9</b>	nd	nd	nd	<b>6.8</b>	nd	nd	<b>15</b>	nd	nd	<b>14.4</b>	nd	nd	<b>9.5</b>	nd	nd		
Oct-04	nd	4.09	nd	13.9	<b>6.22</b>	nd	nd	1.7	nd	nd	<b>8.33</b>	nd	1.57	<b>14</b>	nd	1.9	<b>19.5</b>	nd	nd	12.3	4.18	1	nd	nd	<b>7.14</b>	nd	--	--	--	--	--	nd	--	--	nd	nd		
Jul-05	nd	nd	nd	17.7	<b>9.48</b>	1.02	nd	1.4	nd	nd	4.79	nd	2.33	<b>13</b>	nd	1.8	<b>28.8</b>	nd	nd	18.4	<b>9.77</b>	<b>nd</b>	nd	nd	<b>5.96</b>	nd	--	--	--	nd	<b>15.2</b>	nd	nd	<b>9.48</b>	nd	nd		
Oct-05	nd	1.06	nd	34.5	<b>5.22</b>	nd	1.1	1.47	nd	nd	3.1	nd	1.59	<b>12.8</b>	nd	2.23	<b>29.7</b>	nd	nd	24.4	<b>7.55</b>	<b>nd</b>	nd	nd	<b>7</b>	nd	--	--	--	--	--	--	--	--	--	--		
Jun-06	nd	1.11	nd	26.5	<b>5.31</b>	nd	nd	1.46	nd	nd	<b>5.47</b>	nd	2.34	<b>9.36</b>	nd	2.61	<b>23.8</b>	nd	nd	25.8	<b>6.64</b>	<b>2.88</b>	nd	nd	4.72	nd	6.33	<b>20.7</b>	2.05	1.22	<b>15</b>	1.06	nd	<b>8.56</b>	0.55	nd		
Sep-06	nd	<b>5.96</b>	nd	34.8	4.13	nd	1.62	1.73	nd	2.7	<b>5.27</b>	nd	1.5	<b>10.7</b>	nd	5.28	<b>12.2</b>	1.65	nd	34.8	1.8	2.83	nd	nd	<b>5.61</b>	nd	--	--	--	--	--	--	--	--	--	--	--	
May-07	nd	3.41	nd	16.2	3.92	1.09	0.54	1.2	nd	1.91	<b>9.32</b>	0.52	2.83	<b>15.7</b>	0.65	3.31	<b>16.7</b>	2.17	0.57	25.6	<b>5.85</b>	<b>6.08</b>	nd	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Jun-07	nd	1.05	nd	19.5	2.84	1.05	nd	0.72	nd	1.13	3.57	0.59	0.77	<b>5.26</b>	nd	3.27	<b>13.2</b>	2.2	nd	30.8	3.51	6.13	nd	nd	3.41	nd	6.1	<b>18.4</b>	2.5	1.44	<b>14</b>	1.07	nd	4.46	nd	nd		
Oct-07	nd	0.51	nd	19	2.5	0.79	1.1	0.59	0.46	3	<b>8.5</b>	1.4	2.9	<b>19</b>	1.4	--	--	--	--	35.0	0.69	4.7	nd	nd	<b>5.2</b>	nd	--	--	--	--	--	--	--	--	--	--	--	--
Nov-07	--	--	--	--	--	--	--	--	--	--	--	--	1.06	<b>7.9</b>	nd	2.66	<b>13.7</b>	2.32	1.4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Jun-08	--	--	--	7.27	3.69	1.53	nd	1.54	nd	nd	3.37	nd	1.01	<b>7.19</b>	nd	1.84	<b>14.3</b>	1.71	nd	15.7	2.88	nd	nd	nd	3.91	nd	3.24	<b>17.5</b>	2.32	--	--	--	--	--	--	nd	<b>5.95</b>	nd
Oct-08	--	--	--	5.24	3.82	1.23	--	--	--	nd	4.26	nd	nd	<b>8.47</b>	nd	nd	<b>5.43</b>	nd	nd	12.9	3.73	nd	nd	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Jun-09	--	--	--	6.27	<b>6.7</b>	1.55	--	--	--	nd	4.62	nd	2.38	<b>12.2</b>	1.26	nd	<b>4.88</b>	nd	nd	10.7	4.18	1.23	<b>5.04</b>	--	--	--	--	--	--	--	--	--	--	--	--	nd	<b>5.3</b>	nd
Oct-11	--	--	--	4.56	<b>8.68</b>	1.14	--	--	--	nd	<b>5.46</b>	nd	2.69	<b>13.4</b>	1.49	BLOCKED WITH SOIL	6.6	1.56	1.42	nd	--	--	--	--	--	--	--	--	--	--	--	--	--	--	nd	<b>6.48</b>	nd	
11-Sep-15	--	--	--	1.42	3.14	nd	--	--	--	nd	2.78	nd	nd	4.83	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Notes:																								nd	4.57	1.17	nd											
Wells listed in order from North (upgradient) to South (downgradient)																								Duplicate sample														
<b>BOLD</b> indicates the concentration exceeds ADEC cleanup level.																																						
ADEC cleanup criteria listed below in ().																																						
DCE cis-1,2-dichloroethene (70)																																						
PCE tetrachloroethene (5)																																						
TCE trichloroethene (5)																																						
VC vinyl chloride (2)																																						

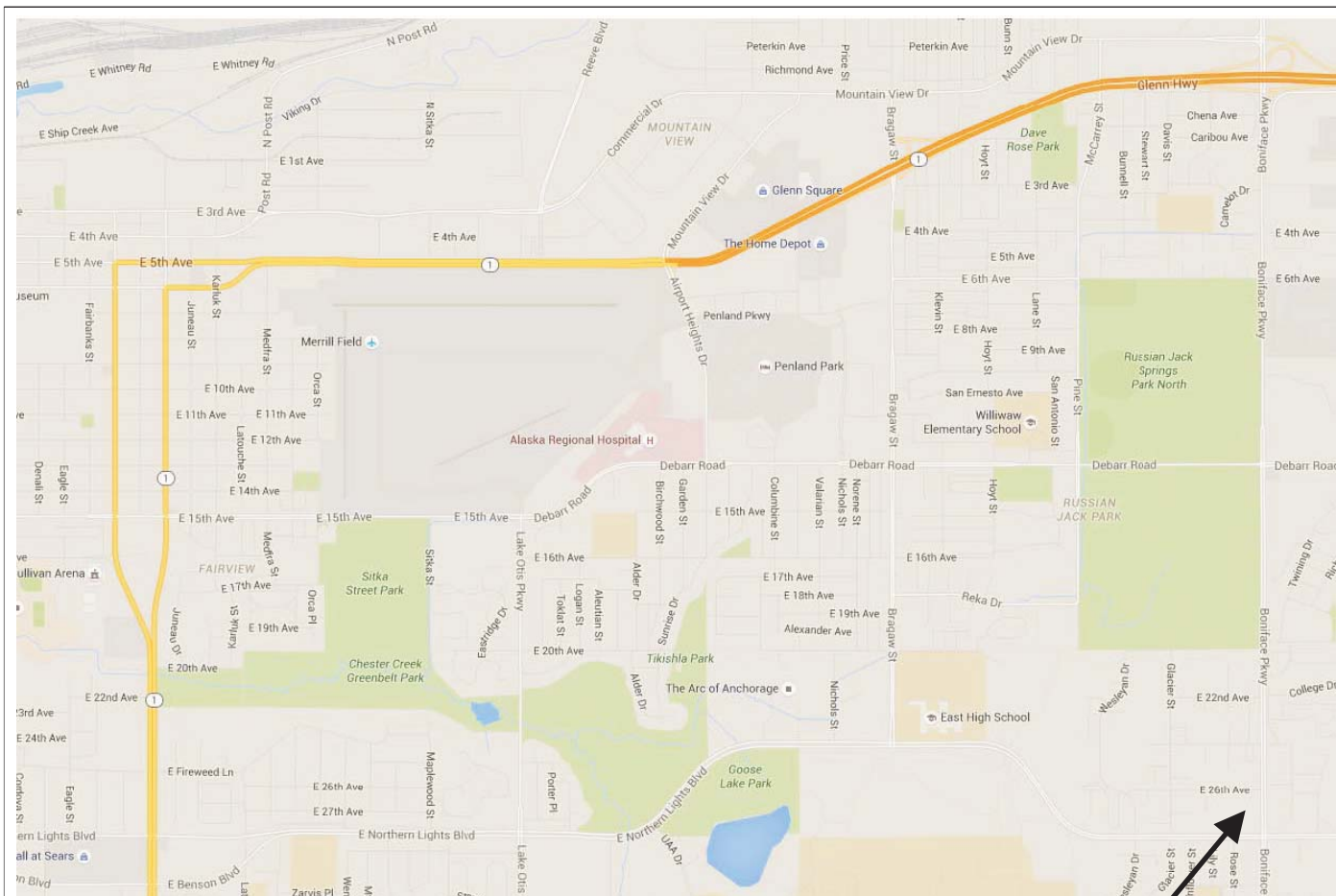
MW-114<sup>1</sup> Well R-3 substituted beginning September 2015

MW-11<sup>2</sup> New well MW-115 substituted beginning September 2015



## **FIGURES**

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**SITE LOCATION**

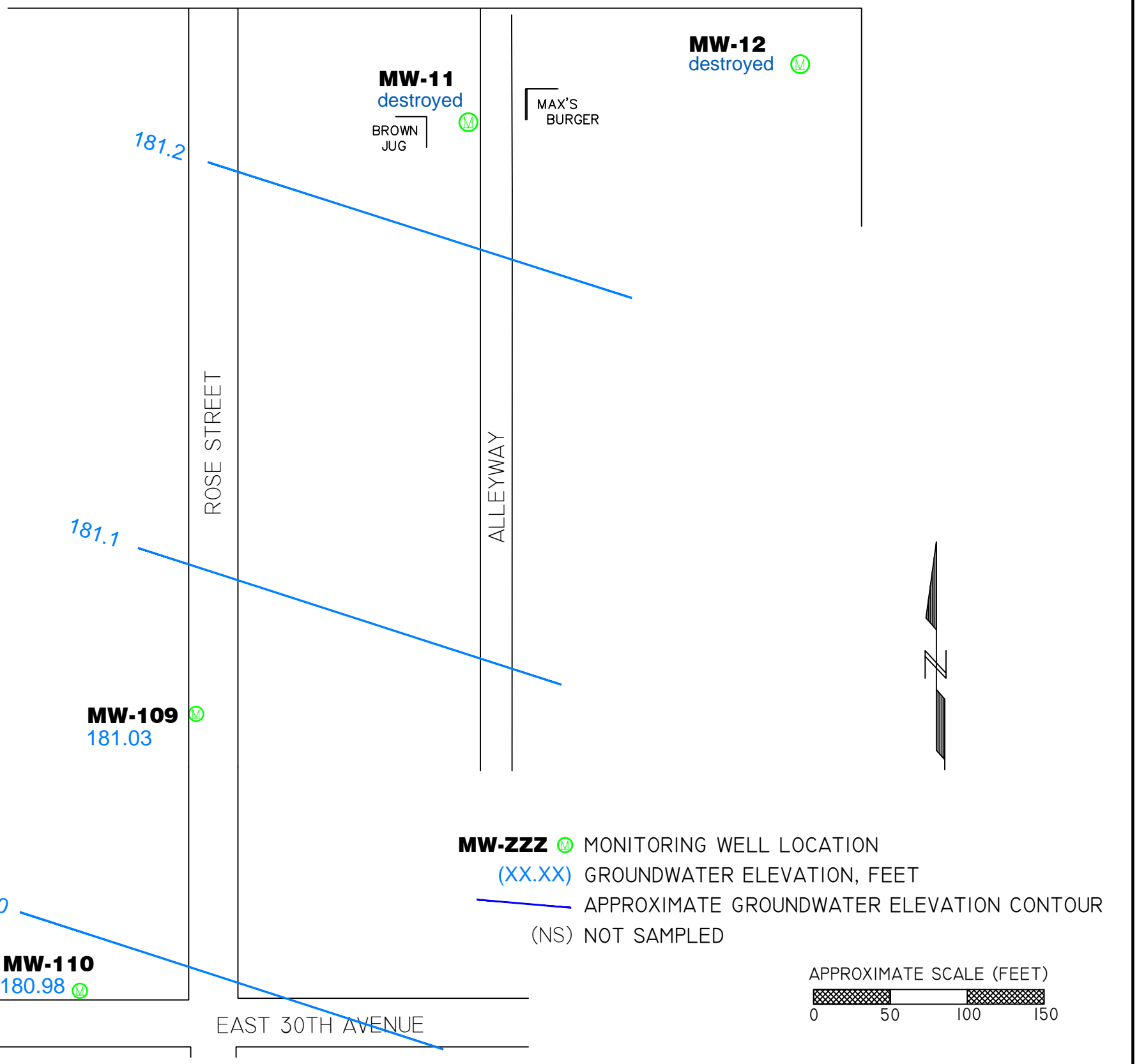
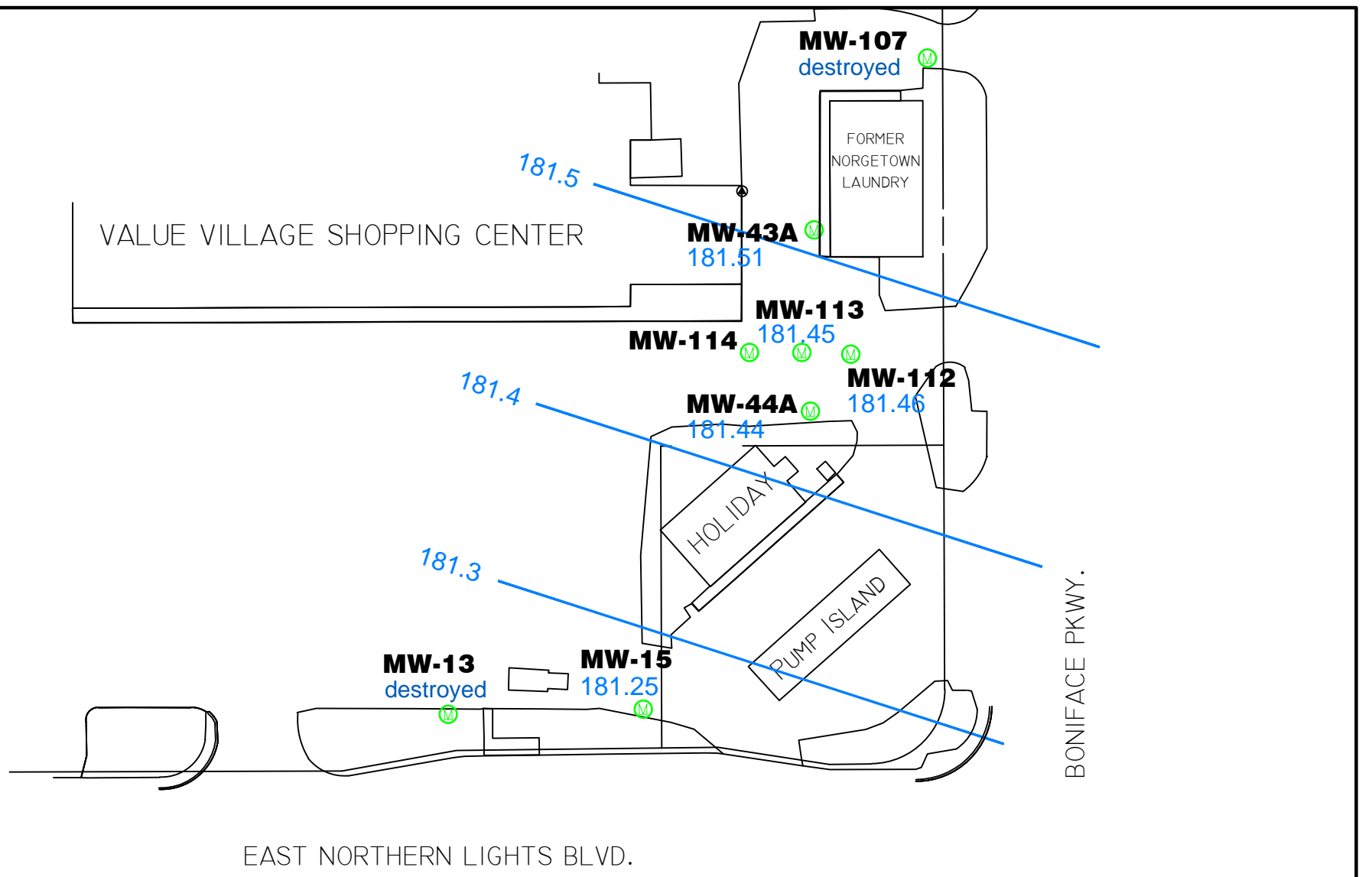
**ALTA GEOSCIENCES, Inc.**  
*Environmental & Geotechnical Solutions*  
 Bothell, Washington  
 Prepared for:  
**Legacy Commercial LLC**

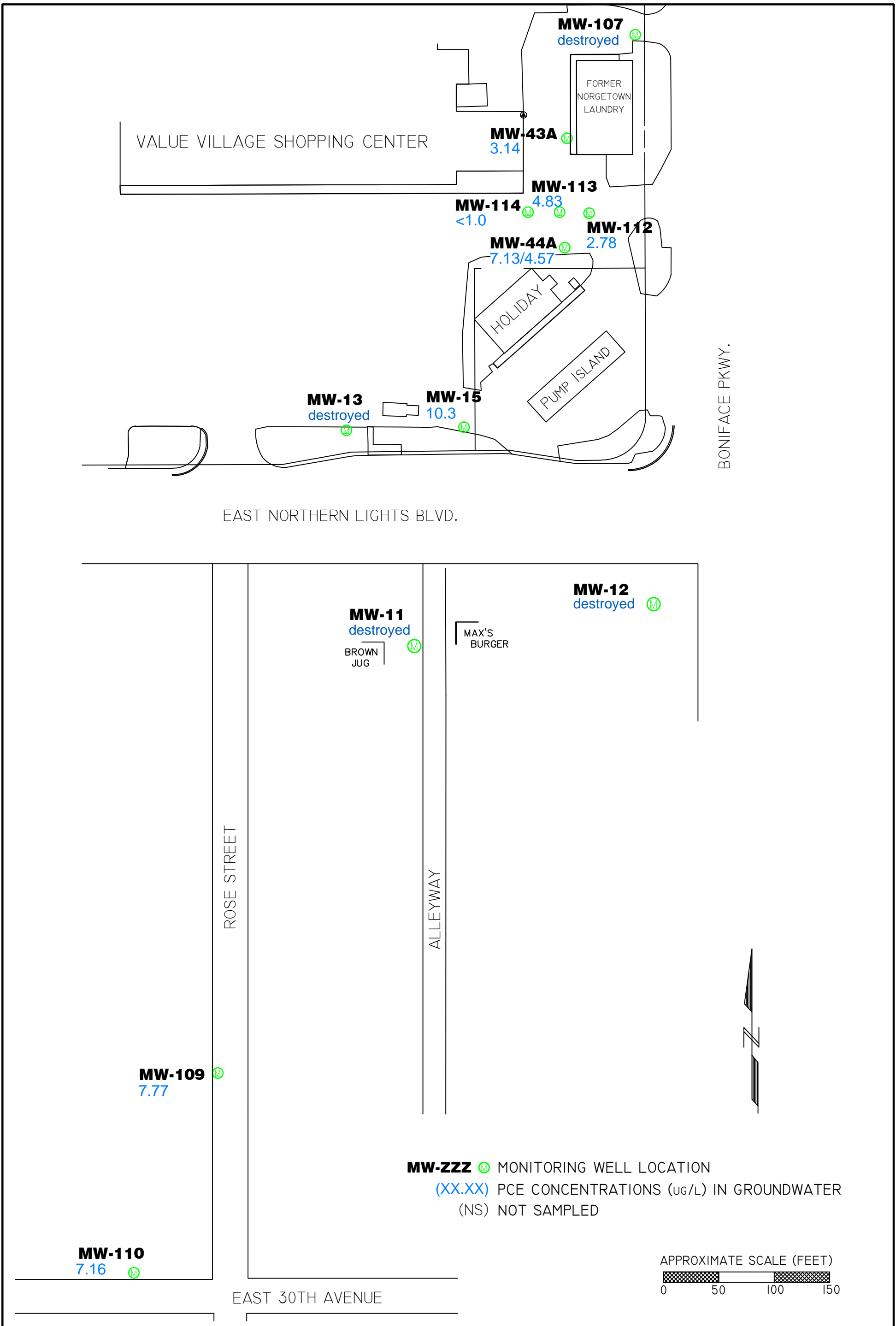
**FORMER NORGETOWN LAUNDRY SITE**

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**SITE LOCATION**

**FIGURE**  
**1**







*2015 Groundwater Monitoring & Well Installation Report – Former Norgetown Laundry Site*

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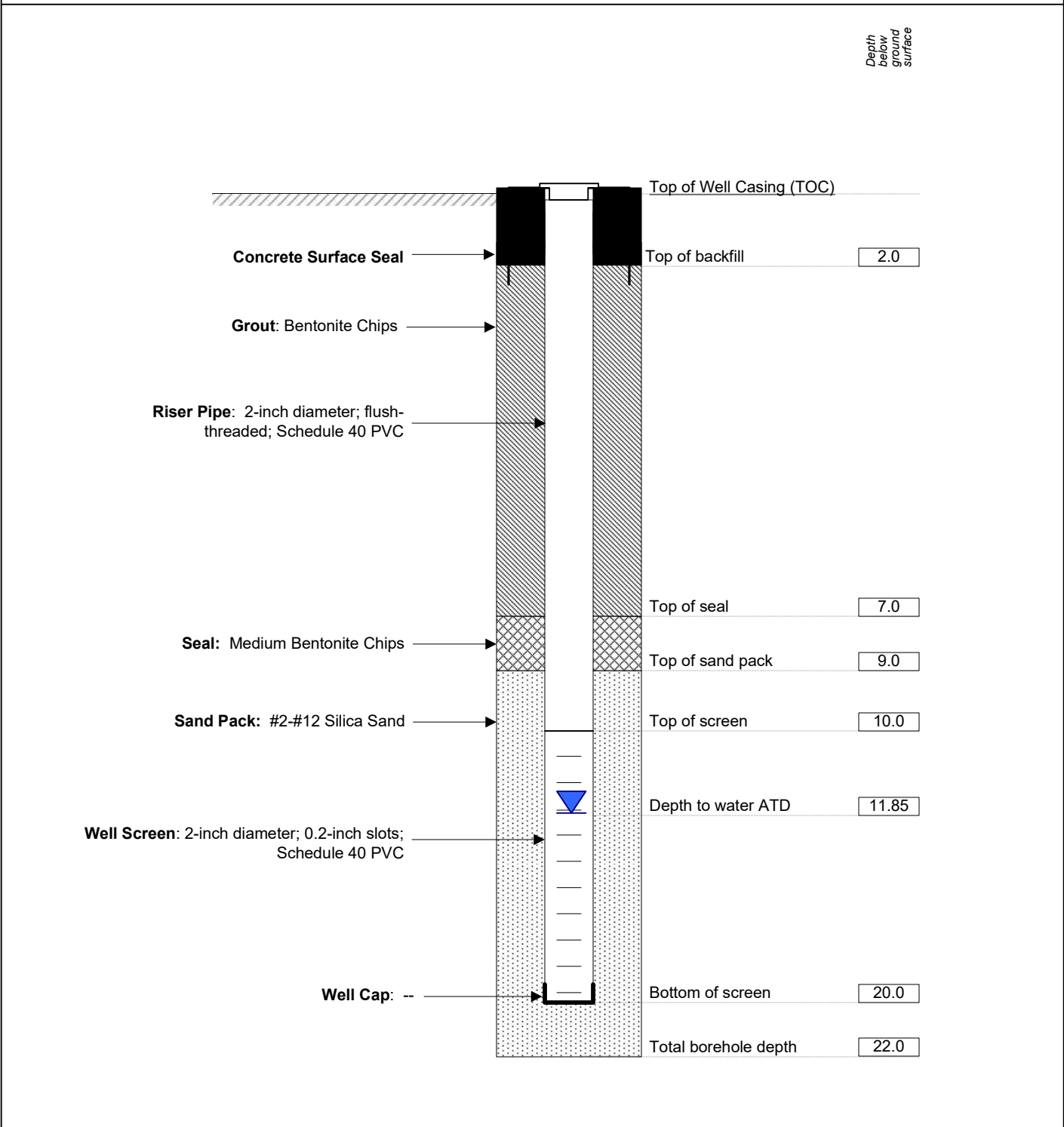
**APPENDIX A**  
**MONITORING WELL CONSTRUCTION DIAGRAM**

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# Construction Diagram

# Monitoring Well MW-115

<b>Well Location:</b> Former Norgetown Laundry Site	<b>Ground Elevation:</b> NA	<b>Drilling Company:</b> Discovery Drilling
<b>Date Installed:</b> 08/24/2015	<b>TOC Elevation:</b> 193.10	<b>Drilling Rig:</b> CME-75
<b>Date Developed:</b> 08/25/2015	<b>Northing:</b> 61 11' 43.65" N Lat	<b>Drilling Method:</b> hollow stem auger
<b>Project Number:</b> E15-1160AK	<b>Easting:</b> 146 46' 46.62" W Long	
<b>Geologist:</b> Alex Tula	<b>Elevation Datum:</b> feet MSL	





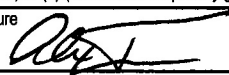
*2015 Groundwater Monitoring & Well Installation Report – Former Norgetown Laundry Site*

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**APPENDIX B**  
**HAZARDOUS WASTE MANIFESTS**

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<b>UNIFORM HAZARDOUS WASTE MANIFEST</b>		1. Generator ID Number <b>AKD 982654894</b>	2. Page 1 of <b>3</b>	3. Emergency Response Phone <b>1-800-424-9300</b>	4. Manifest Tracking Number <b>011872455 JJK</b>						
5. Generator's Name and Mailing Address <b>Alta Geosciences Inc 2020 Maltby Rd Ste. 7 #197 Bothell, WA 98021 Generator's Phone: <b>425-488-1053</b></b>				Generator's Site Address (if different than mailing address) <b>Legacy Commercial 2777 N. Northern Lights Blvd. Anchorage AK 99501</b>							
6. Transporter 1 Company Name <b>Carlele Transportation Systems</b>					U.S. EPA ID Number <b>AKR 00005611</b>						
7. Transporter 2 Company Name <b>Totem Ocean Express</b>					U.S. EPA ID Number <b>WAD090397955</b>						
8. Designated Facility Name and Site Address <b>Chemical Waste Management 1726 Cedar Springs Ln Arlington OR 97112 Facility's Phone: <b>541-454-2630</b></b>					U.S. EPA ID Number <b>ORD089452353</b>						
<b>GENERATOR</b>	9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))			10. Containers		11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes		
					No.	Type					
	X	UN 3097, Waste Environmentally Hazardous, Substances, solid, n.o.s. (tetrachloroethane), 9, PG III, ERG #171			1	DM		P	F002		
	X	UN 3082, Waste Environmentally Hazardous, Substances, liquid, n.o.s. (tetrachloroethane), 9, PG III, ERG #171			1	DM		P	F002		
	14. Special Handling Instructions and Additional Information <b>DOR329625 Soil contaminated by TCX</b>			<b>Cert of Disposal Required</b>							
15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.											
Generator's/Offoror's Printed/Typed Name <b>ALEX TULA agent for Legacy Commercial</b>					Signature 			Month <b>01</b>	Day <b>26</b>	Year <b>16</b>	
<b>INTL</b>	16. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: _____ Date leaving U.S.: _____										
	17. Transporter Acknowledgment of Receipt of Materials										
<b>TRANSPORTER</b>	Transporter 1 Printed/Typed Name					Signature			Month	Day	Year
	Transporter 2 Printed/Typed Name					Signature			Month	Day	Year
<b>DESIGNATED FACILITY</b>	18. Discrepancy										
	18a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection										
	18b. Alternate Facility (or Generator) U.S. EPA ID Number: _____ Manifest Reference Number: _____										
18c. Signature of Alternate Facility (or Generator) Month Day Year											
19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)											
1.		2.		3.		4.					
20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a											
Printed/Typed Name					Signature			Month	Day	Year	



2015 Groundwater Monitoring & Well Installation Report – Former Norgetown Laundry Site

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**APPENDIX A  
LABORATORY ANALYSIS CERTIFICATES  
AND ADEC LABORATORY DATA REVIEW CHECKLIST**

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*SGS Environmental Services Work Order No. 1154773 & 1155274*



## Laboratory Report of Analysis

To: ALTA Geosciences, INC  
2020 Maltby Rd Ste 7 #197  
Bothell, WA 98021  
(206)979-8282

Report Number: **1154773**

Client Project: **Norgetown**

Dear Alex Tula,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Chuck at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,  
SGS North America Inc.

---

Chuck Homestead  
Project Manager  
Charles.Homestead@sgs.com

Date

Print Date: 08/31/2015 4:45:45PM

## Case Narrative

SGS Client: **ALTA Geosciences, INC**

SGS Project: **1154773**

Project Name/Site: **Norgetown**

Project Contact: **Alex Tula**

Refer to sample receipt form for information on sample condition.

**1154758001(1286740MS) (1286488) MS**

8260B –MS/MSD recovery for n-butylbenzene does not meet QC criteria. Refer to LCS for accuracy.

8260B - BFB (surrogate) recovery does not meet QC criteria. Sample was analyzed twice for confirmation and the results confirmed.

**1154758001(1286740MSD) (1286489) MSD**

8260B –MS/MSD recovery for n-butylbenzene does not meet QC criteria. Refer to LCS for accuracy.

8260B - BFB (surrogate) recovery does not meet QC criteria. Sample was analyzed twice for confirmation and the results confirmed.

\*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

Print Date: 08/31/2015 4:45:46PM

## Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & UST-005 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020A, 7470A, 7471B, 8021B, 8082A, 8260B, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
D	The analyte concentration is the result of a dilution.
DF	Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
F	Indicates value that is greater than or equal to the DL
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
JL	The analyte was positively identified, but the quantitation is a low estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
M	A matrix effect was present.
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
Q	QC parameter out of acceptance range.
R	Rejected
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

### Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
MW-115	1154773001	08/25/2015	08/25/2015	Water (Surface, Eff., Ground)
MW-115SO	1154773002	08/24/2015	08/25/2015	Soil/Solid (dry weight)
Trip Blank	1154773003	08/24/2015	08/25/2015	Soil/Solid (dry weight)
Trip Blank	1154773004	08/25/2015	08/25/2015	Water (Surface, Eff., Ground)

<u>Method</u>	<u>Method Description</u>
SW8260B	8021B by 8260B (S)
SW8260B	8021B by 8260B (W)
SM21 2540G	Percent Solids SM2540G

Print Date: 08/31/2015 4:45:49PM

## Detectable Results Summary

Client Sample ID: **MW-115**  
Lab Sample ID: 1154773001  
**Volatile GC/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Chloroform	1.79	ug/L
Tetrachloroethene	2.55	ug/L

Client Sample ID: **MW-115SO**  
Lab Sample ID: 1154773002  
**Volatile GC/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Tetrachloroethene	22.7	ug/Kg



**Results of MW-115**

Client Sample ID: **MW-115**  
Client Project ID: **Norgetown**  
Lab Sample ID: 1154773001  
Lab Project ID: 1154773

Collection Date: 08/25/15 09:30  
Received Date: 08/25/15 10:24  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Volatile GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,1,1-Trichloroethane	1.00 U	1.00	0.310	ug/L	1		08/29/15 00:33
1,1,2,2-Tetrachloroethane	0.500 U	0.500	0.150	ug/L	1		08/29/15 00:33
1,1-Dichloroethane	1.00 U	1.00	0.310	ug/L	1		08/29/15 00:33
1,1-Dichloroethene	1.00 U	1.00	0.310	ug/L	1		08/29/15 00:33
1,2-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		08/29/15 00:33
1,2-Dichloroethane	0.500 U	0.500	0.150	ug/L	1		08/29/15 00:33
1,2-Dichloropropane	1.00 U	1.00	0.310	ug/L	1		08/29/15 00:33
1,3-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		08/29/15 00:33
1,4-Dichlorobenzene	0.500 U	0.500	0.150	ug/L	1		08/29/15 00:33
Bromodichloromethane	0.500 U	0.500	0.150	ug/L	1		08/29/15 00:33
Bromoform	1.00 U	1.00	0.310	ug/L	1		08/29/15 00:33
Carbon tetrachloride	1.00 U	1.00	0.310	ug/L	1		08/29/15 00:33
Chlorobenzene	0.500 U	0.500	0.150	ug/L	1		08/29/15 00:33
Chloroform	1.79	1.00	0.300	ug/L	1		08/29/15 00:33
cis-1,2-Dichloroethene	1.00 U	1.00	0.310	ug/L	1		08/29/15 00:33
Dibromochloromethane	0.500 U	0.500	0.150	ug/L	1		08/29/15 00:33
Methylene chloride	5.00 U	5.00	1.00	ug/L	1		08/29/15 00:33
Tetrachloroethene	2.55	1.00	0.310	ug/L	1		08/29/15 00:33
trans-1,2-Dichloroethene	1.00 U	1.00	0.310	ug/L	1		08/29/15 00:33
Trichloroethene	1.00 U	1.00	0.310	ug/L	1		08/29/15 00:33
<b>Surrogates</b>							
1,2-Dichloroethane-D4 (surr)	99.7	81-118		%	1		08/29/15 00:33
4-Bromofluorobenzene (surr)	110	85-114		%	1		08/29/15 00:33
Toluene-d8 (surr)	99.9	89-112		%	1		08/29/15 00:33

**Batch Information**

Analytical Batch: VMS15212  
Analytical Method: SW8260B  
Analyst: NRB  
Analytical Date/Time: 08/29/15 00:33  
Container ID: 1154773001-A

Prep Batch: VXX27806  
Prep Method: SW5030B  
Prep Date/Time: 08/28/15 06:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL

Print Date: 08/31/2015 4:45:50PM





Results of MW-115SO

Client Sample ID: MW-115SO
Client Project ID: Norgetown
Lab Sample ID: 1154773002
Lab Project ID: 1154773

Collection Date: 08/24/15 08:30
Received Date: 08/25/15 10:24
Matrix: Soil/Solid (dry weight)
Solids (%):90.1
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists surrogate compounds like 1,2-Dichloroethane-D4.

Batch Information

Analytical Batch: VMS15205
Analytical Method: SW8260B
Analyst: SCL
Analytical Date/Time: 08/25/15 20:32
Container ID: 1154773002-B

Prep Batch: VXX27778
Prep Method: SW5035A
Prep Date/Time: 08/24/15 08:30
Prep Initial Wt./Vol.: 51.54 g
Prep Extract Vol: 30.0874 mL

Print Date: 08/31/2015 4:45:50PM



**Results of Trip Blank**

Client Sample ID: **Trip Blank**  
Client Project ID: **Norgetown**  
Lab Sample ID: 1154773003  
Lab Project ID: 1154773

Collection Date: 08/24/15 08:30  
Received Date: 08/25/15 10:24  
Matrix: Soil/Solid (dry weight)  
Solids (%):  
Location:

**Results by Volatile GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,1,1-Trichloroethane	24.2 U	24.2	7.55	ug/Kg	1		08/25/15 19:29
1,1,2,2-Tetrachloroethane	12.1 U	12.1	3.77	ug/Kg	1		08/25/15 19:29
1,1-Dichloroethane	24.2 U	24.2	7.55	ug/Kg	1		08/25/15 19:29
1,1-Dichloroethene	24.2 U	24.2	7.55	ug/Kg	1		08/25/15 19:29
1,2-Dichlorobenzene	24.2 U	24.2	7.55	ug/Kg	1		08/25/15 19:29
1,2-Dichloroethane	9.67 U	9.67	3.00	ug/Kg	1		08/25/15 19:29
1,2-Dichloropropane	9.67 U	9.67	3.00	ug/Kg	1		08/25/15 19:29
1,3-Dichlorobenzene	24.2 U	24.2	7.55	ug/Kg	1		08/25/15 19:29
1,4-Dichlorobenzene	24.2 U	24.2	7.55	ug/Kg	1		08/25/15 19:29
Bromodichloromethane	24.2 U	24.2	7.55	ug/Kg	1		08/25/15 19:29
Bromoform	24.2 U	24.2	7.55	ug/Kg	1		08/25/15 19:29
Carbon tetrachloride	12.1 U	12.1	3.77	ug/Kg	1		08/25/15 19:29
Chlorobenzene	24.2 U	24.2	7.55	ug/Kg	1		08/25/15 19:29
Chloroform	24.2 U	24.2	7.55	ug/Kg	1		08/25/15 19:29
cis-1,2-Dichloroethene	24.2 U	24.2	7.55	ug/Kg	1		08/25/15 19:29
Dibromochloromethane	24.2 U	24.2	7.55	ug/Kg	1		08/25/15 19:29
Methylene chloride	96.7 U	96.7	30.0	ug/Kg	1		08/25/15 19:29
Tetrachloroethene	12.1 U	12.1	3.77	ug/Kg	1		08/25/15 19:29
trans-1,2-Dichloroethene	24.2 U	24.2	7.55	ug/Kg	1		08/25/15 19:29
Trichloroethene	12.1 U	12.1	3.77	ug/Kg	1		08/25/15 19:29
<b>Surrogates</b>							
1,2-Dichloroethane-D4 (surr)	110	71-136		%	1		08/25/15 19:29
4-Bromofluorobenzene (surr)	93.7	55-151		%	1		08/25/15 19:29
Toluene-d8 (surr)	97.8	85-116		%	1		08/25/15 19:29

**Batch Information**

Analytical Batch: VMS15205  
Analytical Method: SW8260B  
Analyst: SCL  
Analytical Date/Time: 08/25/15 19:29  
Container ID: 1154773003-A

Prep Batch: VXX27778  
Prep Method: SW5035A  
Prep Date/Time: 08/24/15 08:30  
Prep Initial Wt./Vol.: 51.687 g  
Prep Extract Vol: 25 mL

Print Date: 08/31/2015 4:45:50PM



### Results of Trip Blank

Client Sample ID: **Trip Blank**  
 Client Project ID: **Norgetown**  
 Lab Sample ID: 1154773004  
 Lab Project ID: 1154773

Collection Date: 08/25/15 09:30  
 Received Date: 08/25/15 10:24  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

### Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,1,1-Trichloroethane	1.00 U	1.00	0.310	ug/L	1		08/28/15 22:37
1,1,2,2-Tetrachloroethane	0.500 U	0.500	0.150	ug/L	1		08/28/15 22:37
1,1-Dichloroethane	1.00 U	1.00	0.310	ug/L	1		08/28/15 22:37
1,1-Dichloroethene	1.00 U	1.00	0.310	ug/L	1		08/28/15 22:37
1,2-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		08/28/15 22:37
1,2-Dichloroethane	0.500 U	0.500	0.150	ug/L	1		08/28/15 22:37
1,2-Dichloropropane	1.00 U	1.00	0.310	ug/L	1		08/28/15 22:37
1,3-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		08/28/15 22:37
1,4-Dichlorobenzene	0.500 U	0.500	0.150	ug/L	1		08/28/15 22:37
Bromodichloromethane	0.500 U	0.500	0.150	ug/L	1		08/28/15 22:37
Bromoform	1.00 U	1.00	0.310	ug/L	1		08/28/15 22:37
Carbon tetrachloride	1.00 U	1.00	0.310	ug/L	1		08/28/15 22:37
Chlorobenzene	0.500 U	0.500	0.150	ug/L	1		08/28/15 22:37
Chloroform	1.00 U	1.00	0.300	ug/L	1		08/28/15 22:37
cis-1,2-Dichloroethene	1.00 U	1.00	0.310	ug/L	1		08/28/15 22:37
Dibromochloromethane	0.500 U	0.500	0.150	ug/L	1		08/28/15 22:37
Methylene chloride	5.00 U	5.00	1.00	ug/L	1		08/28/15 22:37
Tetrachloroethene	1.00 U	1.00	0.310	ug/L	1		08/28/15 22:37
trans-1,2-Dichloroethene	1.00 U	1.00	0.310	ug/L	1		08/28/15 22:37
Trichloroethene	1.00 U	1.00	0.310	ug/L	1		08/28/15 22:37
<b>Surrogates</b>							
1,2-Dichloroethane-D4 (surr)	101	81-118		%	1		08/28/15 22:37
4-Bromofluorobenzene (surr)	106	85-114		%	1		08/28/15 22:37
Toluene-d8 (surr)	103	89-112		%	1		08/28/15 22:37

### Batch Information

Analytical Batch: VMS15212  
 Analytical Method: SW8260B  
 Analyst: NRB  
 Analytical Date/Time: 08/28/15 22:37  
 Container ID: 1154773004-A

Prep Batch: VXX27806  
 Prep Method: SW5030B  
 Prep Date/Time: 08/28/15 06:00  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL

Print Date: 08/31/2015 4:45:50PM



### Method Blank

Blank ID: MB for HBN 1718419 [SPT/9707]

Blank Lab ID: 1286354

QC for Samples:

1154773002

Matrix: Soil/Solid (dry weight)

### Results by SM21 2540G

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Total Solids	100			%

### Batch Information

Analytical Batch: SPT9707

Analytical Method: SM21 2540G

Instrument:

Analyst: A.R

Analytical Date/Time: 8/25/2015 5:10:00PM

Print Date: 08/31/2015 4:45:51PM



### Duplicate Sample Summary

Original Sample ID: 1154714002  
Duplicate Sample ID: 1286358  
QC for Samples:

Analysis Date: 08/25/2015 17:10  
Matrix: Soil/Solid (dry weight)

### Results by SM21 2540G

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>Units</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Solids	86.3	81.5	%	5.70	(< 15 )

### Batch Information

Analytical Batch: SPT9707  
Analytical Method: SM21 2540G  
Instrument:  
Analyst: A.R

Print Date: 08/31/2015 4:45:51PM



### Duplicate Sample Summary

Original Sample ID: 1154714005

Duplicate Sample ID: 1286359

QC for Samples:

1154773002

Analysis Date: 08/25/2015 17:10

Matrix: Soil/Solid (dry weight)

### Results by SM21 2540G

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>Units</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Solids	75.6	69.1	%	8.90	(< 15 )

### Batch Information

Analytical Batch: SPT9707

Analytical Method: SM21 2540G

Instrument:

Analyst: A.R

Print Date: 08/31/2015 4:45:51PM



### Duplicate Sample Summary

Original Sample ID: 1154773002

Duplicate Sample ID: 1286360

QC for Samples:

1154773002

Analysis Date: 08/25/2015 17:10

Matrix: Soil/Solid (dry weight)

### Results by SM21 2540G

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>Units</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Solids	90.1	90.6	%	0.47	(< 15 )

### Batch Information

Analytical Batch: SPT9707

Analytical Method: SM21 2540G

Instrument:

Analyst: A.R

Print Date: 08/31/2015 4:45:51PM



### Method Blank

Blank ID: MB for HBN 1718448 [VXX/27778]

Blank Lab ID: 1286486

QC for Samples:

1154773002, 1154773003

Matrix: Soil/Solid (dry weight)

### Results by SW8260B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,1,1-Trichloroethane	12.5U	25.0	7.80	ug/Kg
1,1,2,2-Tetrachloroethane	6.25U	12.5	3.90	ug/Kg
1,1-Dichloroethane	12.5U	25.0	7.80	ug/Kg
1,1-Dichloroethene	12.5U	25.0	7.80	ug/Kg
1,2-Dichlorobenzene	12.5U	25.0	7.80	ug/Kg
1,2-Dichloroethane	5.00U	10.0	3.10	ug/Kg
1,2-Dichloropropane	5.00U	10.0	3.10	ug/Kg
1,3-Dichlorobenzene	12.5U	25.0	7.80	ug/Kg
1,4-Dichlorobenzene	12.5U	25.0	7.80	ug/Kg
Bromodichloromethane	12.5U	25.0	7.80	ug/Kg
Bromoform	12.5U	25.0	7.80	ug/Kg
Carbon tetrachloride	6.25U	12.5	3.90	ug/Kg
Chlorobenzene	12.5U	25.0	7.80	ug/Kg
Chloroform	12.5U	25.0	7.80	ug/Kg
cis-1,2-Dichloroethene	12.5U	25.0	7.80	ug/Kg
Dibromochloromethane	12.5U	25.0	7.80	ug/Kg
Methylene chloride	50.0U	100	31.0	ug/Kg
Tetrachloroethene	6.25U	12.5	3.90	ug/Kg
trans-1,2-Dichloroethene	12.5U	25.0	7.80	ug/Kg
Trichloroethene	6.25U	12.5	3.90	ug/Kg

### Surrogates

1,2-Dichloroethane-D4 (surr)	109	71-136	%
4-Bromofluorobenzene (surr)	89.6	55-151	%
Toluene-d8 (surr)	92.7	85-116	%

### Batch Information

Analytical Batch: VMS15205  
Analytical Method: SW8260B  
Instrument: Agilent 7890-75MS  
Analyst: SCL  
Analytical Date/Time: 8/25/2015 2:33:00PM

Prep Batch: VXX27778  
Prep Method: SW5035A  
Prep Date/Time: 8/23/2015 12:00:00AM  
Prep Initial Wt./Vol.: 50 g  
Prep Extract Vol: 25 mL

Print Date: 08/31/2015 4:45:53PM





### Blank Spike Summary

Blank Spike ID: LCS for HBN 1154773 [VXX27778]

Blank Spike Lab ID: 1286487

Date Analyzed: 08/25/2015 15:00

Matrix: Soil/Solid (dry weight)

QC for Samples: 1154773002, 1154773003

### Results by SW8260B

#### Blank Spike (ug/Kg)

Parameter	Spike	Result	Rec (%)	CL
1,1,1-Trichloroethane	750	810	108	(73-130)
1,1,2,2-Tetrachloroethane	750	809	108	(70-124)
1,1-Dichloroethane	750	824	110	(76-125)
1,1-Dichloroethene	750	807	108	(70-131)
1,2-Dichlorobenzene	750	791	105	(78-121)
1,2-Dichloroethane	750	844	113	(73-128)
1,2-Dichloropropane	750	798	106	(76-123)
1,3-Dichlorobenzene	750	778	104	(77-121)
1,4-Dichlorobenzene	750	780	104	(75-120)
Bromodichloromethane	750	823	110	(75-127)
Bromoform	750	809	108	(67-132)
Carbon tetrachloride	750	815	109	(70-135)
Chlorobenzene	750	779	104	(79-120)
Chloroform	750	816	109	(78-123)
cis-1,2-Dichloroethene	750	797	106	(77-123)
Dibromochloromethane	750	795	106	(74-126)
Methylene chloride	750	828	110	(70-128)
Tetrachloroethene	750	773	103	(73-128)
trans-1,2-Dichloroethene	750	810	108	(74-125)
Trichloroethene	750	793	106	(77-123)

### Surrogates

1,2-Dichloroethane-D4 (surr)	750	106	106	(71-136)
4-Bromofluorobenzene (surr)	750	93.5	94	(55-151)
Toluene-d8 (surr)	750	101	101	(85-116)

### Batch Information

Analytical Batch: **VMS15205**  
 Analytical Method: **SW8260B**  
 Instrument: **Agilent 7890-75MS**  
 Analyst: **SCL**

Prep Batch: **VXX27778**  
 Prep Method: **SW5035A**  
 Prep Date/Time: **08/23/2015 00:00**  
 Spike Init Wt./Vol.: 750 ug/Kg Extract Vol: 25 mL  
 Dupe Init Wt./Vol.: Extract Vol:

Print Date: 08/31/2015 4:45:53PM



### Matrix Spike Summary

Original Sample ID: 1286740  
 MS Sample ID: 1286488 MS  
 MSD Sample ID: 1286489 MSD

Analysis Date: 08/25/2015 16:49  
 Analysis Date: 08/25/2015 15:30  
 Analysis Date: 08/25/2015 15:46  
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1154773002, 1154773003

### Results by SW8260B

Parameter	Sample	Matrix Spike (ug/Kg)			Spike Duplicate (ug/Kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,1,1-Trichloroethane	7.15U	536	589	110	536	564	105	73-130	4.40	(< 20 )
1,1,2,2-Tetrachloroethane	3.58U	536	581	108	536	585	109	70-124	0.70	(< 20 )
1,1-Dichloroethane	7.15U	536	577	108	536	552	103	76-125	4.40	(< 20 )
1,1-Dichloroethene	7.15U	536	574	107	536	543	101	70-131	5.50	(< 20 )
1,2-Dichlorobenzene	7.15U	536	576	108	536	561	105	78-121	2.60	(< 20 )
1,2-Dichloroethane	2.86U	536	593	111	536	571	107	73-128	3.70	(< 20 )
1,2-Dichloropropane	2.86U	536	569	106	536	549	103	76-123	3.50	(< 20 )
1,3-Dichlorobenzene	7.15U	536	572	107	536	554	103	77-121	3.10	(< 20 )
1,4-Dichlorobenzene	7.15U	536	574	107	536	553	103	75-120	3.80	(< 20 )
Bromodichloromethane	7.15U	536	589	110	536	564	105	75-127	4.30	(< 20 )
Bromoform	7.15U	536	587	110	536	580	108	67-132	1.20	(< 20 )
Carbon tetrachloride	3.58U	536	597	111	536	569	106	70-135	4.80	(< 20 )
Chlorobenzene	7.15U	536	561	105	536	551	103	79-120	1.80	(< 20 )
Chloroform	7.15U	536	580	108	536	553	103	78-123	4.80	(< 20 )
cis-1,2-Dichloroethene	7.15U	536	571	107	536	553	103	77-123	3.10	(< 20 )
Dibromochloromethane	7.15U	536	582	109	536	572	107	74-126	1.60	(< 20 )
Methylene chloride	28.6U	536	569	106	536	544	102	70-128	4.40	(< 20 )
Tetrachloroethene	3.58U	536	553	103	536	552	103	73-128	0.16	(< 20 )
trans-1,2-Dichloroethene	7.15U	536	571	107	536	547	102	74-125	4.20	(< 20 )
Trichloroethene	3.58U	536	571	107	536	551	103	77-123	3.60	(< 20 )

### Surrogates

1,2-Dichloroethane-D4 (surr)	536	545	102	536	525	98	71-136	3.70
4-Bromofluorobenzene (surr)	1430	622	44 *	1430	599	42 *	55-151	3.90
Toluene-d8 (surr)	536	533	100	536	530	99	85-116	0.64

### Batch Information

Analytical Batch: VMS15205  
 Analytical Method: SW8260B  
 Instrument: Agilent 7890-75MS  
 Analyst: SCL  
 Analytical Date/Time: 8/25/2015 3:30:01PM

Prep Batch: VXX27778  
 Prep Method: Vol. Extraction SW8260 Field Extracted L  
 Prep Date/Time: 8/23/2015 12:00:00AM  
 Prep Initial Wt./Vol.: 70.02g  
 Prep Extract Vol: 25.00mL

Print Date: 08/31/2015 4:45:54PM



### Method Blank

Blank ID: MB for HBN 1718900 [VXX/27806]

Blank Lab ID: 1287561

QC for Samples:

1154773001, 1154773004

Matrix: Water (Surface, Eff., Ground)

### Results by SW8260B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,1,1-Trichloroethane	0.500U	1.00	0.310	ug/L
1,1,2,2-Tetrachloroethane	0.250U	0.500	0.150	ug/L
1,1-Dichloroethane	0.500U	1.00	0.310	ug/L
1,1-Dichloroethene	0.500U	1.00	0.310	ug/L
1,2-Dichlorobenzene	0.500U	1.00	0.310	ug/L
1,2-Dichloroethane	0.250U	0.500	0.150	ug/L
1,2-Dichloropropane	0.500U	1.00	0.310	ug/L
1,3-Dichlorobenzene	0.500U	1.00	0.310	ug/L
1,4-Dichlorobenzene	0.250U	0.500	0.150	ug/L
Bromodichloromethane	0.250U	0.500	0.150	ug/L
Bromoform	0.500U	1.00	0.310	ug/L
Carbon tetrachloride	0.500U	1.00	0.310	ug/L
Chlorobenzene	0.250U	0.500	0.150	ug/L
Chloroform	0.500U	1.00	0.300	ug/L
cis-1,2-Dichloroethene	0.500U	1.00	0.310	ug/L
Dibromochloromethane	0.250U	0.500	0.150	ug/L
Methylene chloride	2.50U	5.00	1.00	ug/L
Tetrachloroethene	0.500U	1.00	0.310	ug/L
trans-1,2-Dichloroethene	0.500U	1.00	0.310	ug/L
Trichloroethene	0.500U	1.00	0.310	ug/L
<b>Surrogates</b>				
1,2-Dichloroethane-D4 (surr)	98.8	81-118		%
4-Bromofluorobenzene (surr)	107	85-114		%
Toluene-d8 (surr)	101	89-112		%

### Batch Information

Analytical Batch: VMS15212  
Analytical Method: SW8260B  
Instrument: HP 5890 Series II MS3 VNA  
Analyst: NRB  
Analytical Date/Time: 8/28/2015 7:19:00PM

Prep Batch: VXX27806  
Prep Method: SW5030B  
Prep Date/Time: 8/28/2015 6:00:00AM  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL

Print Date: 08/31/2015 4:45:55PM



### Blank Spike Summary

Blank Spike ID: LCS for HBN 1154773 [VXX27806]  
 Blank Spike Lab ID: 1287562  
 Date Analyzed: 08/28/2015 20:20

Spike Duplicate ID: LCSD for HBN 1154773 [VXX27806]  
 Spike Duplicate Lab ID: 1287563  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1154773001, 1154773004

### Results by SW8260B

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,1,1-Trichloroethane	30	29.7	99	30	30.4	101	( 74-131 )	2.30	(< 20 )
1,1,2,2-Tetrachloroethane	30	30.6	102	30	30.0	100	( 71-121 )	2.10	(< 20 )
1,1-Dichloroethane	30	29.8	99	30	30.7	102	( 77-125 )	2.90	(< 20 )
1,1-Dichloroethene	30	28.3	94	30	28.4	95	( 71-131 )	0.63	(< 20 )
1,2-Dichlorobenzene	30	30.7	102	30	30.6	102	( 80-119 )	0.36	(< 20 )
1,2-Dichloroethane	30	28.5	95	30	28.8	96	( 73-128 )	1.00	(< 20 )
1,2-Dichloropropane	30	30.0	100	30	29.5	98	( 78-122 )	1.70	(< 20 )
1,3-Dichlorobenzene	30	32.4	108	30	31.6	105	( 80-119 )	2.40	(< 20 )
1,4-Dichlorobenzene	30	31.7	106	30	31.6	105	( 79-118 )	0.25	(< 20 )
Bromodichloromethane	30	29.1	97	30	28.4	95	( 79-125 )	2.60	(< 20 )
Bromoform	30	28.9	96	30	28.3	94	( 66-130 )	2.20	(< 20 )
Carbon tetrachloride	30	29.4	98	30	28.0	93	( 72-136 )	4.70	(< 20 )
Chlorobenzene	30	30.2	101	30	29.6	99	( 82-118 )	2.10	(< 20 )
Chloroform	30	29.2	97	30	28.8	96	( 79-124 )	1.30	(< 20 )
cis-1,2-Dichloroethene	30	29.1	97	30	29.9	100	( 78-123 )	2.50	(< 20 )
Dibromochloromethane	30	29.1	97	30	28.6	95	( 74-126 )	1.60	(< 20 )
Methylene chloride	30	26.1	87	30	26.4	88	( 74-124 )	1.10	(< 20 )
Tetrachloroethene	30	30.3	101	30	29.3	98	( 74-129 )	3.40	(< 20 )
trans-1,2-Dichloroethene	30	28.3	94	30	28.7	96	( 75-124 )	1.50	(< 20 )
Trichloroethene	30	28.0	93	30	27.4	91	( 79-123 )	2.20	(< 20 )

### Surrogates

1,2-Dichloroethane-D4 (surr)	30	96.7	97	30	98.1	98	( 81-118 )	1.40	
4-Bromofluorobenzene (surr)	30	100	100	30	99.7	100	( 85-114 )	0.23	
Toluene-d8 (surr)	30	101	101	30	102	102	( 89-112 )	1.40	

### Batch Information

Analytical Batch: VMS15212  
 Analytical Method: SW8260B  
 Instrument: HP 5890 Series II MS3 VNA  
 Analyst: NRB

Prep Batch: VXX27806  
 Prep Method: SW5030B  
 Prep Date/Time: 08/28/2015 06:00  
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL  
 Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Print Date: 08/31/2015 4:45:56PM



1154773



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SGS NORTH AMERICA INC. CHAIN OF CUS

<b>CLIENT:</b> ALTA GEOSCIENCES, INC. <b>CONTACT:</b> ALEX TULA <b>PHONE #:</b> 206-979-8282 <b>PROJECT/ PWSID/ PERMIT #:</b> NORGETOWN <b>REPORTS TO:</b> ALEX TULA <b>E-MAIL:</b> atula@altageo.com <b>INVOICE TO:</b> ALTA GEO. <b>QUOTE #:</b> 12563A <b>P.O. #:</b>		<b>SECTION 1</b> <b>INSTRUCTIONS: SECTIONS 1-5 MUST BE FILLED OUT. OMISSIONS MAY DELAY THE ONSET OF ANALYSIS.</b> Page <u>1</u> of <u>1</u>	
<b>SECTION 2</b> <b>RESERVED FOR LAB USE</b> SAMPLE IDENTIFICATION DATE MM/DD/YY TIME HH:MM MATRIX CODE 1A-C MW-115 8/25/15 0930 W 2A-B MW-115SO 8/24/15 0830 S <del>3A MW-116 8/14/15</del> <del>4A-C MW-116SO 8/15/15</del>		<b>SECTION 3</b> <b>CONTAINERS</b> # SAMPLE TYPE: Comp Grab MI (Multi-incremental) PRESERVATIVE HVOCS-826B REMARKS/LOC ID	
<b>SECTION 4</b> RELINQUISHED BY: (4) DATE 8/25 TIME 1020 RELINQUISHED BY: (2) DATE TIME RELINQUISHED BY: (3) DATE TIME RELINQUISHED BY: (4) DATE 8/25/15 TIME 10:24		<b>SECTION 5</b> SECTION 4 DOD Project? COC ID: Cooler ID: REQUESTED TURNAROUND TIME AND/OR SPECIAL INSTRUCTIONS 7-DAY DATA DELIVERABLE REQUIREMENTS: TEMP BLANK °C: 20.2 + 0.3 OR AMBIENT ( ) CHAIN OF CUSTODY SEAL: (CIRCLE) INTACT <b>BROKEN</b> <b>ABSENT</b> (See attached Sample Receipt Form)	

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F101\_eCOC\_Revise\_2014-12-10



1154773



1 1 5 4 7 7 3

SAMPLE RECEIPT FORM

Review Criteria:	Yes	N/A	No	Comments/Action Taken:
Were <b>custody seals</b> intact? Note # & location, if applicable. COC accompanied samples?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<i>Exemption permitted if sampler hand carries/delivers.</i>
<b>Temperature blank</b> compliant* (i.e., 0-6°C after CF)? <i>If &gt;6°C, were samples collected &lt;8 hours ago?</i> <i>If &lt;0°C, were all sample containers ice free?</i> Cooler ID: <u>1</u> @ <u>20.2</u> w/ Therm.ID: <u>D3</u> Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ If samples are received <u>without</u> a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank & "COOLER TEMP" will be noted to the right. In cases where neither a temp blank <u>nor</u> cooler temp can be obtained, note "ambient" or "chilled."	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<i>Exemption permitted if chilled &amp; collected &lt;8 hrs ago.</i> <b>Sample one collected within 8 hours of arrival time at the lab; Proceed with the analysis with Sample 2 per client's request.</b>  <i>Note: Identify containers received at non-compliant temperature. Use form FS-0029 if more space is needed.</i>
Delivery method (specify all that apply): <input checked="" type="checkbox"/> Client (hand carried) <input type="checkbox"/> USPS <input type="checkbox"/> Lynden <input type="checkbox"/> AK Air <input type="checkbox"/> Alert Courier <input type="checkbox"/> UPS <input type="checkbox"/> FedEx <input type="checkbox"/> RAVN <input type="checkbox"/> C&D Delivery <input type="checkbox"/> Carlife <input type="checkbox"/> Pen Air <input type="checkbox"/> Warp Speed <input type="checkbox"/> Other: _____ → For WO# with airbills, was the WO# & airbill info recorded in the Front Counter eLog?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
	Yes	N/A	No	
Were samples received within hold time? Do samples <b>match COC*</b> (i.e., sample IDs, dates/times collected)? Were analyses requested unambiguous?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<i>Note: Refer to form F-083 "Sample Guide" for hold times.</i> <i>Note: If times differ &lt;1hr, record details and login per COC.</i> *
Were samples in <b>good condition</b> (no leaks/cracks/breakage)? Packing material used (specify all that apply): <input type="checkbox"/> Bubble Wrap <input type="checkbox"/> Separate plastic bags <input type="checkbox"/> Vermiculite <input type="checkbox"/> Other:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were <b>proper containers</b> (type/mass/volume/preservative*) used? Were <b>Trip Blanks</b> (i.e., VOAs, LL-Hg) in cooler with samples? Were all VOA vials <b>free of headspace</b> (i.e., bubbles ≤6 mm)? Were all soil VOAs <b>field extracted</b> with MeOH+BFB?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> <i>Exemption permitted for metals (e.g., 200.8/6020A).</i>
For preserved waters (other than VOA vials, LL-Mercury or microbiological analyses), was <b>pH verified and compliant</b> ? If pH was adjusted, were bottles flagged (i.e., stickers)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
For <b>special handling</b> (e.g., "MI" soils, foreign soils, lab filter for dissolved..., lab extract for volatiles, Ref Lab, limited volume), were bottles/paperwork flagged (e.g., sticker)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
For <b>RUSH/SHORT Hold Time</b> , were COC/Bottles flagged accordingly? Was Rush/Short HT email sent, if applicable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>Rush due 09/03/2015</b>
For <b>SITE-SPECIFIC QC, e.g. BMS/BMSD/BDUP</b> , were containers / paperwork flagged accordingly?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>For any question answered "No,"</b> has the PM been notified and the problem resolved (or paperwork put in their bin)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	SRF Completed by: D.C 08/25/2015 PM notified:
Was <b>PEER REVIEW</b> of <i>sample numbering/labeling completed</i> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Peer Reviewed by: KPV
Additional notes (if applicable): <b>* The IDs and collection times for sample 2 do not match on the containers and the COC. Logged in per COC.</b>				
<i>Note to Client: Any "no" answer above indicates non-compliance with standard procedures and may impact data quality.</i>				



## Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1154773001-A	HCL to pH < 2	OK			
1154773001-B	HCL to pH < 2	OK			
1154773001-C	HCL to pH < 2	OK			
1154773002-A	No Preservative Required	OK			
1154773002-B	Methanol field pres. 4 C	OK			
1154773003-A	Methanol field pres. 4 C	OK			
1154773004-A	HCL to pH < 2	OK			
1154773004-B	HCL to pH < 2	OK			
1154773004-C	HCL to pH < 2	OK			

### Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates that an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

BU - The container was received with headspace greater than 6mm.



## Laboratory Report of Analysis

To: ALTA Geosciences, INC  
2020 Maltby Rd Ste 7 #197  
Bothell, WA 98021  
(206)979-8282

Report Number: **1155274**

Client Project: **Norgetown**

Dear Alex Tula,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Chuck at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,  
SGS North America Inc.

---

Chuck Homestead  
Project Manager  
Charles.Homestead@sgs.com

Date

Print Date: 09/24/2015 4:55:00PM



## Case Narrative

SGS Client: **ALTA Geosciences, INC**

SGS Project: **1155274**

Project Name/Site: **Norgetown**

Project Contact: **Alex Tula**

Refer to sample receipt form for information on sample condition.

**MW-43A (1155274001) PS**

Revised Report : Compound List adjusted per clients request.

**MW-44B (1155274002) PS**

Revised Report : Compound List adjusted per clients request.

**MW-44BDB (1155274003) PS**

Revised Report : Compound List adjusted per clients request.

**MW-109 (1155274004) PS**

Revised Report : Compound List adjusted per clients request.

**MW-110 (1155274005) PS**

Revised Report : Compound List adjusted per clients request.

**MW-112 (1155274006) PS**

Revised Report : Compound List adjusted per clients request.

**MW-113 (1155274007) PS**

Revised Report : Compound List adjusted per clients request.

**MW-115 (1155274008) PS**

Revised Report : Compound List adjusted per clients request.

**R3 (1155274009) PS**

Revised Report : Compound List adjusted per clients request.

**Trip Blank (1155274010) TB**

Revised Report : Compound List adjusted per clients request.

\*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

Print Date: 09/24/2015 4:55:02PM

## Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & UST-005 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020A, 7470A, 7471B, 8021B, 8082A, 8260B, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
D	The analyte concentration is the result of a dilution.
DF	Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
F	Indicates value that is greater than or equal to the DL
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
JL	The analyte was positively identified, but the quantitation is a low estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
M	A matrix effect was present.
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
Q	QC parameter out of acceptance range.
R	Rejected
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

### Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
MW-43A	1155274001	09/11/2015	09/11/2015	Water (Surface, Eff., Ground)
MW-44B	1155274002	09/11/2015	09/11/2015	Water (Surface, Eff., Ground)
MW-44BDB	1155274003	09/11/2015	09/11/2015	Water (Surface, Eff., Ground)
MW-109	1155274004	09/11/2015	09/11/2015	Water (Surface, Eff., Ground)
MW-110	1155274005	09/11/2015	09/11/2015	Water (Surface, Eff., Ground)
MW-112	1155274006	09/11/2015	09/11/2015	Water (Surface, Eff., Ground)
MW-113	1155274007	09/11/2015	09/11/2015	Water (Surface, Eff., Ground)
MW-115	1155274008	09/11/2015	09/11/2015	Water (Surface, Eff., Ground)
R3	1155274009	09/11/2015	09/11/2015	Water (Surface, Eff., Ground)
Trip Blank	1155274010	09/11/2015	09/11/2015	Water (Surface, Eff., Ground)

<u>Method</u>	<u>Method Description</u>
SW8260B	8021B by 8260B (W)



Results of MW-43A

Client Sample ID: MW-43A
Client Project ID: Norgetown
Lab Sample ID: 1155274001
Lab Project ID: 1155274

Collection Date: 09/11/15 11:30
Received Date: 09/11/15 12:28
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include various chemical compounds like 1,1,1-Trichloroethane, 1,1,2,2-Tetrachloroethane, etc., and a Surrogates section.

Batch Information

Analytical Batch: VMS15262
Analytical Method: SW8260B
Analyst: NRB
Analytical Date/Time: 09/16/15 23:01
Container ID: 1155274001-A

Prep Batch: VXX27925
Prep Method: SW5030B
Prep Date/Time: 09/16/15 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 09/24/2015 4:55:08PM



Results of MW-44B

Client Sample ID: MW-44B
Client Project ID: Norgetown
Lab Sample ID: 1155274002
Lab Project ID: 1155274

Collection Date: 09/11/15 10:40
Received Date: 09/11/15 12:28
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include various chemical compounds like 1,1,1-Trichloroethane, 1,1,2,2-Tetrachloroethane, etc., and a Surrogates section at the bottom.

Batch Information

Analytical Batch: VMS15262
Analytical Method: SW8260B
Analyst: NRB
Analytical Date/Time: 09/16/15 23:17
Container ID: 1155274002-A

Prep Batch: VXX27925
Prep Method: SW5030B
Prep Date/Time: 09/16/15 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 09/24/2015 4:55:08PM



Results of MW-44BDB

Client Sample ID: MW-44BDB
Client Project ID: Norgetown
Lab Sample ID: 1155274003
Lab Project ID: 1155274

Collection Date: 09/11/15 10:15
Received Date: 09/11/15 12:28
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include various chemical compounds like 1,1,1-Trichloroethane, 1,1,2,2-Tetrachloroethane, etc., and a Surrogates section.

Batch Information

Analytical Batch: VMS15262
Analytical Method: SW8260B
Analyst: NRB
Analytical Date/Time: 09/16/15 23:34
Container ID: 1155274003-A

Prep Batch: VXX27925
Prep Method: SW5030B
Prep Date/Time: 09/16/15 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 09/24/2015 4:55:08PM



Results of MW-109

Client Sample ID: MW-109
Client Project ID: Norgetown
Lab Sample ID: 1155274004
Lab Project ID: 1155274

Collection Date: 09/11/15 09:25
Received Date: 09/11/15 12:28
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include various chemical compounds like 1,1,1-Trichloroethane, 1,1,2,2-Tetrachloroethane, etc., and a Surrogates section at the bottom.

Batch Information

Analytical Batch: VMS15262
Analytical Method: SW8260B
Analyst: NRB
Analytical Date/Time: 09/16/15 23:50
Container ID: 1155274004-A

Prep Batch: VXX27925
Prep Method: SW5030B
Prep Date/Time: 09/16/15 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 09/24/2015 4:55:08PM



Results of MW-110

Client Sample ID: MW-110
Client Project ID: Norgetown
Lab Sample ID: 1155274005
Lab Project ID: 1155274

Collection Date: 09/11/15 09:40
Received Date: 09/11/15 12:28
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include various chemical compounds like 1,1,1-Trichloroethane, 1,1,2,2-Tetrachloroethane, etc., and a Surrogates section.

Batch Information

Analytical Batch: VMS15262
Analytical Method: SW8260B
Analyst: NRB
Analytical Date/Time: 09/17/15 00:07
Container ID: 1155274005-A

Prep Batch: VXX27925
Prep Method: SW5030B
Prep Date/Time: 09/16/15 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 09/24/2015 4:55:08PM





### Results of MW-112

Client Sample ID: **MW-112**  
 Client Project ID: **Norgetown**  
 Lab Sample ID: 1155274006  
 Lab Project ID: 1155274

Collection Date: 09/11/15 10:45  
 Received Date: 09/11/15 12:28  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

### Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1-Trichloroethane	1.00 U	1.00	0.310	ug/L	1		09/17/15 00:23
1,1,2,2-Tetrachloroethane	0.500 U	0.500	0.150	ug/L	1		09/17/15 00:23
1,1-Dichloroethane	1.00 U	1.00	0.310	ug/L	1		09/17/15 00:23
1,1-Dichloroethene	1.00 U	1.00	0.310	ug/L	1		09/17/15 00:23
1,2-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		09/17/15 00:23
1,2-Dichloroethane	0.500 U	0.500	0.150	ug/L	1		09/17/15 00:23
1,2-Dichloropropane	1.00 U	1.00	0.310	ug/L	1		09/17/15 00:23
1,3-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		09/17/15 00:23
1,4-Dichlorobenzene	0.500 U	0.500	0.150	ug/L	1		09/17/15 00:23
Bromodichloromethane	0.500 U	0.500	0.150	ug/L	1		09/17/15 00:23
Bromoform	1.00 U	1.00	0.310	ug/L	1		09/17/15 00:23
Carbon tetrachloride	1.00 U	1.00	0.310	ug/L	1		09/17/15 00:23
Chloroform	2.10	1.00	0.300	ug/L	1		09/17/15 00:23
cis-1,2-Dichloroethene	1.00 U	1.00	0.310	ug/L	1		09/17/15 00:23
Dibromochloromethane	0.500 U	0.500	0.150	ug/L	1		09/17/15 00:23
Hexachlorobutadiene	1.00 U	1.00	0.310	ug/L	1		09/17/15 00:23
Methylene chloride	5.00 U	5.00	1.00	ug/L	1		09/17/15 00:23
Tetrachloroethene	2.78	1.00	0.310	ug/L	1		09/17/15 00:23
trans-1,2-Dichloroethene	1.00 U	1.00	0.310	ug/L	1		09/17/15 00:23
Trichloroethene	1.00 U	1.00	0.310	ug/L	1		09/17/15 00:23
Vinyl chloride	1.00 U	1.00	0.310	ug/L	1		09/17/15 00:23
<b>Surrogates</b>							
1,2-Dichloroethane-D4 (surr)	107	81-118		%	1		09/17/15 00:23
1,2-Dichloroethane-D4 (surr)							
4-Bromofluorobenzene (surr)	106	85-114		%	1		09/17/15 00:23
4-Bromofluorobenzene (surr)							
Toluene-d8 (surr)							
Toluene-d8 (surr)	99.3	89-112		%	1		09/17/15 00:23

### Batch Information

Analytical Batch: VMS15262  
 Analytical Method: SW8260B  
 Analyst: NRB  
 Analytical Date/Time: 09/17/15 00:23  
 Container ID: 1155274006-A

Prep Batch: VXX27925  
 Prep Method: SW5030B  
 Prep Date/Time: 09/16/15 06:00  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL

Print Date: 09/24/2015 4:55:08PM



Results of MW-113

Client Sample ID: MW-113
Client Project ID: Norgetown
Lab Sample ID: 1155274007
Lab Project ID: 1155274

Collection Date: 09/11/15 11:00
Received Date: 09/11/15 12:28
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include various chemical compounds like 1,1,1-Trichloroethane, 1,1,2,2-Tetrachloroethane, etc., and a Surrogates section at the bottom.

Batch Information

Analytical Batch: VMS15262
Analytical Method: SW8260B
Analyst: NRB
Analytical Date/Time: 09/17/15 00:40
Container ID: 1155274007-A

Prep Batch: VXX27925
Prep Method: SW5030B
Prep Date/Time: 09/16/15 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 09/24/2015 4:55:08PM



### Results of MW-115

Client Sample ID: **MW-115**  
 Client Project ID: **Norgetown**  
 Lab Sample ID: 1155274008  
 Lab Project ID: 1155274

Collection Date: 09/11/15 10:00  
 Received Date: 09/11/15 12:28  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

### Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1-Trichloroethane	1.00 U	1.00	0.310	ug/L	1		09/17/15 00:57
1,1,2,2-Tetrachloroethane	0.500 U	0.500	0.150	ug/L	1		09/17/15 00:57
1,1-Dichloroethane	1.00 U	1.00	0.310	ug/L	1		09/17/15 00:57
1,1-Dichloroethene	1.00 U	1.00	0.310	ug/L	1		09/17/15 00:57
1,2-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		09/17/15 00:57
1,2-Dichloroethane	0.500 U	0.500	0.150	ug/L	1		09/17/15 00:57
1,2-Dichloropropane	1.00 U	1.00	0.310	ug/L	1		09/17/15 00:57
1,3-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		09/17/15 00:57
1,4-Dichlorobenzene	0.500 U	0.500	0.150	ug/L	1		09/17/15 00:57
Bromodichloromethane	0.500 U	0.500	0.150	ug/L	1		09/17/15 00:57
Bromoform	1.00 U	1.00	0.310	ug/L	1		09/17/15 00:57
Carbon tetrachloride	1.00 U	1.00	0.310	ug/L	1		09/17/15 00:57
Chloroform	3.47	1.00	0.300	ug/L	1		09/17/15 00:57
cis-1,2-Dichloroethene	1.00 U	1.00	0.310	ug/L	1		09/17/15 00:57
Dibromochloromethane	0.500 U	0.500	0.150	ug/L	1		09/17/15 00:57
Hexachlorobutadiene	1.00 U	1.00	0.310	ug/L	1		09/17/15 00:57
Methylene chloride	5.00 U	5.00	1.00	ug/L	1		09/17/15 00:57
Tetrachloroethene	10.3	1.00	0.310	ug/L	1		09/17/15 00:57
trans-1,2-Dichloroethene	1.00 U	1.00	0.310	ug/L	1		09/17/15 00:57
Trichloroethene	1.00 U	1.00	0.310	ug/L	1		09/17/15 00:57
Vinyl chloride	1.00 U	1.00	0.310	ug/L	1		09/17/15 00:57
<b>Surrogates</b>							
1,2-Dichloroethane-D4 (surr)	104	81-118		%	1		09/17/15 00:57
1,2-Dichloroethane-D4 (surr)							
4-Bromofluorobenzene (surr)	107	85-114		%	1		09/17/15 00:57
4-Bromofluorobenzene (surr)							
Toluene-d8 (surr)							
Toluene-d8 (surr)	97.9	89-112		%	1		09/17/15 00:57

### Batch Information

Analytical Batch: VMS15262  
 Analytical Method: SW8260B  
 Analyst: NRB  
 Analytical Date/Time: 09/17/15 00:57  
 Container ID: 1155274008-A

Prep Batch: VXX27925  
 Prep Method: SW5030B  
 Prep Date/Time: 09/16/15 06:00  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL

Print Date: 09/24/2015 4:55:08PM



### Results of R3

Client Sample ID: **R3**  
 Client Project ID: **Norgetown**  
 Lab Sample ID: 1155274009  
 Lab Project ID: 1155274

Collection Date: 09/11/15 11:15  
 Received Date: 09/11/15 12:28  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

### Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1-Trichloroethane	1.00 U	1.00	0.310	ug/L	1		09/17/15 01:14
1,1,2,2-Tetrachloroethane	0.500 U	0.500	0.150	ug/L	1		09/17/15 01:14
1,1-Dichloroethane	1.00 U	1.00	0.310	ug/L	1		09/17/15 01:14
1,1-Dichloroethene	1.00 U	1.00	0.310	ug/L	1		09/17/15 01:14
1,2-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		09/17/15 01:14
1,2-Dichloroethane	0.500 U	0.500	0.150	ug/L	1		09/17/15 01:14
1,2-Dichloropropane	1.00 U	1.00	0.310	ug/L	1		09/17/15 01:14
1,3-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		09/17/15 01:14
1,4-Dichlorobenzene	0.500 U	0.500	0.150	ug/L	1		09/17/15 01:14
Bromodichloromethane	0.500 U	0.500	0.150	ug/L	1		09/17/15 01:14
Bromoform	1.00 U	1.00	0.310	ug/L	1		09/17/15 01:14
Carbon tetrachloride	1.00 U	1.00	0.310	ug/L	1		09/17/15 01:14
Chloroform	1.00 U	1.00	0.300	ug/L	1		09/17/15 01:14
cis-1,2-Dichloroethene	1.00 U	1.00	0.310	ug/L	1		09/17/15 01:14
Dibromochloromethane	0.500 U	0.500	0.150	ug/L	1		09/17/15 01:14
Hexachlorobutadiene	1.00 U	1.00	0.310	ug/L	1		09/17/15 01:14
Methylene chloride	5.00 U	5.00	1.00	ug/L	1		09/17/15 01:14
Tetrachloroethene	1.00 U	1.00	0.310	ug/L	1		09/17/15 01:14
trans-1,2-Dichloroethene	1.00 U	1.00	0.310	ug/L	1		09/17/15 01:14
Trichloroethene	1.00 U	1.00	0.310	ug/L	1		09/17/15 01:14
Vinyl chloride	1.00 U	1.00	0.310	ug/L	1		09/17/15 01:14
<b>Surrogates</b>							
1,2-Dichloroethane-D4 (surr)	103	81-118		%	1		09/17/15 01:14
1,2-Dichloroethane-D4 (surr)							
4-Bromofluorobenzene (surr)	102	85-114		%	1		09/17/15 01:14
4-Bromofluorobenzene (surr)							
Toluene-d8 (surr)	103	89-112		%	1		09/17/15 01:14
Toluene-d8 (surr)							

### Batch Information

Analytical Batch: VMS15262  
 Analytical Method: SW8260B  
 Analyst: NRB  
 Analytical Date/Time: 09/17/15 01:14  
 Container ID: 1155274009-A

Prep Batch: VXX27925  
 Prep Method: SW5030B  
 Prep Date/Time: 09/16/15 06:00  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL

Print Date: 09/24/2015 4:55:08PM



### Results of Trip Blank

Client Sample ID: **Trip Blank**  
 Client Project ID: **Norgetown**  
 Lab Sample ID: 1155274010  
 Lab Project ID: 1155274

Collection Date: 09/11/15 09:00  
 Received Date: 09/11/15 12:28  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

### Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1-Trichloroethane	1.00 U	1.00	0.310	ug/L	1		09/16/15 22:27
1,1,2,2-Tetrachloroethane	0.500 U	0.500	0.150	ug/L	1		09/16/15 22:27
1,1-Dichloroethane	1.00 U	1.00	0.310	ug/L	1		09/16/15 22:27
1,1-Dichloroethene	1.00 U	1.00	0.310	ug/L	1		09/16/15 22:27
1,2-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		09/16/15 22:27
1,2-Dichloroethane	0.500 U	0.500	0.150	ug/L	1		09/16/15 22:27
1,2-Dichloropropane	1.00 U	1.00	0.310	ug/L	1		09/16/15 22:27
1,3-Dichlorobenzene	1.00 U	1.00	0.310	ug/L	1		09/16/15 22:27
1,4-Dichlorobenzene	0.500 U	0.500	0.150	ug/L	1		09/16/15 22:27
Bromodichloromethane	0.500 U	0.500	0.150	ug/L	1		09/16/15 22:27
Bromoform	1.00 U	1.00	0.310	ug/L	1		09/16/15 22:27
Carbon tetrachloride	1.00 U	1.00	0.310	ug/L	1		09/16/15 22:27
Chloroform	1.00 U	1.00	0.300	ug/L	1		09/16/15 22:27
cis-1,2-Dichloroethene	1.00 U	1.00	0.310	ug/L	1		09/16/15 22:27
Dibromochloromethane	0.500 U	0.500	0.150	ug/L	1		09/16/15 22:27
Hexachlorobutadiene	1.00 U	1.00	0.310	ug/L	1		09/16/15 22:27
Methylene chloride	5.00 U	5.00	1.00	ug/L	1		09/16/15 22:27
Tetrachloroethene	1.00 U	1.00	0.310	ug/L	1		09/16/15 22:27
trans-1,2-Dichloroethene	1.00 U	1.00	0.310	ug/L	1		09/16/15 22:27
Trichloroethene	1.00 U	1.00	0.310	ug/L	1		09/16/15 22:27
Vinyl chloride	1.00 U	1.00	0.310	ug/L	1		09/16/15 22:27
<b>Surrogates</b>							
1,2-Dichloroethane-D4 (surr)	102	81-118		%	1		09/16/15 22:27
1,2-Dichloroethane-D4 (surr)							
4-Bromofluorobenzene (surr)	108	85-114		%	1		09/16/15 22:27
4-Bromofluorobenzene (surr)							
Toluene-d8 (surr)	102	89-112		%	1		09/16/15 22:27
Toluene-d8 (surr)							

### Batch Information

Analytical Batch: VMS15262  
 Analytical Method: SW8260B  
 Analyst: NRB  
 Analytical Date/Time: 09/16/15 22:27  
 Container ID: 1155274010-A

Prep Batch: VXX27925  
 Prep Method: SW5030B  
 Prep Date/Time: 09/16/15 06:00  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL

Print Date: 09/24/2015 4:55:08PM



### Method Blank

Blank ID: MB for HBN 1720715 [VXX/27925]  
Blank Lab ID: 1291921

Matrix: Water (Surface, Eff., Ground)

QC for Samples:

1155274001, 1155274002, 1155274003, 1155274004, 1155274005, 1155274006, 1155274007, 1155274008, 1155274009, 1155274010

### Results by SW8260B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,1,1-Trichloroethane	0.500U	1.00	0.310	ug/L
1,1,2,2-Tetrachloroethane	0.250U	0.500	0.150	ug/L
1,1-Dichloroethane	0.500U	1.00	0.310	ug/L
1,1-Dichloroethene	0.500U	1.00	0.310	ug/L
1,2-Dichlorobenzene	0.500U	1.00	0.310	ug/L
1,2-Dichloroethane	0.250U	0.500	0.150	ug/L
1,2-Dichloropropane	0.500U	1.00	0.310	ug/L
1,3-Dichlorobenzene	0.500U	1.00	0.310	ug/L
1,4-Dichlorobenzene	0.250U	0.500	0.150	ug/L
Bromodichloromethane	0.250U	0.500	0.150	ug/L
Bromoform	0.500U	1.00	0.310	ug/L
Carbon tetrachloride	0.500U	1.00	0.310	ug/L
Chloroform	0.500U	1.00	0.300	ug/L
cis-1,2-Dichloroethene	0.500U	1.00	0.310	ug/L
Dibromochloromethane	0.250U	0.500	0.150	ug/L
Hexachlorobutadiene	0.500U	1.00	0.310	ug/L
Methylene chloride	2.50U	5.00	1.00	ug/L
Tetrachloroethene	0.500U	1.00	0.310	ug/L
trans-1,2-Dichloroethene	0.500U	1.00	0.310	ug/L
Trichloroethene	0.500U	1.00	0.310	ug/L
Vinyl chloride	0.500U	1.00	0.310	ug/L

### Surrogates

1,2-Dichloroethane-D4 (surr)	103	81-118	%
4-Bromofluorobenzene (surr)	106	85-114	%
Toluene-d8 (surr)	101	89-112	%

### Batch Information

Analytical Batch: VMS15262  
Analytical Method: SW8260B  
Instrument: HP 5890 Series II MS3 VNA  
Analyst: NRB  
Analytical Date/Time: 9/16/2015 8:15:00PM

Prep Batch: VXX27925  
Prep Method: SW5030B  
Prep Date/Time: 9/16/2015 6:00:00AM  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL

Print Date: 09/24/2015 4:55:11PM



### Blank Spike Summary

Blank Spike ID: LCS for HBN 1155274 [VXX27925]  
 Blank Spike Lab ID: 1291922  
 Date Analyzed: 09/16/2015 20:52

Spike Duplicate ID: LCSD for HBN 1155274 [VXX27925]  
 Spike Duplicate Lab ID: 1291923  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1155274001, 1155274002, 1155274003, 1155274004, 1155274005, 1155274006, 1155274007, 1155274008, 1155274009, 1155274010

### Results by SW8260B

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,1,1-Trichloroethane	30	32.4	108	30	31.3	104	( 74-131 )	3.70	(< 20 )
1,1,2,2-Tetrachloroethane	30	29.4	98	30	30.3	101	( 71-121 )	3.00	(< 20 )
1,1-Dichloroethane	30	31.9	106	30	31.3	104	( 77-125 )	2.10	(< 20 )
1,1-Dichloroethene	30	31.9	106	30	30.4	101	( 71-131 )	5.00	(< 20 )
1,2-Dichlorobenzene	30	30.3	101	30	30.4	101	( 80-119 )	0.20	(< 20 )
1,2-Dichloroethane	30	28.7	96	30	28.8	96	( 73-128 )	0.35	(< 20 )
1,2-Dichloropropane	30	30.6	102	30	31.7	106	( 78-122 )	3.30	(< 20 )
1,3-Dichlorobenzene	30	30.2	101	30	32.2	107	( 80-119 )	6.30	(< 20 )
1,4-Dichlorobenzene	30	30.5	102	30	32.3	108	( 79-118 )	5.80	(< 20 )
Bromodichloromethane	30	31.7	106	30	30.2	101	( 79-125 )	4.60	(< 20 )
Bromoform	30	34.0	113	30	32.0	107	( 66-130 )	6.00	(< 20 )
Carbon tetrachloride	30	34.4	115	30	32.5	108	( 72-136 )	5.80	(< 20 )
Chloroform	30	31.1	104	30	31.1	104	( 79-124 )	0.03	(< 20 )
cis-1,2-Dichloroethene	30	29.5	98	30	29.0	97	( 78-123 )	1.60	(< 20 )
Dibromochloromethane	30	32.9	110	30	32.8	109	( 74-126 )	0.27	(< 20 )
Hexachlorobutadiene	30	31.0	103	30	28.6	95	( 66-134 )	8.00	(< 20 )
Methylene chloride	30	29.8	99	30	29.0	97	( 74-124 )	2.40	(< 20 )
Tetrachloroethene	30	32.8	109	30	30.8	103	( 74-129 )	6.30	(< 20 )
trans-1,2-Dichloroethene	30	30.8	103	30	30.9	103	( 75-124 )	0.19	(< 20 )
Trichloroethene	30	32.3	108	30	31.0	103	( 79-123 )	4.30	(< 20 )
Vinyl chloride	30	33.0	110	30	32.5	108	( 58-137 )	1.50	(< 20 )

### Surrogates

1,2-Dichloroethane-D4 (surr)	30	91.7	92	30	93.9	94	( 81-118 )	2.40	
4-Bromofluorobenzene (surr)	30	95.6	96	30	98.3	98	( 85-114 )	2.80	
Toluene-d8 (surr)	30	104	104	30	100	100	( 89-112 )	3.90	

### Batch Information

Analytical Batch: VMS15262  
 Analytical Method: SW8260B  
 Instrument: HP 5890 Series II MS3 VNA  
 Analyst: NRB

Prep Batch: VXX27925  
 Prep Method: SW5030B  
 Prep Date/Time: 09/16/2015 06:00  
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL  
 Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Print Date: 09/24/2015 4:55:12PM



CHI

1155274



Locations Nationwide  
 Alaska  
 Maryland  
 New Jersey  
 North Carolina  
 West Virginia  
 Indiana  
 Kentucky  
[www.us.sgs.com](http://www.us.sgs.com)

**CLIENT:** *Alta Geo Science*

**CONTACT:** *Alex Tula*    **PHONE NO:** *425-485-1053*

**PROJECT NAME:** *Norgettown*    **PROJECT PWSID/ PERMIT#:** *16-08*

**REPORTS TO:** *Alex Tula*    **E-MAIL:** *atula@Altagco.com*

**INVOICE TO:** *Alex Tula*    **QUOTE #:**    **P.O. #:**

**Section 1**

**Instructions: Sections 1 - 5 must be filled out. Omissions may delay the onset of analysis.**

Page 1 of 1

RESERVED for lab use	SAMPLE IDENTIFICATION	DATE mm/dd/yy	TIME HH:MM	MATRIX CODE	Section 3		Type C = COMP G = GRAB M = Multi I = Incre- mental S = Soils	Preservative	REMARKS/ LOC ID
					#	C O N T A I N E R S			
① AC	Mw-43A	9-11-15	1130	Gw	3	3	6		
② AC	Mw-44B	9-11-15	1040	Gw	3	3	6		
③ AC	Mw-44BD13	9-11-15	1015	Gw	3	3	6		
④ AC	Mw-109	9-11-15	0925	Gw	3	3	6		
⑤ AC	Mw-110	9-11-15	0940	Gw	3	3	6		
⑥ AC	Mw-112	9-11-15	1045	Gw	3	3	6		
⑦ AC	Mw-113	9-11-15	1100	Gw	3	3	6		
⑧ AC	Mw-115	9-11-15	1000	Gw	3	3	6		
⑨ AC	R3	9-11-15	1115	Gw	3	3	6		
⑩ AC	TAP Blank	9-11-15	0900	Gw	3	3	6		

**Section 2**

Relinquished By: (1) *[Signature]*    Received By: *[Signature]*

Relinquished By: (2) *[Signature]*    Received By: *[Signature]*

Relinquished By: (3) *[Signature]*    Received By: *[Signature]*

Relinquished By: (4) *[Signature]*    Received For Laboratory By: *[Signature]*

**Section 4**    **Section 5**

Section 4    DOD Project? Yes No    Data Deliverable Requirements:

Cooler ID:    Requested Turnaround Time and/or Special Instructions:

Temp Blank °C: *5-8 #222*    Chain of Custody Seal: (Circle) **ABSENT**

or Ambient [ ]    INTACT    BROKEN    (See attached Sample Receipt Form)





1155274



1 1 5 5 2 7 4

SAMPLE RECEIPT FORM

Review Criteria:	Yes	N/A	No	Comments/Action Taken:
Were <b>custody seals</b> intact? Note # & location, if applicable. COC accompanied samples?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<i>Exemption permitted if sampler hand carries/delivers.</i>
<b>Temperature blank</b> compliant* (i.e., 0-6°C after CF)? <i>If &gt;6°C, were samples collected &lt;8 hours ago?</i> <i>If &lt;0°C, were all sample containers ice free?</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>Exemption permitted if chilled &amp; collected &lt;8 hrs ago.</i>
Cooler ID: <u>1</u> @ <u>5.8</u> w/ Therm.ID: <u>242</u> Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ If samples are received <u>without</u> a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank & "COOLER TEMP" will be noted to the right. In cases where neither a temp blank <u>nor</u> cooler temp can be obtained, note "ambient" or "chilled."	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Delivery method (specify all that apply): <input checked="" type="checkbox"/> Client (hand carried) <input type="checkbox"/> USPS <input type="checkbox"/> Lynden <input type="checkbox"/> AK Air <input type="checkbox"/> Alert Courier <input type="checkbox"/> UPS <input type="checkbox"/> FedEx <input type="checkbox"/> RAVN <input type="checkbox"/> C&D Delivery <input type="checkbox"/> Carlife <input type="checkbox"/> Pen Air <input type="checkbox"/> Warp Speed <input type="checkbox"/> Other: _____ → For WO# with airbills, was the WO# & airbill info recorded in the Front Counter eLog?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
	Yes	N/A	No	
Were samples received within hold time? Do samples <b>match COC*</b> (i.e., sample IDs, dates/times collected)? Were analyses requested unambiguous?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>Note: Refer to form F-083 "Sample Guide" for hold times. Note: If times differ &lt;1hr, record details and login per COC.</i>
Were samples in <b>good condition</b> (no leaks/cracks/breakage)? Packing material used (specify all that apply): <input checked="" type="checkbox"/> Bubble Wrap <input type="checkbox"/> Separate plastic bags <input type="checkbox"/> Vermiculite <input type="checkbox"/> Other:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were <b>proper containers</b> (type/mass/volume/preservative*) used? Were <b>Trip Blanks</b> (i.e., VOAs, LL-Hg) in cooler with samples? Were all VOA vials <b>free of headspace</b> (i.e., bubbles ≤6 mm)? Were all soil VOAs <b>field extracted</b> with MeOH+BFB?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> <i>Exemption permitted for metals (e.g., 200.8/6020A).</i>
For preserved waters (other than VOA vials, LL-Mercury or microbiological analyses), was <b>pH verified and compliant</b> ? If pH was adjusted, were bottles flagged (i.e., stickers)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
For <b>special handling</b> (e.g., "MI" soils, foreign soils, lab filter for dissolved..., lab extract for volatiles, Ref Lab, limited volume), were bottles/paperwork flagged (e.g., sticker)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
For <b>RUSH/SHORT Hold Time</b> , were COC/Bottles flagged accordingly? Was Rush/Short HT email sent, if applicable?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
For <b>SITE-SPECIFIC QC, e.g. BMS/BMSD/BDUP</b> , were containers / paperwork flagged accordingly?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>For any question answered "No,"</b> has the PM been notified and the problem resolved (or paperwork put in their bin)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	SRF Completed by: EDJ PM notified:
Was <b>PEER REVIEW</b> of <i>sample numbering/labeling completed</i> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Peer Reviewed by: VDL
Additional notes (if applicable):				

Note to Client: Any "no" answer above indicates non-compliance with standard procedures and may impact data quality.



## Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1155274001-A	HCL to pH < 2	OK			
1155274001-B	HCL to pH < 2	OK			
1155274001-C	HCL to pH < 2	OK			
1155274002-A	HCL to pH < 2	OK			
1155274002-B	HCL to pH < 2	OK			
1155274002-C	HCL to pH < 2	OK			
1155274003-A	HCL to pH < 2	OK			
1155274003-B	HCL to pH < 2	OK			
1155274003-C	HCL to pH < 2	OK			
1155274004-A	HCL to pH < 2	OK			
1155274004-B	HCL to pH < 2	OK			
1155274004-C	HCL to pH < 2	OK			
1155274005-A	HCL to pH < 2	OK			
1155274005-B	HCL to pH < 2	OK			
1155274005-C	HCL to pH < 2	OK			
1155274006-A	HCL to pH < 2	OK			
1155274006-B	HCL to pH < 2	OK			
1155274006-C	HCL to pH < 2	OK			
1155274007-A	HCL to pH < 2	OK			
1155274007-B	HCL to pH < 2	OK			
1155274007-C	HCL to pH < 2	OK			
1155274008-A	HCL to pH < 2	OK			
1155274008-B	HCL to pH < 2	OK			
1155274008-C	HCL to pH < 2	OK			
1155274009-A	HCL to pH < 2	OK			
1155274009-B	HCL to pH < 2	OK			
1155274009-C	HCL to pH < 2	OK			
1155274010-A	HCL to pH < 2	OK			
1155274010-B	HCL to pH < 2	OK			
1155274010-C	HCL to pH < 2	OK			

### Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates that an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

BU - The container was received with headspace greater than 6mm.

## **NORGETOWN**

### **QUALITY CONTROL SUMMARY**

This QA summary includes a review, where appropriate, of holding times, blanks, matrix spike (MS) and laboratory control sample (LCS) recoveries, duplicate sample relative percent differences (RPDs), reporting limits, and overall assessment of data in the sample event. Each analysis that was performed is evaluated in the following subsections.

Field samples were reviewed to determine overall precision of sampling and analysis as well as matrix homogeneity for HVOCs.

Laboratory data were evaluated using laboratory-supplied control criteria. In the following method-specific discussions, only the criteria exceedances that impact data qualification or require assessment beyond laboratory documentation are discussed.

Samples were submitted to SGS Environmental Services (SGS) in Anchorage, Alaska. Ten (10) water samples, including one (1) field duplicate and one (1) trip blank, were submitted in person at the laboratory in one laboratory batch on September 11, 2015.

Sample MW-44BDB was collected as a field duplicate of sample MW-44B.

No samples were designated as matrix spike/matrix spike duplicate (MS/MSD) samples.

The sample results are reported under SGS job number 1155274, and all samples were received at the laboratory properly preserved with temperatures (0-6°C) and in good condition.

### **HVOCs BY SW8260B**

All data elements/indicators are in conformance with the project criteria, with the following exception:

- The RPDs for chloroform (40.6%) and tetrachloroethene (43.8%) in parent sample/field duplicate pair MW-44B/MW-44BDB are above QC limits (<30%). The chloroform and tetrachloroethene results in these samples are qualified as estimated (J).

### **OVERALL ASSESSMENT**

The following summary highlights the data evaluation findings for this sampling event:

- No data are rejected.
- The completeness objectives (greater than 85 percent complete) for this project are met.

- The precision and accuracy of the laboratory data, as measured by laboratory quality control indicators, suggest that the data are useable as qualified for the purposes of this project.
- The precision measurements for result comparisons between primary and duplicate field samples are acceptable for the purpose of this project.

**FIELD DUPLICATE RESULTS**

Analyte	Method	Units	MW-44B 1155274002 Sample	MW-44BDB 1155274003 Duplicate	RPD ≤ 30	Qual
1,1,1-Trichloroethane	SW8260B	ug/L	ND	ND	NC	
1,1,2,2-Tetrachloroethane	SW8260B	ug/L	ND	ND	NC	
1,1-Dichloroethane	SW8260B	ug/L	ND	ND	NC	
1,1-Dichloroethene	SW8260B	ug/L	ND	ND	NC	
1,2-Dichlorobenzene	SW8260B	ug/L	ND	ND	NC	
1,2-Dichloroethane	SW8260B	ug/L	ND	ND	NC	
1,2-Dichloropropane	SW8260B	ug/L	ND	ND	NC	
1,3-Dichlorobenzene	SW8260B	ug/L	ND	ND	NC	
1,4-Dichlorobenzene	SW8260B	ug/L	ND	ND	NC	
Bromodichloromethane	SW8260B	ug/L	ND	ND	NC	
Bromoform	SW8260B	ug/L	ND	ND	NC	
Carbon tetrachloride	SW8260B	ug/L	ND	ND	NC	
Chloroform	SW8260B	ug/L	4.92	3.26	<b>40.6</b>	J
cis-1,2-Dichloroethene	SW8260B	ug/L	ND	ND	NC	
Dibromochloromethane	SW8260B	ug/L	ND	ND	NC	
Hexachlorobutadiene	SW8260B	ug/L	ND	ND	NC	
Methylene chloride	SW8260B	ug/L	ND	ND	NC	
Tetrachloroethene	SW8260B	ug/L	7.13	4.57	<b>43.8</b>	J
trans-1,3-Dichloroethene	SW8260B	ug/L	ND	ND	NC	
Trichloroethene	SW8260B	ug/L	ND	1.17	*	NQ
Vinyl chloride	SW8260B	ug/L	ND	ND	NC	

NC = RPD cannot be calculated.

ND = non-detect

NQ = No additional qualification required

\* = positive result is less than 2 times the RL, RPD cannot be calculated.

J = The associated numerical value is an estimated quantity because the Quality Control criteria were not met.

# Laboratory Data Review Checklist

Completed by:	Rachel James		
Title:	Chemist, Argon Inc.	Date:	Oct 17, 2015
CS Report Name:	Norgetown	Report Date:	Sep 24, 2015
Consultant Firm:	Alta Geosciences		
Laboratory Name:	SGS North America, Inc.	Laboratory Report Number:	1155274
ADEC File Number:		ADEC RecKey Number:	

## 1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

Yes     No     NA (Please explain.)    Comments:

b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

Yes     No     NA (Please explain)    Comments:

Samples were not subcontracted.

## 2. Chain of Custody (COC)

a. COC information completed, signed, and dated (including released/received by)?

Yes     No     NA (Please explain)    Comments:

b. Correct analyses requested?

Yes     No     NA (Please explain)    Comments:

## 3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt ( $4^{\circ} \pm 2^{\circ} \text{C}$ )?

Yes     No     NA (Please explain)    Comments:

b. Sample preservation acceptable - acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes       No       NA (Please explain)      Comments:

c. Sample condition documented - broken, leaking (Methanol), zero headspace (VOC vials)?

Yes       No       NA (Please explain)      Comments:

d. If there were any discrepancies, were they documented? - For example, incorrect sample containers/preservation, sample temperature outside of acceptance range, insufficient or missing samples, etc.?

Yes       No       NA (Please explain)      Comments:

e. Data quality or usability affected? (Please explain)

Comments:

No data quality or usability was affected by sample receipt.

#### 4. Case Narrative

a. Present and understandable?

Yes       No       NA (Please explain)      Comments:

b. Discrepancies, errors or QC failures identified by the lab?

Yes       No       NA (Please explain)      Comments:

c. Were all corrective actions documented?

Yes       No       NA (Please explain)      Comments:

d. What is the effect on data quality/usability according to the case narrative?

Comments:

No data quality or usability was affected by the case narrative.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes     No     NA (Please explain)

Comments:

b. All applicable holding times met?

Yes     No     NA (Please explain)

Comments:

c. All soils reported on a dry weight basis?

Yes     No     NA (Please explain)

Comments:

No soil samples were included.

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?

Yes     No     NA (Please explain)

Comments:

e. Data quality or usability affected? (Please explain)

Comments:

No data quality or usability was affected.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes     No     NA (Please explain)

Comments:

ii. All method blank results less than PQL?

Yes     No     NA (Please explain)

Comments:

iii. If above PQL, what samples are affected?

Comments:

NA



iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes     No     NA (Please explain)    Comments:

v. Data quality or usability affected? (Please explain)    Comments:

No data quality or usability is affected by the method blank.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics - One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes     No     NA (Please explain)    Comments:

ii. Metals/Inorganics - One LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes     No     NA (Please explain)    Comments:

No metals or inorganics were included.

iii. Accuracy - All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes     No     NA (Please explain)    Comments:

iv. Precision - All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/DMSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes     No     NA (Please explain)    Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?    Comments:

Not applicable.

vi. Do the affected samples(s) have data flags? If so, are the data flags clearly defined?

Yes     No     NA (Please explain)    Comments:

No data flags were necessary.

vii. Data quality or usability affected? (Please explain)    Comments:

No data quality or usability was affected by the LCS/LCSDs or MS/MSDs.

c. Surrogates - Organics Only

i. Are surrogate recoveries reported for organic analyses - field, QC and laboratory samples?

Yes     No     NA (Please explain)    Comments:

ii. Accuracy - All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

Yes     No     NA (Please explain)    Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

Yes     No     NA (Please explain)    Comments:

No data flags were necessary.

iv. Data quality or usability affected? (Use the comment box to explain.)

Comments:

No data quality or usability is affected by the surrogates.

d. Trip Blank - Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes     No     NA (Please explain.)    Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes     No     NA (Please explain.)    Comments:

iii. All results less than PQL?

Yes     No     NA (Please explain.)

Comments:

iv. If above PQL, what samples are affected?

Comments:

Not applicable.

v. Data quality or usability affected? (Please explain.)

Comments:

No data quality or usability was affected by the trip blank.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes     No     NA (Please explain)

Comments:

No field duplicate was included.

ii. Submitted blind to lab?

Yes     No     NA (Please explain.)

Comments:

Sample MW-44BDB was a field duplicate of sample MW-44B.

iii. Precision - All relative percent differences (RPD) less than specified DQOs?  
(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute Value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where  $R_1$  = Sample Concentration

$R_2$  = Field Duplicate Concentration

Yes     No     NA (Please explain)

Comments:

The RPDs for chloroform (40.6%) and tetrachloroethene (43.8%) in parent sample/field duplicate pair MW-44B/MW-44BDB are above QC limits (<30%).

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Yes     No     NA (Please explain)    Comments:

The chloroform and tetrachloroethene results in samples MW-44B and MW-44BDB are considered estimates (J) due to the field duplicate imprecision.

f. Decontamination or Equipment Blank (if applicable)

Yes     No     NA (Please explain)    Comments:

No equipment blank was submitted.

i. All results less than PQL?

Yes     No     NA (Please explain)    Comments:

No equipment blank was submitted.

ii. If above PQL, what samples are affected?

Comments:

NA

iii. Data quality or usability affected? (Please explain.)

Comments:

No data quality or usability was affected.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes     No     NA (Please explain)    Comments:

Reset Form