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April 10, 2018

Bucklin Place, LLC
8192 NE Hidden Cover Road
Bainbridge Island, Washington 98110

Attention: Bill Matthews

Subject: Focused Soil and Groundwater Investigation
Ultra Custom Cleaners
2222 NW Bucklin Hill Road
Silverdale, Washington
File No. 22828-001-01

1.0 INTRODUCTION

This report presents the results of GeoEngineers, Inc.'s (GeoEngineers) focused soil and groundwater sampling investigation at the Ultra Custom Cleaners (UCC) tenant space located at 2222 NW Bucklin Hill Road in Silverdale, Washington that is owned by Bucklin Place, LLC. The property is a commercial/retail development located within Kitsap County tax parcel 162501-4-111-2006. The UCC tenant space is currently operating as a dry cleaning facility (herein referred to as the Site). The Site and surrounding physical features are shown on Figure 1.

2.0 PREVIOUS INVESTIGATIONS

2.1. Adapt Engineering and Landau Associates, 2016

Environmental investigations conducted to date at the UCC Site by Adapt Engineering (Adapt) in January 2016 (Adapt, 2016), by Landau Associates, Inc. (Landau) in April-May, and November 2016 (Landau 2016a,c), and by Landau at the west-adjacent Happy Nails tenant space (Landau, 2016b,d) have identified volatile organic compound (VOC) contamination, including the chlorinated solvents tetrachloroethylene (PCE) and trichloroethylene (TCE), in soil, groundwater, indoor air, or sub-slab soil vapor at, or adjacent to, the UCC tenant space at the Site. Subsequent investigations have been conducted to evaluate and document the nature and extent of the VOC contamination at concentrations greater than the applicable Washington State Department of Ecology (Ecology) Model Toxics Control Act (MTCA) cleanup levels. The MTCA cleanup levels, and applicable regulatory criteria from the U.S. Environmental Protection Agency (EPA), were adopted as screening levels to evaluate the concentrations detected at the Site, and to assess the need for further action. Previous indoor air sampling at the Site identified VOCs in indoor air at concentrations greater than the screening levels. Mitigation, including adjustments to the heating

ventilation and air conditioning (HVAC) systems to create positive pressure, has been conducted to address the VOC concentrations detected in indoor air within the UCC tenant space and the adjacent Happy Nails space.

Previous investigations regarding indoor air quality at the UCC tenant space were conducted after hours when there were no active operations in process, but with cleaning products containing PCE or TCE and garments recently treated with such products present. As documented during the Chemical Inventory Evaluation conducted in 2016 (Landau, December 2016c) three products stored and used within the UCC tenant space contain either PCE or TCE, which as noted above are the primary contaminants of concern that have been detected in indoor air at concentrations greater than the screening levels. These cleaning products, and the treated garments, are potential sources that could contribute to the PCE and/or TCE concentrations detected in indoor air within the UCC tenant space.

Landau's December 2016 memorandum addressing the UCC Site presented a preliminary conceptual site model (CSM) indicating complete exposure pathways for VOCs at the UCC tenant space posing a risk to human health via indoor air (workers and customers) and contact with soil and perched groundwater (construction workers), and potentially posing similar risks at adjacent tenant spaces. The CSM identifies an assumed release of chlorinated solvents (VOCs) to soil beneath the UCC tenant space, migrating downward through the vadose zone and then laterally within the underlying perched groundwater to an undetermined vertical and lateral extent, and possibly accumulating as non-aqueous phase liquid (NAPL) at a confining soil layer beneath the Site. The CSM also identified the possible (but undocumented) migration of NAPL downward through the confining soil layer to the underlying deeper area-wide aquifer where it could migrate laterally with the flow of groundwater. The CSM emphasized the unknown lateral and vertical extent of contamination in Site soil and groundwater based on data available at the time.

The discovery of a release of VOCs to soil, groundwater, and air at the UCC Site was reported to Ecology's Northwest regional Office (NWRO) in August 2016, and Ecology's initial investigation was completed in February 2017. Ecology's current listed status for the Site is "Awaiting Cleanup".

Relevant tables and figures from the Adapt report and Landau technical memoranda, including the graphical presentation of Landau's CSM, are included in Appendix A.

2.2. GeoEngineers, 2017

GeoEngineers conducted indoor air sampling and analysis, and indoor/sub-slab pressure differential testing in June 2017 to further evaluate conditions within the UCC tenant space and the effect of the presence of cleaning products and treated garments on indoor air quality (GeoEngineers, 2017). The June 2017 evaluation was completed at the UCC tenant space with the dry cleaning inventory and all PCE- or TCE-containing business supplies removed. The sample analytical results for indoor air from the June 2017 sampling event indicate that the baseline conditions within the UCC tenant space, empty of tenant dry cleaning inventory and business supplies, and with the HVAC system in normal business-hours operation, are protective of workers and customers in a standard commercial setting. The results also indicate that the dry-cleaning inventory and/or business supplies contributed to the elevated PCE and TCE concentrations previously detected in the indoor air within the UCC tenant space. The measurements of the indoor/sub-slab pressure differential found no appreciable difference in air pressure between the sub-slab and the tenant space that could drive or suppress vapor intrusion between the sub-slab and the UCC tenant space.

Relevant tables and figures from GeoEngineers' 2017 indoor air sampling and indoor/sub-slab pressure differential testing are included in Appendix B.

3.0 UCC TENANT SPACE SOIL AND GROUNDWATER INVESTIGATION AND EVALUATION OF VERTICAL EXTENT OF CONTAMINATION

To further evaluate and document the nature and extent of the VOC contamination identified at the Site, GeoEngineers conducted additional focused investigation of the soil and groundwater contamination beneath the UCC tenant space, and evaluation of the vertical extent of the VOC contamination and assessment of the potential that the VOC contamination has affected the deeper area-wide aquifer. The investigation included the drilling of one deep soil boring at a location hydraulically downgradient of the UCC tenant space, and the installation of a monitoring well to evaluate and document the stratigraphy including the depth of the first deeper aquifer and allow for the monitoring and sampling of the deeper groundwater.

3.1. UCC Tenant Space Soil Sampling

The objective of the focused investigation within the UCC tenant space was to address the data gaps regarding sub-slab soil conditions within the footprint of the dry cleaner tenant space and the potential for historical property uses to have impacted Site soil and/or groundwater. Boring locations were chosen to correspond to dry cleaning equipment locations (current and historical) and locations where higher concentrations of VOCs were detected in sub-slab soil vapor during previous investigations.

3.1.1. Field Exploration and Sampling

Figure 2 shows the approximate exploration locations for the investigation. On February 8, 2018, following pre-field coordination by a private utility locator to mark and clear the proposed boring locations for underground utilities and magnetic anomalies, GeoEngineers completed the following:

1. Monitored completion of six (6) soil borings using direct-push drilling equipment operated by ESN Northwest of Lacy, Washington. Portable drilling equipment was used to accommodate access limitations (lateral and overhead) due to fixed equipment within the UCC tenant space and the active dry cleaning operations. Exploration depths ranged from 4 to 6 feet below ground surface (bgs); the maximum drilling depth was dictated by refusal encountered during drilling.
2. The explorations (B1 through B6) were located on the concrete floor slab within the UCC tenant space. A coring drill was used to penetrate the slab before proceeding with the direct-push drilling. Slab thickness was approximately 2 inches in all locations underlain by a base of 3 to 6 inches of coarse gray sand and gravel.
3. Soil samples were collected continuously for field-screening to evaluate whether VOCs were present and for visual soil classification. Selected soil samples were submitted for laboratory chemical analysis for PCE, TCE, and their breakdown products by EPA Method 8260.
    a. The scope of services included the collection and analysis of perched groundwater if it was encountered; no free perched groundwater was encountered during drilling within the tenant space, so no groundwater grab samples were collected.

Chemical analytical data for the samples obtained during the investigation were compared to the respective MTCA Method A cleanup levels (Ecology, 2013). MTCA Method B cleanup levels were used for analytes where MTCA Method A cleanup levels are not established. Field methods and completed boring logs are included in Appendix C.

3.1.2. Analytical Results

The UCC tenant space soil chemical analytical results are summarized in Table 1. Relevant analytical results for detected contaminants are also shown on Figure 2. The data shown on Figure 2 includes soil results from the Landau 2016 study. Laboratory analytical data reports are included in Appendix D.

Soil encountered during the sub-slab soil explorations was generally characterized as brown silty fine sand to silt with fine sand. Perched groundwater was not encountered in any borings at the explored depths; very moist to wet conditions were observed in borings B3 and B5, though perched groundwater was not present in a recoverable quantity suitable for sampling.

Twelve soil samples collected from the six direct push borings were submitted for chemical analysis for VOCs.

PCE was detected at boring B3 in soil samples GEI-B3-3.5-4 and GEI-B3-5.5-6 at concentrations of 0.0905 milligrams per kilogram (mg/kg) and 0.0653 mg/kg, respectively; both of these concentrations are greater than the MTCA Method A cleanup level of 0.05 mg/kg for unrestricted land uses. PCE was also detected at boring B5 in sample GEI-B5-5.5-6 at a concentration of 0.0373 mg/kg and at boring B6 in sample GEI-B6-3.5-4 at a concentration of 0.0476 mg/kg; both of these concentrations are less than the Method A cleanup level.

PCE and other VOCs were not detected above the laboratory reporting limits in the remaining samples analyzed, including the deeper sample intervals at borings B5 and nearby B6.

3.2. Investigation of Vertical Extent of Contamination

Because the VOCs of concern at the Site (PCE and TCE) are denser than water (i.e., dense non-aqueous phase liquids [DNAPLs]), they tend to migrate vertically downward, even after reaching the depth of groundwater. Therefore, the objectives of the investigation were to evaluate and document: (1) the stratigraphy underlying the Site, including the glacial till confining layer and the occurrence of the deeper area-wide aquifer; (2) the vertical and downgradient extent of the VOC contamination; and (3) the potential for contaminants detected beneath the UCC tenant space to have affected the deeper area-wide groundwater. The investigation included drilling, soil and groundwater sampling, and installation and sampling of a monitoring well to evaluate and document groundwater within the first deeper aquifer encountered beneath the Site.

3.2.1. Field Exploration, Monitoring Well Installation and Sampling

Figure 3 shows the approximate deep soil boring and monitoring well location. On March 1 and 2, 2018, following pre-field coordination by a private utility locator to mark and clear the proposed boring location for underground utilities and magnetic anomalies, GeoEngineers completed the following:

1. Installation of one (1) groundwater well using sonic technology drilling to monitor the deeper area-wide aquifer. The monitoring well was located approximately 50 feet south of the UCC tenant space.
    a. Prior to drilling through the low permeability confining till layer beneath the shallow, perched groundwater, a conductor casing and a bentonite plug were set to prevent the creation of a conduit for vertical migration of contamination through the till.

b. Soil samples were collected continuously for field-screening to evaluate whether VOCs were present and for visual soil classification. One soil sample from the monitoring well boring and a groundwater grab sample were collected at the perched groundwater zone during drilling for analysis for PCE, TCE, and their breakdown products by EPA Method 8260.

c. A monitoring well, MW1, was constructed with the well screen set to monitor the first groundwater zone encountered beneath the shallow perched groundwater zone observed during previous sampling at the Site. Groundwater conditions in the deeper area-wide aquifer were artesian, producing approximately 8 feet of head at the time of drilling.

d. Upon completion, the new monitoring well was developed to remove suspended solids and produce a clear groundwater sample.

2. A groundwater sample was collected from the monitoring well on March 7, 2018 using low-flow sampling techniques to ensure a representative sample from the deeper aquifer.

3. Both the perched groundwater sample and deeper aquifer groundwater sample collected from the well were analyzed for PCE, TCE, and their breakdown products by EPA Method 8260.

4. The soil and groundwater sample results were evaluated for quality assurance/quality control purposes and relative to current MTCA screening levels.

Chemical analytical data for the samples obtained during this investigation were compared to the respective MTCA Method A cleanup levels (Ecology, 2013). MTCA Method B cleanup levels were used for analytes where MTCA Method A cleanup levels are not established. Field methods and completed boring logs are included in Appendix C.

3.2.2. Analytical Results

The soil and groundwater chemical analytical results for the samples collected during the deeper aquifer drilling investigation are summarized in Tables 1 and 2. Relevant analytical results for detected contaminants are also shown on Figure 3; the data shown on Figure 3 include perched groundwater results from the Landau 2016 study. Laboratory analytical data reports are included in Appendix D.

Soil encountered during the deep boring for monitoring well MW1 was generally characterized as gray sandy silt with fine sand and gray silty fine-to-coarse sand, with occasional gravel content, from 10 to 27 feet bgs, underlain by a very dense gray silty sand from 27 to 45 feet bgs, transitioning to a black/gray to brown sand from 45 feet to the termination of drilling at 70 feet bgs. Perched groundwater was encountered at a depth of approximately 19 feet bgs, and the deeper aquifer was encountered at approximately 45 feet bgs.

A soil sample collected from a depth of 14½ feet bgs (GEI-MW1-14.5-15) and a grab groundwater sample collected from the perched groundwater zone during drilling were submitted for chemical analysis for VOCs. A deeper aquifer groundwater sample collected from the developed monitoring well was also submitted for chemical analysis for VOCs.

VOCs were not detected at concentrations greater than the laboratory reporting limits in the soil sample from the perched groundwater zone, or in either the perched grab groundwater sample or the deeper aquifer groundwater sample collected from MW-1.

4.0 SUMMARY

Chemical analytical results for the soil samples collected by GeoEngineers from the shallow borings within the UCC tenant space and by Landau from deeper borings located around the exterior of the UCC tenant space indicate a release of PCE to shallow soil that appears to be limited in extent to the approximate footprint of the central area of the UCC tenant space (Figure 2, GeoEngineers borings B3, B5 and B6); concentrations of PCE in soil at B6 were greater than the MTCA Method A cleanup level. Perched groundwater collected from Landau borings SB-3 and SB-5 located south of the building footprint at a depth of approximately 7 feet bgs indicated concentrations of PCE greater than the MTCA Method A cleanup level. Due to refusal during drilling, perched groundwater could not be collected from the borings advanced within the UCC tenant space footprint.

The chemical analytical results for soil and groundwater from the perched groundwater zone, and from the deeper area aquifer, collected about 50 feet downgradient from the UCC tenant space did not indicate VOCs at concentrations greater than the laboratory reporting limits, indicating that the release of VOCs documented by the soil and groundwater data at and immediately south of the tenant space has not affected perched groundwater in the downgradient southern portion of the property, or within the deeper area-wide aquifer.

Previous results for sub-slab and indoor air sampling for VOCs by Adapt, Landau, and GeoEngineers, including indoor/sub-slab pressure differential testing, have confirmed the presence of PCE and TCE in indoor air and sub-slab soil vapor beneath the UCC and Happy Nails tenant spaces, with concentrations of TCE in indoor air greater than the MTCA Method B screening level in the UCC tenant space. Based on comparison of indoor air sampling results for the UCC space that were collected under different physical conditions, the presence of the dry cleaning inventory and business supplies contributed to the PCE and TCE concentrations detected in the initial indoor air samples, but do not appear to be the sole source of the VOC concentrations detected in the indoor air.

4.1. Conceptual Site Model

The findings of the recent investigations provide additional information to further document the CSM for the Site. Chemical analytical results for soil, sub-slab gas, and indoor air, and the results of the additional drilling and sampling confirm the following:

- A release of chlorinated solvents to Site soil has occurred, centered within the UCC tenant space;
- The volatilization of VOCs beneath the building has led to the intrusion of PCE and TCE within the UCC and Happy Nails tenant spaces;
- The absence of chlorinated solvents in soil collected at Landau soil boring SB-1 and soil and groundwater collected at SB-2 indicates that the VOC contamination does not extend to the north or laterally to the east.
- Soil encountered during the deep boring for monitoring well MW1 located to the south and hydraulically downgradient of the UCC tenant space identified gray sandy silt with fine sand and gray silty fine-to-coarse sand, with occasional gravel content to 27 feet bgs, underlain by a very dense gray silty sand (interpreted to be glacial till) from 27 to 45 feet bgs, transitioning to a black/gray to brown sand from 45 feet to the termination of drilling at 70 feet bgs.
- Perched groundwater was encountered at a depth of approximately 19 feet bgs, and the deeper area aquifer was encountered at approximately 45 feet bgs.

- Analysis of soil and perched groundwater collected during the drilling of MW1 indicates that VOCs have not affected downgradient shallow soil or the perched groundwater.
- Analysis of groundwater collected from MW1 from the deeper aquifer downgradient from the UCC tenant space indicates that VOCs have not affected the deeper aquifer beneath the confining till layer.

The primary data gaps remaining regarding the conceptual site model are as follows:

- The lateral extent of the VOCs within the perched groundwater has not been documented to the west (i.e., beneath the Happy Nails tenant space);
- The vertical extent of the PCE-impacted soil beneath UCC tenant space has not been documented. Access and equipment limitations prevented drilling to the depth of the confining layer beneath the UCC tenant space.

4.2. Conclusions

The investigations and remedial actions to date indicate:

- The VOCs PCE and TCE are present in soil, perched groundwater, and sub-slab soil vapor at the Site at concentrations greater than the applicable regulatory screening levels.
- PCE and TCE have been detected within the indoor air at the UCC tenant space and at the adjacent Happy Nails space. The detected TCE concentrations have been greater than the screening levels. Mitigation, including adjustments to the HVAC systems to create positive pressure, has been implemented to address the VOC concentrations detected in indoor air within both the UCC tenant space and the adjacent Happy Nails space. The mitigation, as implemented, has been effective at reducing the indoor air concentrations to below the applicable regulatory screening levels.
- Based on comparison of indoor air sampling results for the UCC space that were collected under different physical site conditions, the dry cleaning inventory and business supplies associated with current Site operations contributed to the PCE and TCE concentrations detected in the initial indoor air samples, but do not appear to be the sole source of the VOC concentrations detected in the indoor air.
- The PCE and TCE impacts to soil and perched groundwater appear to be limited in lateral extent to approximately within or just beyond the footprint of the UCC tenant space.
- There is no evidence to indicate that the VOCs detected at the Site have affected the deeper area-wide artesian aquifer that is present at about 45 ft bgs. The deeper aquifer is present beneath the confining till layer that was about 18 feet in thickness where encountered.

5.0 REFERENCES

Adapt Engineering, 2016. Limited Sub-Slab Soil Gas Screening, Ultra Custom Cleaners Site, 2222 Northwest Bucklin Hill Road, Suite 105, Silverdale, Kitsap County, Washington. Adapt Project No WA16-20447-PH2. February 2, 2016.

GeoEngineers, Inc., 2017. Supplemental Indoor Air Sampling and Evaluation, Ultra Custom Cleaners, 2222 NW Bucklin Hill Road, Silverdale, Washington. GEI File No 22828-001-00. August 10, 2017.

Landau Associates, Inc., 2016a. Technical Memorandum, Air, Sub-Slab Soil Vapor, Soil, and Groundwater Sampling and Analysis Results, Ultra Custom Cleaners Tenant Space – Bucklin Place, Silverdale, Washington. Landau Associates Project No 1595001.020.025. June 29, 2016.

Landau Associates, Inc., 2016b. Technical Memorandum, Sub-Slab Soil Vapor and Indoor Air Sampling Results, Happy Nails Tenant Space – Bucklin Place, Silverdale, Washington. Landau Associates Project No 1595001.020.025. September 23, 2016.

Landau Associates, Inc., 2016c. Technical Memorandum, Chemical Inventory Evaluation, HVAC Adjustments, and Indoor Air Sampling Summary, Ultra Custom Cleaners Tenant Space – Bucklin Place, Silverdale, Washington. Landau Associates Project No 1595001.020.025. December 16, 2016.

Landau Associates, Inc., 2016d. Technical Memorandum, HVAC Adjustments, and Indoor Air Sampling Summary, Happy Nails Tenant Space – Bucklin Place, Silverdale, Washington. Landau Associates Project No 1595001.020.025. December 16, 2016.

Washington State Department of Ecology (Ecology), 2013. Model Toxics Control Act Regulation and Statute. Publication No. 94-06. Revised 2013.

6.0 LIMITATIONS

We have prepared this letter report for use by Bucklin Place, LLC and their authorized agents as part of their evaluation of and planning for environmental conditions at the properties located at 2222 NW Bucklin Hill Road in Silverdale, Washington. Our work was completed in accordance with our proposal dated August 31, 2017 and executed January 18, 2018. No other party may rely on the product of our services unless we agree in advance and in writing to such reliance. This is to provide our firm with reasonable protection against open-ended liability claims by third parties with whom there would otherwise be no contractual limits to their actions.

We relied on information obtained from others in the preparation of this report. It is always possible that environmental conditions exist that were not identified or investigated thoroughly. Within the limitations of scope, schedule, and budget, our services have been executed in accordance with generally accepted environmental science practices in this area at the time this report was prepared. No warranty or other conditions, express or implied, should be understood.

We appreciate the opportunity to work with you on this project. If you have any questions please contact us.

Sincerely,
GeoEngineers, Inc.

Ian Young, LG
Geologist

Tim L. Syverson, LHG
Associate

IDY:TLS:leh

Figure 1. Site Plan

Figure 2. Soil Analytical Results

Figure 3. Groundwater Analytical Results

Table 1. Site Characterization, Soil Field Screening and Chemical Analytical Data (VOCs)

Table 2. Site Characterization, Groundwater Chemical Analytical Data (VOCs)

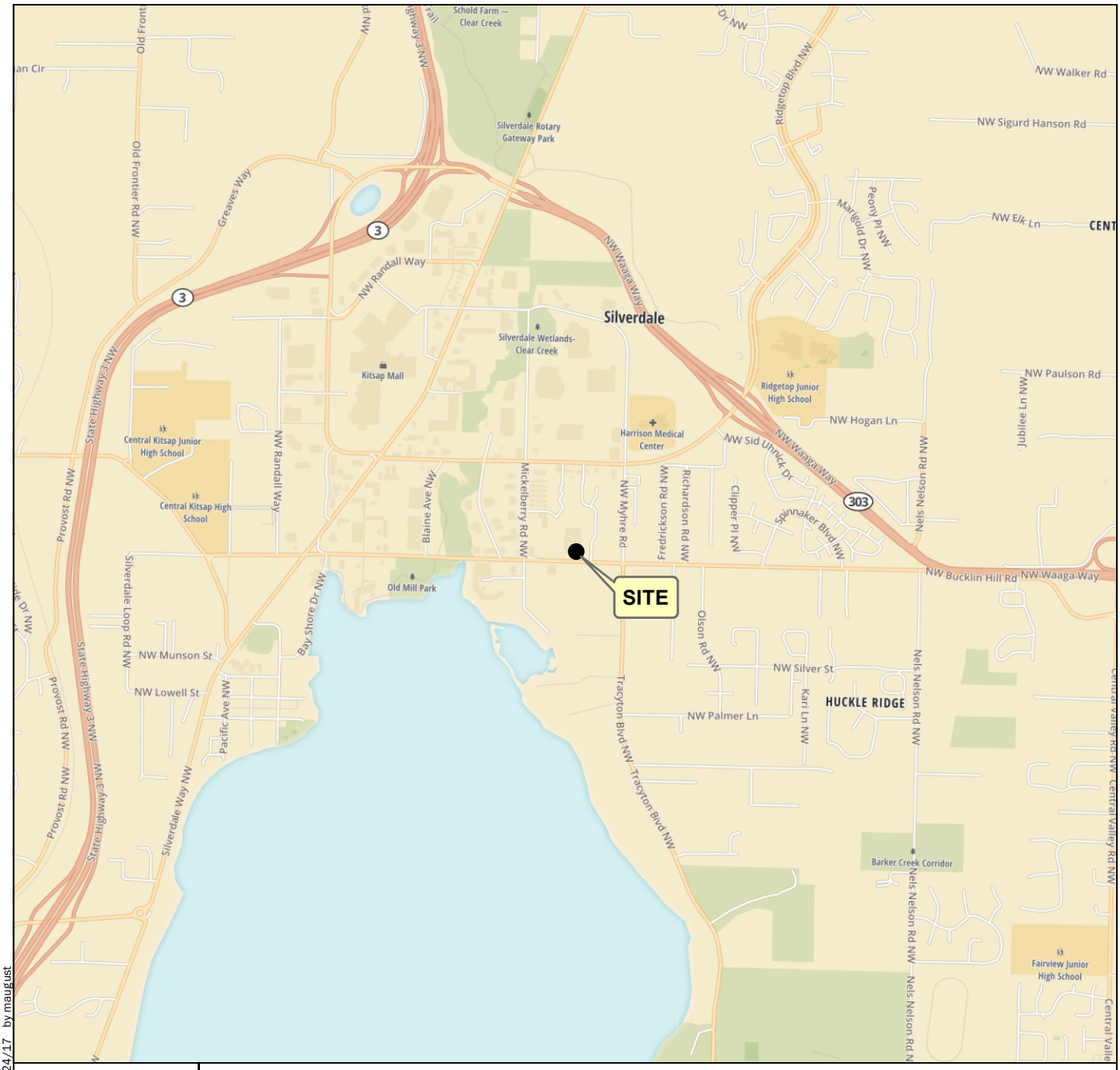
Appendix A. Excerpted Tables and Tables, Adapt Engineering and Landau Associates

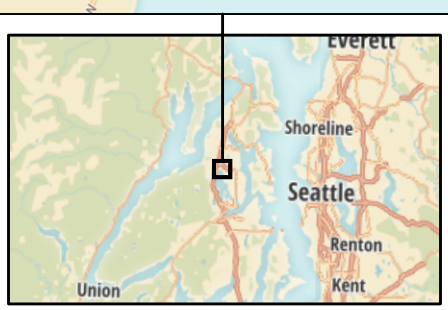
Appendix B. Excerpted Tables and Tables, GeoEngineers

Appendix C. Field Methods and Boring Logs

Appendix D. Laboratory Analytical Data Reports

One copy submitted electronically





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Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: Mapbox Open Street Map, 2017

Projection: NAD 1983 StatePlane Washington North FIPS 4601 Feet

Vicinity Map

Ultra Custom Cleaners
2222 NW Buckling Hill Road
Silverdale, Washington

GeoEngineers

Figure 1

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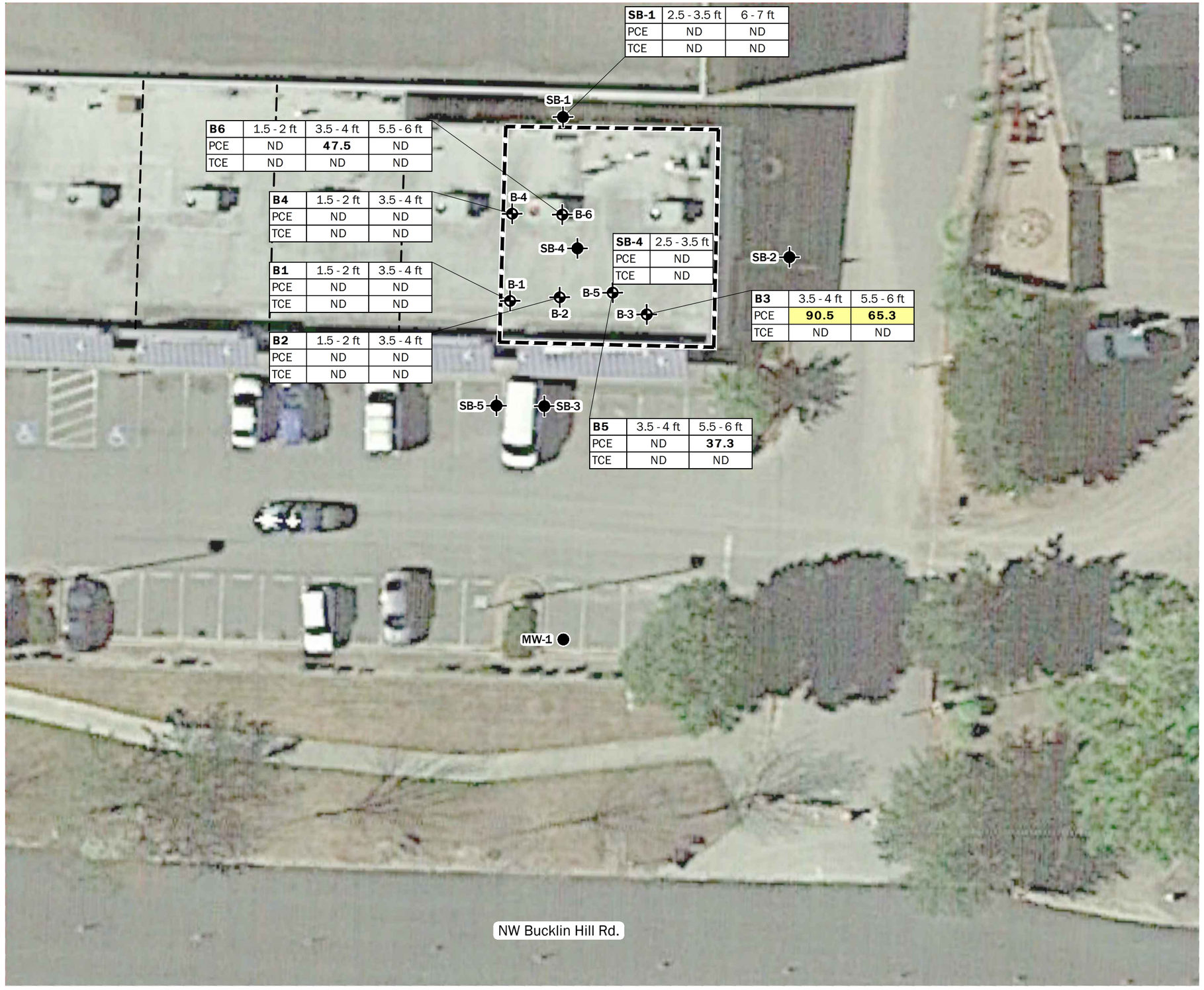

Legend

- Approx. Subject Property Boundary
- B-1 — Boring by GeoEngineers, 2018
- SB-1 — Boring by Landau Associates, 2016

Data Box Explanation:

B3	3.5 - 4 ft	5.5 - 6 ft
PCE	**90.5**	**65.3**
TCE	ND	ND

Exploration Location; Sample Depth; Analytical Result

PCE — Tetrochloroethene

TCE — Trichloroethene

ND — Analyte Not Detected at Laboratory Detection Limit

90.5 — Bolding indicates analyte was detected

Shading indicates Concentration Exceeds Model Toxics Control Act (MTCA) cleanup level

Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: Aerial from Google Earth Pro., Dated: 6/27/2016

Projection: WA State Plane, North Zone, NAD83, US Foot

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Soil Analytical Results

Ultra Custom Cleaners
2222 NW Bucklin Hill Road
Silverdale, Washington

GeoEngineers

Figure 2

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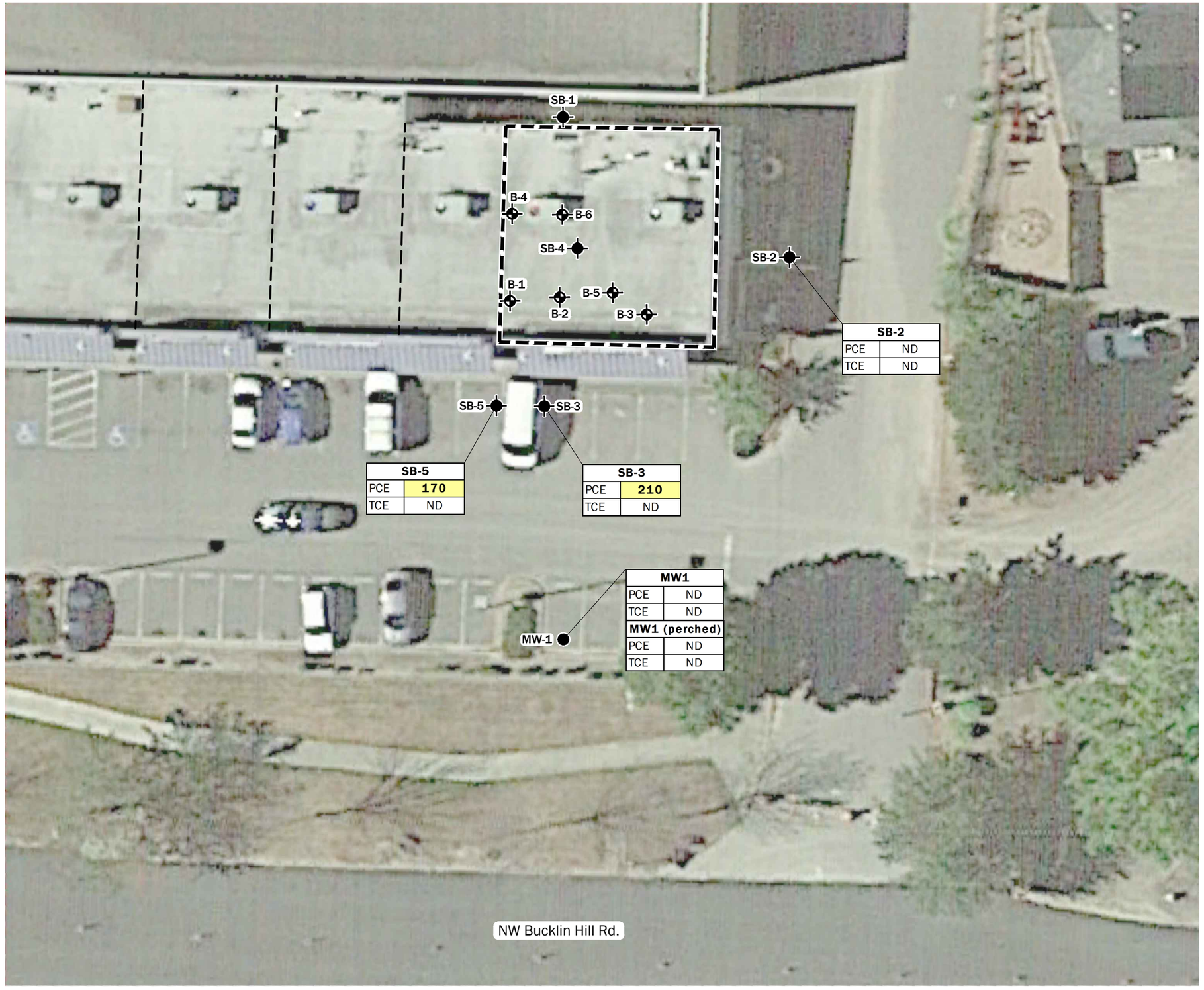

SB-2	
PCE	ND
TCE	ND

SB-5	
PCE	170
TCE	ND

SB-3	
PCE	210
TCE	ND

MW1	
PCE	ND
TCE	ND
MW1 (perched)	
PCE	ND
TCE	ND

Legend

- Approx. Subject Property Boundary
- B-1 — Boring by GeoEngineers, 2018
- SB-1 — Boring by Landau Associates, 2016

Data Box Explanation:

SB-5	Exploration Location
PCE	170 — Analytical Result
TCE	ND — Analytical Result

PCE	Tetrochloroethene
TCE	Trichloroethene
ND	Analyte Not Detected at Laboratory Detection Limit
170	Bolding indicates analyte was detected
	Shading indicates Concentration Exceeds Model Toxics Control Act (MTCA) cleanup level

Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: Aerial from Google Earth Pro., Dated: 6/27/2016

Projection: WA State Plane, North Zone, NAD83, US Foot

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Groundwater Analytical Results

Ultra Custom Cleaners
2222 NW Bucklin Hill Road
Silverdale, Washington

GeoEngineers

Figure 3

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Table 1

Site Characterization, Soil Field Screening and Chemical Analytical Data (VOCs)

Ultra Custom Cleaners

2222 NW Bucklin Hill Road

Silverdale, Washington

Exploration Location[1]	Sample ID	Sample Date	Depth (feet bgs)	Field Screening[2]		VOCs[3] (mg/kg)				
				Sheen	Headspace (ppm)	Tetrachloroethene (PCE)	Trichloroethene (TCE)	1,2-Dichloroethane	Vinyl Chloride	Other VOCs[4]
Direct-push borings sampled by Landau Associates May 11, 2016										
SB-1	SB-1-(2.5-3.5)	5/11/2016	2.5	--	--	< 0.01	< 0.01	< 0.01	< 0.01	ND
	SB-1-(6-7)	5/11/2016	6.0	--	--	< 0.01	< 0.01	< 0.01	< 0.01	ND
SB-2	SB-2-(1.5-2.5)	5/11/2016	1.5	--	--	< 0.01	< 0.01	< 0.01	< 0.01	ND
	SB-2-(10-11)	5/11/2016	10.0	--	--	< 0.01	< 0.01	< 0.01	< 0.01	ND
SB-3	SB-3-(8-9)	5/11/2016	8.0	--	--	**0.029**	< 0.01	< 0.01	< 0.01	ND
	SB-3-(12.5-13)	5/11/2016	12.5	--	--	< 0.01	< 0.01	< 0.01	< 0.01	ND
SB-4	SB-4-(1-2)	5/11/2016	1.0	--	--	< 0.01	< 0.01	< 0.01	< 0.01	ND
SB-5	SB-5-(3-4)	5/11/2016	3.0	--	--	**0.020**	< 0.01	< 0.01	< 0.01	ND
	SB-5-(8-9)	5/11/2016	8.0	--	--	**0.031**	< 0.01	< 0.01	< 0.01	ND
Direct-push borings sampled by GeoEngineers February 8, 2018										
B1	GEI-B1-1.5-2	2/8/2018	1.5	NS	6.5	< 0.0241	< 0.0193	< 0.0193	< 0.0241	ND
	GEI-B1-3.5-4	2/8/2018	3.5	NS	8.2	< 0.0267	< 0.0214	< 0.0214	< 0.0267	ND
B2	GEI-B2-1.5-2	2/8/2018	1.5	NS	8.7	< 0.0253	< 0.0202	< 0.0202	< 0.0253	ND
	GEI-B2-3.5-4	2/8/2018	3.5	NS	5.3	< 0.0272	< 0.0218	< 0.0218	< 0.0272	ND
B3	GEI-B3-3.5-4	2/8/2018	3.5	NS	7.5	**0.0905**	< 0.0200	< 0.0200	< 0.0249	ND
	GEI-B3-5.5-6	2/8/2018	5.5	NS	2.4	**0.0653**	< 0.0232	< 0.0232	< 0.0290	ND
B4	GEI-B4-1.5-2	2/8/2018	1.5	NS	4.6	< 0.0268	< 0.0215	< 0.0215	< 0.0268	ND
B5	GEI-B5-3.5-4	2/8/2018	3.5	NS	4.8	< 0.0220	< 0.0176	< 0.0176	< 0.0220	ND
	GEI-B5-5.5-6	2/8/2018	5.5	NS	3.6	**0.0373**	< 0.0214	< 0.0214	< 0.0267	ND
B6	GEI-B6-1.5-2	2/8/2018	1.5	NS	2.6	< 0.0216	< 0.0173	< 0.0173	< 0.0216	ND
	GEI-B6-3.5-4	2/8/2018	3.5	NS	12.2	**0.0475**	< 0.0208	< 0.0208	< 0.0260	ND
	GEI-B6-5.5-6	2/8/2018	5.5	NS	6.4	< 0.0258	< 0.0207	< 0.0207	< 0.0258	ND
Sonic boring sampled by GeoEngineers March 1, 2018										
MW1	GEI-MW1-14.5-15	3/1/2018	14.5	NS	< 1	< 0.0274	< 0.0219	< 0.0219	< 0.0274	ND
MTCA Method A or Method B Cleanup Levels for Unrestricted Land Use						0.05	0.03	480[5]	240[5]	NA

Notes:

[1]Approximate exploration locations shown on Figure 2.

[2]Field screening methods are described in Appendix B.

[3]Volatile organic compounds (VOCs) analyzed by U.S. Environmental Protection Agency (EPA) Method 8260.

[4]Only selected chlorinated solvents are shown; refer to laboratory reports in Appendix C for complete list of method analytes and detection limits.

[5]Model Toxics Cleanup Act (MTCA) Method B cleanup level for direct contact derived from Ecology's "CLARC Master Spreadsheet.xlsx" dated August 2015.

bgs = below pre-construction ground surface.

mg/kg = milligrams per kilogram

NAVD88 = North American Vertical Datum of 1988

NA = No listed value

ND = Analytes not detected at laboratory reporting limits.

NS = no sheen

SS = slight sheen

ppm = parts per million

-- = not tested

Bolding indicates analyte was detected.

Shading indicates that concentration exceeded Model Toxics Control Act (MTCA) cleanup level.

GeoEngineers' chemical analytical testing by Fremont Analytical in Seattle, Washington. Laboratory analytical reports in Appendix C.

Table 2

Site Characterization, Groundwater Chemical Analytical Data (VOCs)

Ultra Custom Cleaners

2222 NW Bucklin Hill Road

Silverdale, Washington

Sample ID[1]	Depth to Groundwater (from TOC)	Groundwater Elevation (Feet NAVD88)	Sample Date	VOCs[2] (µg/L)				
				Tetrachloroethene (PCE)	Trichloroethene (TCE)	1,2-Dichloroethane	Vinyl Chloride	Other VOCs[3]
Grab groundwater sampled by Landau Associates May 11, 2016								
SB-1	--	--	5/11/2016	< 2.0	< 2.0	< 2.0	< 0.20	ND
SB-3	--	--	5/11/2016	**210**	< 2.0	< 2.0	< 0.20	ND
SB-5	--	--	5/11/2016	**170**	< 2.0	< 2.0	< 0.20	ND
Grab groundwater sampled by GeoEngineers March 1, 2018								
GEI-MW1-180301[4]	--	--	3/1/2018	< 1.00	< 0.500	< 1.00	< 0.200	ND
Monitoring well sampled by GeoEngineers March 7, 2018								
GEI-MW1-180307			3/7/2018	< 1.00	< 0.500	< 1.00	< 0.200	ND
MTCA Method A or B Cleanup Level for Unrestricted Land Use				5	5	5	0.2	--

Notes:

[1]Sampling locations shown on Figure 3.

[2]Volatile Organic Compounds (VOCs) analyzed by U.S. Environmental Protection Agency (EPA) Method 8260C. Refer to laboratory report for individual analytes and detection limits.

[3]Only selected chlorinated solvents are shown; refer to laboratory reports in Appendix C for complete list of method analytes and detection limits.

[4]Sample collected from perched groundwater zone during drilling at approximately 14 feet below ground surface.

µg/L = micrograms per liter

ND = Not Detected

TOC = top of casing

Bolding indicates analyte was detected.

Shading indicates exceedance of Model Toxics Control Act (MTCA) cleanup level.

GeoEngineers' chemical analytical testing by Fremont Analytical in Seattle, Washington. Laboratory analytical reports in Appendix C.

APPENDIX A
Excerpted Tables and Tables, Adapt Engineering and Landau Associates

Table 1: Summary of Sub-Slab Soil Gas Analytical Results

Sample No.	PCE	TCE	Cis-1,2-DCE	Vinyl Chloride	All Other Tested VOCs
SV-1	**1,020**	**70.6**	ND(<0.793)	ND(<0.511)	ND
SV-2	**537**	**43.9**	ND(<0.793)	ND(<0.511)	ND
SV-3	**1,710** (E)	**338**	ND(<0.793)	ND(<0.511)	ND
SV-4	**701**	**26.3**	**140**	ND(<0.511)	ND
MTCA Method B 2015 Sub-Slab Soil Gas Screening Level - Cancer (ug/m^3)	321	12.3	3.21	9.33	Varies

MTCA = Model Toxics Control Act (MTCA Method B 2015 Sub-Slab Soil Gas Screening Levels - Cancer Shown)
All concentrations given in micrograms per cubic meter (ug/m^3)
PCE = tetrachloroethylene; TCE = trichloroethylene; DCE = dichloroethene
(E) = Value above quantitation range
Bolded values indicate exceedance of the MTCA Method B 2015 Sub-Slab Soil Gas Screening Levels

5.0 CONCLUSIONS AND RECOMMENDATIONS

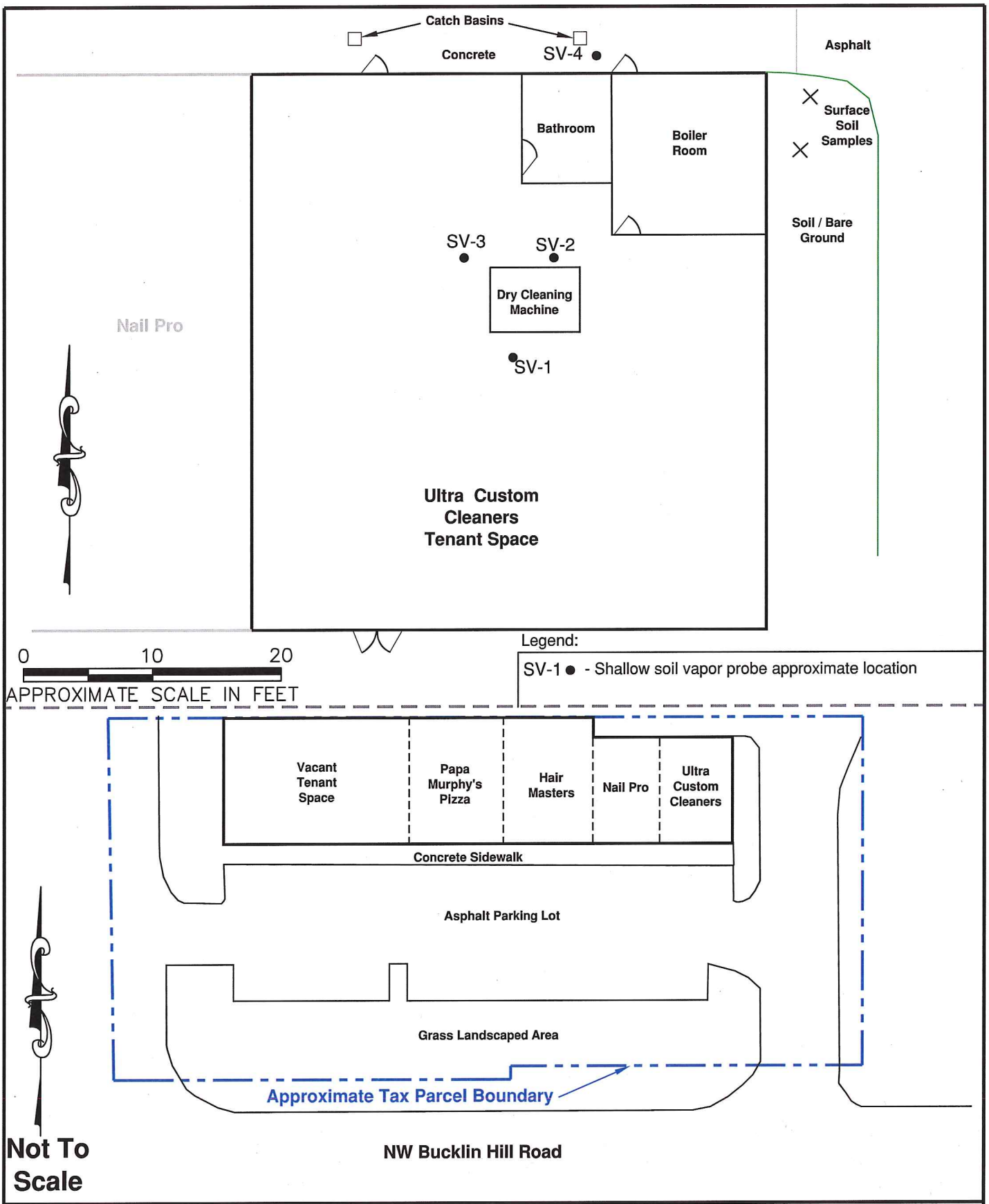
5.1 Conclusions

The purpose of the proposed Limited Sub-Slab Soil Gas Screen is to evaluate the potential for a large-scale chlorinated solvent release to subsurface soils in areas inside and immediately outside the footprint of the on-site dry cleaners tenant space due to the reported past use of PCE-based detergents. The proposed scope of work for the Limited Sub-Slab Soil Gas Screen does not guarantee to include the work scope required to fully delineate the exact vertical and lateral extent of possible on-site or off-site contamination, but was designed to evaluate for the presence of chlorinated solvent impacts to sub-slab soil gas in the areas immediately surrounding the location of the former PCE-based dry cleaning machine and near a surface water catch basin adjacent to a back door for the dry cleaners tenant space.

Based on the findings of this Limited Sub-Slab Soil Gas Screen, there appears to have been a significant chlorinated solvent release to the subsurface within the dry cleaner's tenant space. As the scope of the Limited Sub-Slab Soil Gas Screen was limited and preliminary in nature, the full lateral and vertical extent of the apparent chlorinated solvent release has not been fully assessed. Based on the sub-slab soil gas sampling results, it is possible that there may be significant chlorinated solvent impacts to soil, and possibly groundwater, potentially at concentrations above the regulatory cleanup levels.

5.2 Recommendations

In the event Rosen Properties would like to further assess the lateral and vertical extent of the observed chlorinated solvent impacts to sub-slab soil gas, it may be prudent to consider completion of a comprehensive subsurface soil and groundwater assessment in the area within, and potentially surrounding, the location of the on-site dry cleaner's tenant space.



Adapt Engineering
615 - 8th Avenue South
Seattle, Washington 98104

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FIGURE 2 – Site Exploration Plan

Project : Ultra Custom Cleaners Site
Location : 2222 Northwest Bucklin Hill Road, Suite 105
Silverdale, WA 98383
Client : Rosen Properties
Project No : WA16-20447-PH2 **Date** : 01/29/16

APPENDIX B
Excerpted Tables and Tables, GeoEngineers

Legend

- GIA-1/GPD-1 — Indoor Air and/or Pressure Differential Sampling Location
- GAA-1 — Ambient Air Sampling Location (Rooftop)
- Approx. Subject Property Boundary

Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: Aerial was taken from Google Earth Pro., Imagery Dated: 6/27/2016

Projection: WA State Plane, North Zone, NAD83, US Foot

N W E S

20 0 20
Feet

Indoor Air Sampling and Pressure Differential Testing Site Plan

Ultra Custom Cleaners
2222 NW Buckling Hill Road
Silverdale, Washington

GeoEngineers

Figure 2

P:\22\22828001\CAD\00\Environmental\22282800100_F02_Site Plan.dwg TAB:Site Plan Date Exported: 07/24/17 - 16:29 by kcook

Table 1

Air Chemical Analytical Data

Ultra Custom Cleaners

Silverdale, Washington

Sample Location[1]	Laboratory ID	Sample Date	Sample Type	VOCs[2] (µg/m³)			
				Vinyl Chloride	cis-1,2-Dichloroethene	Trichloroethene (TCE)	Tetrachloroethene (PCE)
Landau Associates, April 2016[3]							
IA-1	P1602080-001	4/19/2016	Indoor Air	0.18 U	0.18 U	**68**	**10**
IA-2	P1602080-002	4/19/2016	Indoor Air	0.14 U	0.14 U	**67**	**10**
AA-1	P1602080-003	4/19/2016	Ambient Air	0.17 U	0.17 U	**0.52**	**0.99**
Landau Associates, May 2016[4]							
IA-1	P1602491-004	5/11/2016	Indoor Air	0.23 U	0.23 U	**4.8**	**5.7**
Landau Associates, November 2016[5]							
IA-1	P1602188-001	11/2/2016	Indoor Air	0.21 U	0.21 U	**65**	**4.1**
AA-1	P1602188-003	11/2/2016	Ambient Air	0.18 U	0.18 U	**0.99**	0.18 U
GeoEngineers, June 2017[6]							
GIA-1	P1702869-002	6/12/2017	Indoor Air	0.14 U	0.14 U	**0.17**	**0.34**
GIA-2	P1702869-003	6/12/2017	Indoor Air	0.16 U	0.16 U	**0.19**	**0.37**
GAA-1	P1702869-001	6/12/2017	Ambient Air	0.13 U	0.13 U	**0.58**	0.13 U
Modified MTCA Method B Indoor Air Screening Level for Commercial Exposure Scenario[7]				NC	NC	2.7	42
EPA Region 9, Accelerated Response Action Level Commercial/Industrial 10-Hour Work Period[8]				NA	NA	7	NA
EPA Region 9 Urgent Response Action Level Commercial/Industrial 10-Hour Work Period[8]				NA	NA	21	NA
EPA Region 10 Short-Term, Not to be Exceeded Concentration, Commercial/Industrial 8-Hour Work Period[9]				NA	NA	8.8	NA

Notes:

[1]Approximate sample locations shown on Figure 1. GeoEngineers sample locations replicated previous Landau Associates sample locations.

[2]Volatile organic compounds (VOCs) analyzed by U.S. Environmental Protection Agency (EPA) Method TO-15.

[3]Landau Associates April 2016 sampling event conducted with exterior doors closed.

[4]Landau Associates May 2016 sampling event conducted with exterior doors open.

[3]Landau Associates November 2016 sampling event conducted following modifcations to HVAC system and with exterior doors closed.

[6]GeoEngineers June 2017 sampling event conducted following removal of all inventory and business supplies, with HVAC system operating, and with exterior doors closed.

[7]Model Toxics Control Act (MTCA) Method B Indoor Air Screening Level adjusted for a commercial exposure scenario (adult only, 60 hours per week, 50 weeks per year, 20 years).

[8]EPA Region 9 Response Action Levels and Recommendations to Address Near-Term Inhalation Exposures to TCE in Air from Subsurface Vapor Intrusion dated July 9, 2014.

[9]Office of Environmental Assessment (OEA) Recommendations Regarding Trichloroethylene Toxicity in Human Health Risk Assessments dated December 13, 2012 (EPA Region 10).

NA = Not applicable; no listed value

NC = Not calculated as analyte was not detected

U = Analyte not detected at the laboratory reporting limit shown

µg/m³ = micrograms per cubic meter

-- = not tested

Bolding indicates analyte was detected.

Shading indicates a concentration greater than one or more screening level.

Chemical analytical testing by ALS Environmental in Simi Valley, California. Laboratory analytical reports in Appendix B.

APPENDIX C
Field Methods and Boring Logs

APPENDIX C
FIELD METHODS AND BORING LOGS

Underground Utility Locate

Prior to drilling activities, an underground utility locate was conducted in the areas of the proposed boring locations to identify subsurface utilities and/or potential underground physical hazards. The underground utility check consisted of contacting a local utility alert service (one-call) and hiring a private utility locating service.

Soil Sampling

The direct-push explorations were completed using direct-push drilling equipment. Soil samples were obtained using a 2-foot-long core sampler. The sampler was driven into the soil using a pneumatic hammer. Upon retrieval, the sampler was opened and a GeoEngineers representative examined the soil and performed field screening tests. The boring logs are presented in Figures A-2 through A-7.

Selected soil samples were obtained in glass jars (supplied by the analytical laboratory), labeled and stored in a cooler with ice pending delivery to the laboratory. VOC samples were collected directly from the sample sleeve using the 5035A sampling method. All sampling equipment was decontaminated between samples using a Liqui-Nox® wash solution and distilled water rinse.

The drilling of the new monitoring wells was completed using sonic drilling equipment and a temporary casing to isolate overlying perched groundwater from the deeper area aquifer during drilling. Soil samples obtained from the drilling of the monitoring well were collected from the sampler with a stainless-steel knife, a stainless-steel trowel and/or new gloves. A portion of each sample was placed in laboratory-prepared sample jars for possible chemical analysis. The remaining portion of each sample was used for field screening.

Selected samples from the explorations were submitted for chemical analysis based on field screening results. The soil samples were placed in a cooler with ice for transport to the laboratory. Standard chain-of-custody procedures were followed in transporting the soil samples to the laboratory. Drill cuttings were placed in drums pending disposal.

Field Screening of Soil Samples

Soil samples obtained from the borings were screened in the field for evidence of contamination using: 1) visual examination; 2) sheen screening and 3) vapor headspace screening with a photo-ionization detector (PID). The results of headspace and sheen screening are included in the boring logs.

Visual screening consists of inspecting the soil for stains indicative of petroleum-related contamination. Visual screening is generally more effective when contamination is related to heavy petroleum hydrocarbons, such as motor oil or hydraulic oil, or when hydrocarbon concentrations are high. Sheen screening and headspace vapor screening are more sensitive methods that have been effective in detecting contamination at concentrations less than regulatory cleanup guidelines. Sheen screening involves placing soil in a pan of water and observing the water surface for signs of sheen. Sheen classifications are as follows:

No Sheen (NS) No visible sheen on water surface.

Slight Sheen (SS) Light, colorless, dull sheen; spread is irregular, not rapid; sheen dissipates rapidly.

Moderate Sheen (MS) Light to heavy sheen, may have some color/iridescence; spread is irregular to flowing; few remaining areas of no sheen on water surface.

Heavy Sheen (HS) Heavy sheen with color/iridescence; spread is rapid; entire water surface may be covered with sheen.

Headspace vapor screening involves placing a soil sample in a plastic sample bag. Air is captured in the bag and the bag is shaken to expose the soil to the air trapped in the bag. The probe of a PID is inserted in the bag and the instrument measures the concentration of combustible vapor in the air removed from the sample headspace. The PID measures concentrations in ppm (parts per million) and is calibrated to isobutylene. The PID is designed to quantify combustible gas and organic vapor concentrations up to 2,500 ppm. A lower threshold of significance of 1 ppm was used in this application. Field screening results are site-specific and vary with soil type, soil moisture content, temperature and type of contaminant.

Groundwater Sampling

Perched Groundwater

A grab groundwater sample was obtained from the perched groundwater zone from the open boring during the drilling of MW1 for chemical analysis. Groundwater was purged from the open boring using a peristaltic pump and disposable tubing until water from boring was clear. The groundwater sample was collected in laboratory-prepared containers. The groundwater sample was then placed in a cooler with ice and logged on the chain-of-custody record. Purge water was stored in a labeled drum at the site.

Monitoring Well

A groundwater sample was obtained from newly installed monitoring well using low-flow/low-turbidity sampling techniques to minimize the suspension of particulates in the samples. As the groundwater conditions at MW1 were artesian, no pump was needed to collect groundwater; a sample was collected using disposable tubing connected through a water-tight slip cap and control valve. Groundwater flow was controlled at approximately 0.5 liters per minute from the approximate midpoint of the screened interval. A water quality measuring system with a flow-through-cell was used to monitor the following water quality parameters during purging: electrical conductivity, dissolved oxygen, pH, turbidity, oxidation-reduction potential and temperature. Ambient groundwater conditions were assumed to have been reached once these parameters varied by less than 10 percent on three consecutive measurements. All field measurements were documented on the field logs.

After well purging, the flow-through-cell was disconnected and the groundwater sample was collected in laboratory-prepared containers. The groundwater sample was placed in a cooler with ice and logged on the chain-of-custody record. Purge water was stored in a labeled drum at the site.

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
MORE THAN 50% RETAINED ON NO. 200 SIEVE	SAND AND SANDY SOILS	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS
				SP	POORLY-GRADED SANDS, GRAVELLY SAND
	MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS, ROCK FLOUR, CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
MORE THAN 50% PASSING NO. 200 SIEVE	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS AND SILTS OF MEDIUM TO HIGH PLASTICITY
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: Multiple symbols are used to indicate borderline or dual soil classifications

ADDITIONAL MATERIAL SYMBOLS

SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
	AC	Asphalt Concrete
	CC	Cement Concrete
	CR	Crushed Rock/ Quarry Spalls
	SOD	Sod/Forest Duff
	TS	Topsoil

Groundwater Contact

Measured groundwater level in exploration, well, or piezometer

Measured free product in well or piezometer

Graphic Log Contact

Distinct contact between soil strata

Approximate contact between soil strata

Material Description Contact

Contact between geologic units

Contact between soil of the same geologic unit

Sampler Symbol Descriptions

2.4-inch I.D. split barrel

Standard Penetration Test (SPT)

Shelby tube

Piston

Direct-Push

Bulk or grab

Continuous Coring

Blowcount is recorded for driven samplers as the number of blows required to advance sampler 12 inches (or distance noted). See exploration log for hammer weight and drop.

"P" indicates sampler pushed using the weight of the drill rig.

"WOH" indicates sampler pushed using the weight of the hammer.

Laboratory / Field Tests

%F	Percent fines
%G	Percent gravel
AL	Atterberg limits
CA	Chemical analysis
CP	Laboratory compaction test
CS	Consolidation test
DD	Dry density
DS	Direct shear
HA	Hydrometer analysis
MC	Moisture content
MD	Moisture density
Mohs	Mohs hardness scale
OC	Organic content
PM	Permeability or hydraulic conductivity
PI	Plasticity index
PP	Pocket penetrometer
SA	Sieve analysis
TX	Triaxial compression
UC	Unconfined compression
VS	Vane shear

Sheen Classification

NS	No Visible Sheen
SS	Slight Sheen
MS	Moderate Sheen
HS	Heavy Sheen

NOTE: The reader must refer to the discussion in the report text and the logs of explorations for a proper understanding of subsurface conditions. Descriptions on the logs apply only at the specific exploration locations and at the time the explorations were made; they are not warranted to be representative of subsurface conditions at other locations or times.

Key to Exploration Logs

GeoEngineers

Figure C-1

Drilled	Start 2/8/2018	End 2/8/2018	Total Depth (ft)	4	Logged By	PDR	Driller	ESN Northwest	Drilling Method	Direct-Push
					Checked By	IDY				

Surface Elevation (ft) Vertical Datum	Undetermined	Hammer Data	NA	Drilling Equipment	Power Probe 9100P
Easting (X) Northing (Y)		System Datum	NA	Groundwater not observed at time of exploration	

Notes:

Elevation (feet)	Depth (feet)	FIELD DATA: Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0		24					CC	Approximately 2 inches of concrete cement			
								SP	Gray fine to coarse sand with fine gravel			
								SM	Brown silty fine to coarse sand with fine gravel (moist)			
						GEI-B1-1.5-2 CA				NS	6.5	
								ML	Brown silt with fine sand	NS	6.2	
								SM	Brown silty fine to medium sand with occasional coarse sand and fine gravel (moist)			
						GEI-B1-3.5-4 CA				NS	8.2	

Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on . Vertical approximated based on .

Log of Boring GEI-B1

GeoEngineers

Project: Bucklin Place Ultra Custom Cleaners
Project Location: Silverdale, Washington
Project Number: 22828-001-01

Figure C-2
Sheet 1 of 1

Drilled	Start 2/8/2018	End 2/8/2018	Total Depth (ft)	4	Logged By	PDR	Driller	ESN Northwest	Drilling Method	Direct-Push
					Checked By	IDY				

Surface Elevation (ft) Vertical Datum	Undetermined	Hammer Data	NA	Drilling Equipment	Power Probe 9100P
Easting (X) Northing (Y)		System Datum	NA	Groundwater not observed at time of exploration	

Notes:

Elevation (feet)	Depth (feet)	FIELD DATA: Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0		24					CC	Approximately 2 inches of concrete cement			
								SP	Gray fine to coarse sand with fine to coarse gravel (moist)			
								SM	Brown silty fine to coarse sand with fine gravel (moist)			
						GEI-B2-1.5-2 CA				NS	8.7	
						GEI-B2-3.5-4 CA				NS	5.3	

Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on . Vertical approximated based on .

Log of Boring GEI-B2

GeoEngineers

Project: Bucklin Place Ultra Custom Cleaners
Project Location: Silverdale, Washington
Project Number: 22828-001-01

Figure C-3
Sheet 1 of 1

Drilled Start 2/8/2018 End 2/8/2018	Total Depth (ft) 6	Logged By PDR Checked By IDY	Driller ESN Northwest	Drilling Method Direct-Push	
Surface Elevation (ft) Vertical Datum Undetermined		Hammer Data NA		Drilling Equipment Power Probe 9100P	
Easting (X) Northing (Y)		System Datum NA		Groundwater not observed at time of exploration	
Notes:					

Elevation (feet)	Depth (feet)	FIELD DATA: Interval Recovered (in)	FIELD DATA: Blows/foot	FIELD DATA: Collected Sample	FIELD DATA: Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0						CC	Approximately 2 inches of concrete cement			
		12			GEI-B3-0.5-1 CA		SP	Brown fine to coarse sand with fine to coarse gravel (moist)	NS	<1	
		24			GEI-B3-1.5-2 CA		SM	Brown silty fine sand (moist)	NS	1.6	
					GEI-B3-3.5-4 CA		SM	Brown silty fine to coarse sand with occasional fine gravel (moist)	NS	7.5	
		24					SM	Brown silty fine to medium sand (moist)			
	5				GEI-B3-5.5-6 CA			Grades to more silt, moist to wet	NS	2.4	

Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on . Vertical approximated based on .

Log of Boring GEI-B3

GeoEngineers

Project: Bucklin Place Ultra Custom Cleaners
Project Location: Silverdale, Washington
Project Number: 22828-001-01

Figure C-4
Sheet 1 of 1

Drilled Start 2/8/2018 End 2/8/2018	Total Depth (ft) 2	Logged By PDR Checked By IDY	Driller ESN Northwest	Drilling Method Direct-Push	
Surface Elevation (ft) Vertical Datum Undetermined		Hammer Data NA		Drilling Equipment Power Probe 9100P	
Easting (X) Northing (Y)		System Datum NA		Groundwater not observed at time of exploration	
Notes:					

Elevation (feet)	Depth (feet)	FIELD DATA: Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0		12					CC	Approximately 2 inches of concrete cement			
								SM	Brown silty fine to coarse sand with fine gravel (moist)			
						GEI-B4-1.5-2 CA				NS	4.6	

Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on . Vertical approximated based on .

Log of Boring GEI-B4

GeoEngineers

Project: Bucklin Place Ultra Custom Cleaners
Project Location: Silverdale, Washington
Project Number: 22828-001-01

Figure C-5
Sheet 1 of 1

Drilled: Start 2/8/2018 End 2/8/2018	Total Depth (ft): 6	Logged By: PDR Checked By: IDY	Driller: ESN Northwest	Drilling Method: Direct-Push	
Surface Elevation (ft) Vertical Datum: Undetermined		Hammer Data: NA		Drilling Equipment: Power Probe 9100P	
Easting (X) Northing (Y)		System Datum: NA		Groundwater not observed at time of exploration	
Notes:					

Elevation (feet)	Depth (feet)	FIELD DATA: Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0							CC	Approximately 2 inches of concrete cement			
								SP	Gray fine to coarse sand with fine gravel (moist)			
			24					SM	Brown silty fine to medium sand with fine gravel (moist)			
						GEI-B5-1.5-2 CA				NS	2.9	
			24									
								SM	Brown silty fine to medium sand with fine gravel (moist to wet)			
						GEI-B5-3.5-4 CA				NS	4.8	
			24									
	5							SP	Brown fine to medium sand with trace silt (moist to wet)			
						GEI-B5-5.5-6 CA				NS	3.6	

Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on . Vertical approximated based on .

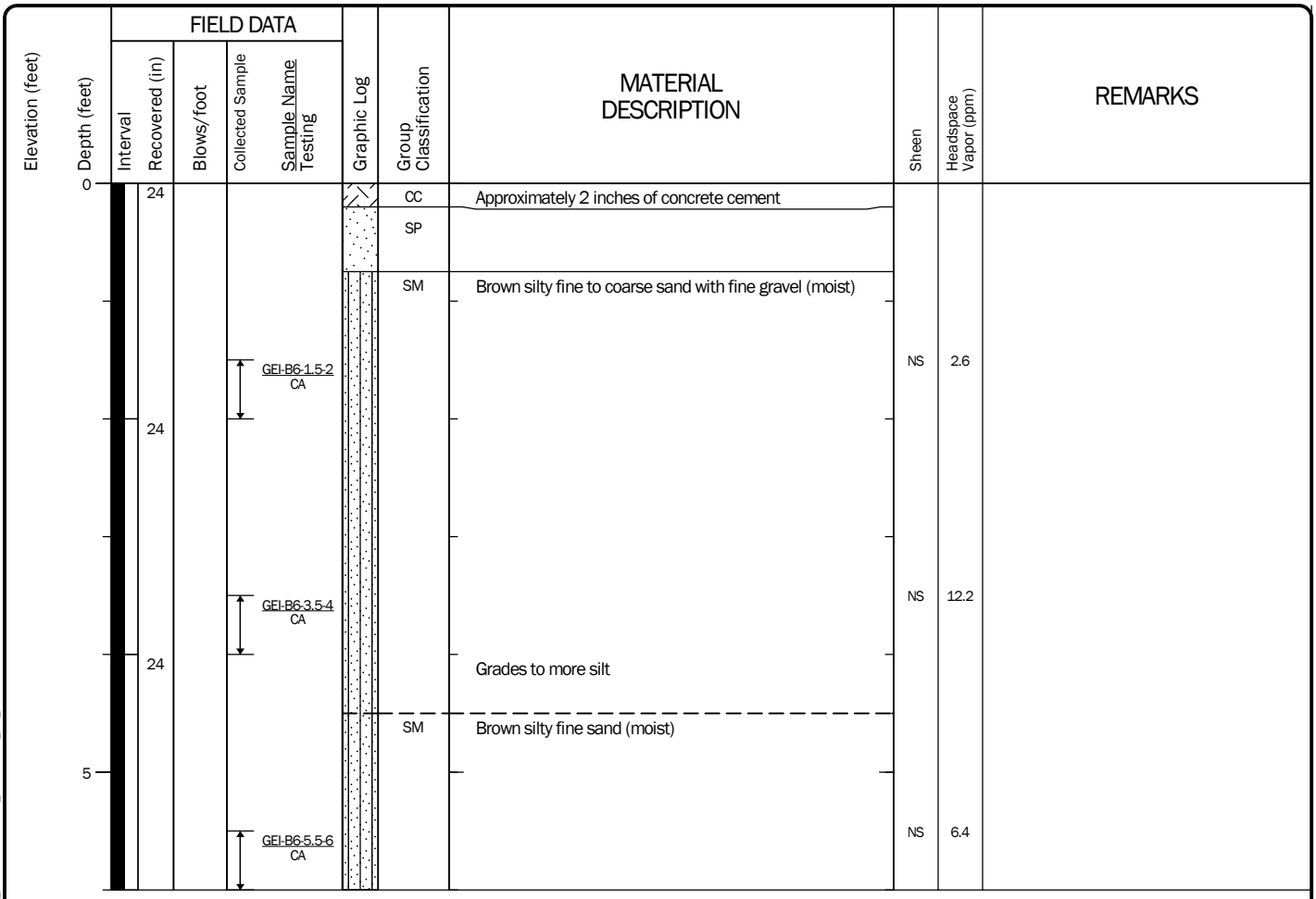
Log of Boring GEI-B5

GeoEngineers

Project: Bucklin Place Ultra Custom Cleaners
Project Location: Silverdale, Washington
Project Number: 22828-001-01

Figure C-6
Sheet 1 of 1

Drilled Start 2/8/2018 End 2/8/2018	Total Depth (ft) 6	Logged By PDR Checked By IDY	Driller ESN Northwest	Drilling Method Direct-Push	
Surface Elevation (ft) Vertical Datum Undetermined		Hammer Data NA		Drilling Equipment Power Probe 9100P	
Easting (X) Northing (Y)		System Datum NA		Groundwater not observed at time of exploration	
Notes:					



Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on . Vertical approximated based on .

Log of Boring GEI-B6

GeoEngineers

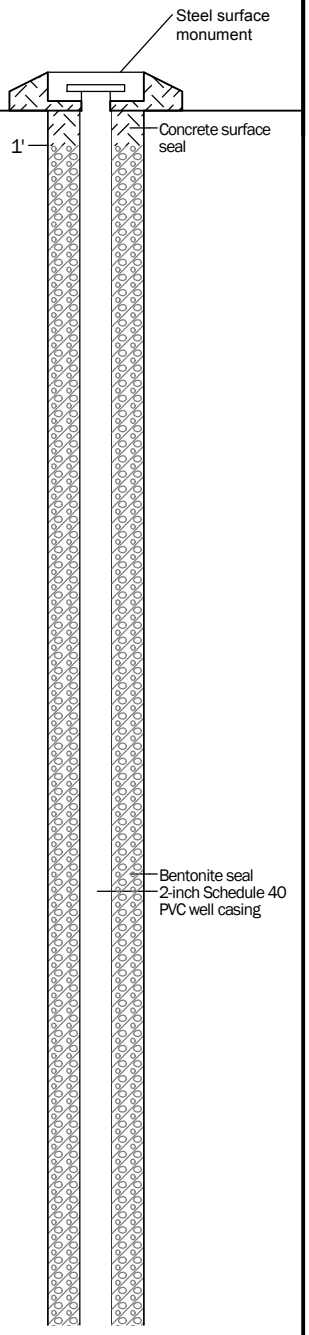
Project: Bucklin Place Ultra Custom Cleaners
Project Location: Silverdale, Washington
Project Number: 22828-001-01

Figure C-7
Sheet 1 of 1

Drilled Start 3/1/2018 End 3/2/2018	Total Depth (ft) 70	Logged By PDR Checked By IDY	Driller Cascade Drilling	Drilling Method Sonic Drilling	
Hammer Data NA		Drilling Equipment Boart Longyear mini-sonic		A 2 (in) well was installed on 3/2/2018 to a depth of 70 (ft).	
Surface Elevation (ft) Vertical Datum Undetermined		Top of Casing Elevation (ft)		Groundwater Date Measured: 3/2/2018 Depth to Water (ft): 19.20 Elevation (ft):	
Easting (X) Northing (Y)		Horizontal Datum NA			

Notes:

Elevation (feet)	Depth (feet)	Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)
	0								AC	Approximately 6 inches of asphalt concrete pavement		
									NR	Air knife to 10 feet to clear utilities - no recovery		
	5											
	10					GEI-MW1-10-10.5			ML	Gray silt with fine sand, occasional coarse sand and fine gravel (dense, wet) (no free water)	NS	<1
									SM	Gray silty fine to medium sand with occasional fine gravel (dense, wet) (no free water)		
	15					GEI-MW1-14.5-15				Grades to fine to coarse sand with less silt	NS	<1
									SP	Gray fine to coarse sand with trace silt (dense, moist to wet)		
									SM	Gray silty fine sand (dense, moist)		
						GEI-MW1-18.5-19	▼		SP-SM	Gray fine to coarse sand with silt and occasional fine gravel (dense, moist) Perched groundwater encountered at approximately 19.2 feet	NS	<1
	20		24									
			60						NR	No recovery, drilling becomes very hard		
	25					GEI-MW1-25-26			ML	Gray silt with fine to medium sand (soft, wet)	NS	<1
									SP-SM	Gray fine to coarse sand with silt (dense, wet)		
									SM	Gray silty fine to coarse sand and fine to coarse gravel (very dense, moist) (till)	NS	<1
	30		24			GEI-MW1-29-30			SM	Gray silty fine to coarse sand and fine gravel (very dense, moist) (till)	NS	<1
			72			GEI-MW1-32-33					NS	<1
	35											



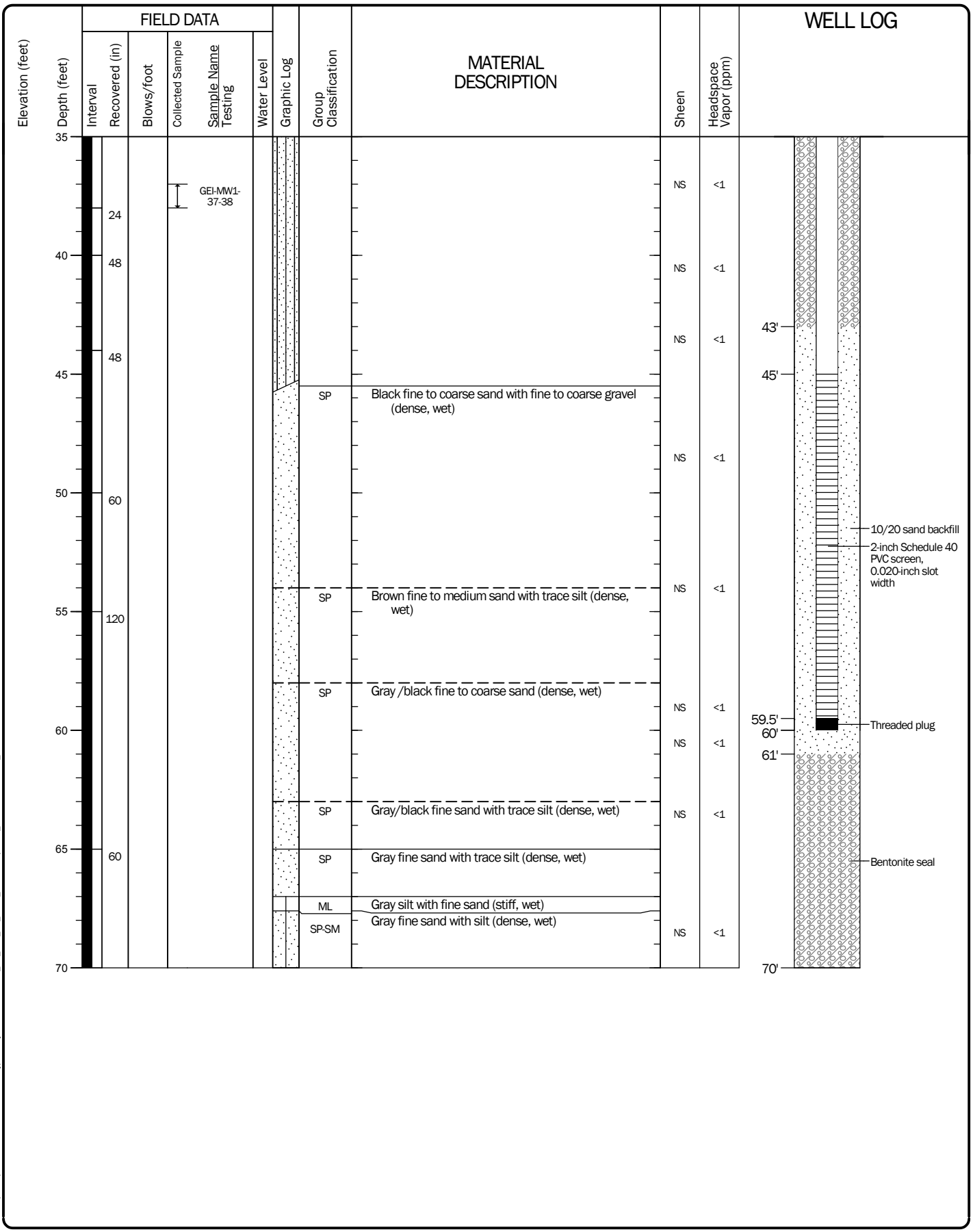
Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on . Vertical approximated based on .

Log of Monitoring Well GEI-MW1

GeoEngineers

Project: Bucklin Place Ultra Custom Cleaners
Project Location: Silverdale, Washington
Project Number: 22828-001-01

Figure C-8
Sheet 1 of 2



Log of Monitoring Well GEI-MW1 (continued)

GeoEngineers

Project: Bucklin Place Ultra Custom Cleaners
Project Location: Silverdale, Washington
Project Number: 22828-001-01

Figure C-8
Sheet 2 of 2

APPENDIX D
Laboratory Analytical Data Reports

APPENDIX D
LABORATORY ANALYTICAL DATA REPORTS

Analytical Methods

Chain-of-custody procedures were followed during the transport of the soil and groundwater samples to Fremont Analytical of Seattle, Washington, the analytical testing laboratory. The analytical results, analytical methods reference and laboratory quality control records are included in this appendix. The analytical results are summarized in the text and tables of this letter report.

Analytical Data Review

The laboratory maintains an internal quality assurance program as documented in its laboratory quality assurance manual. The laboratory uses a combination of method blanks, laboratory duplicates, and laboratory control samples to evaluate the validity of the analytical results. The laboratory also uses data quality goals for individual chemicals or groups of chemicals based on the long-term performance of the test methods. The data quality goals were included in the laboratory report. The laboratory compared each group of samples with the existing data quality goals.

Analytical Data Review Summary

No data quality exceptions were noted in the laboratory report during our review. Based on our data quality review, it is our opinion that the analytical data are of acceptable quality for their intended use in this letter report.

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

GeoEngineers
Ian Young
600 Stewart Street, Suite 1700
Seattle, WA 98101

RE: Bucklin UCC
Work Order Number: 1802112

February 15, 2018

Attention Ian Young:

Fremont Analytical, Inc. received 15 sample(s) on 2/9/2018 for the analyses presented in the following report.

Sample Moisture (Percent Moisture)
Volatile Organic Compounds by EPA Method 8260C

This report consists of the following:

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

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

Thank you for using Fremont Analytical.

Sincerely,

Mike Ridgeway
Laboratory Director

Date: *03/09/2018*

CLIENT: GeoEngineers
Project: Bucklin UCC
Work Order: 1802112

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1802112-001	GEI-B1-1.5-2	02/08/2018 10:55 AM	02/09/2018 2:00 PM
1802112-002	GEI-B1-3.5-4	02/08/2018 11:05 AM	02/09/2018 2:00 PM
1802112-003	GEI-B2-1.5-2	02/08/2018 9:10 AM	02/09/2018 2:00 PM
1802112-004	GEI-B2-3.5-4	02/08/2018 9:20 AM	02/09/2018 2:00 PM
1802112-005	GEI-B3-0.5-1	02/08/2018 7:25 AM	02/09/2018 2:00 PM
1802112-006	GEI-B3-1.5-2	02/08/2018 8:15 AM	02/09/2018 2:00 PM
1802112-007	GEI-B3-3.5-4	02/08/2018 8:22 AM	02/09/2018 2:00 PM
1802112-008	GEI-B3-5.5-6	02/08/2018 8:31 AM	02/09/2018 2:00 PM
1802112-009	GEI-B4-1.5-2	02/08/2018 12:10 PM	02/09/2018 2:00 PM
1802112-010	GEI-B5-1.5-2	02/08/2018 12:50 PM	02/09/2018 2:00 PM
1802112-011	GEI-B5-3.5-4	02/08/2018 12:56 PM	02/09/2018 2:00 PM
1802112-012	GEI-B5-5.5-6	02/08/2018 1:13 PM	02/09/2018 2:00 PM
1802112-013	GEI-B6-1.5-2	02/08/2018 2:00 PM	02/09/2018 2:00 PM
1802112-014	GEI-B6-3.5-4	02/08/2018 2:10 PM	02/09/2018 2:00 PM
1802112-015	GEI-B6-5.5-6	02/08/2018 2:25 PM	02/09/2018 2:00 PM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

Case Narrative

WO#: **1802112**
Date: **2/15/2018**

CLIENT: GeoEngineers
Project: Bucklin UCC

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

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

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

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

Revision1: Corrected Project Name

Qualifiers:

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

Acronyms:

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

Client: GeoEngineers
Collection Date: 2/8/2018 10:55:00 AM
Project: Bucklin UCC
Lab ID: 1802112-001
Matrix: Soil
Client Sample ID: **GEI-B1-1.5-2**

Volatile Organic Compounds by EPA Method 8260C

Batch ID: 19784 Analyst: MW

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Dichlorodifluoromethane (CFC-12)	ND	0.0193		mg/Kg-dry	1	2/13/2018 11:26:18 AM
Chloromethane	ND	0.0481		mg/Kg-dry	1	2/13/2018 11:26:18 AM
Vinyl chloride	ND	0.0241		mg/Kg-dry	1	2/13/2018 11:26:18 AM
Bromomethane	ND	0.0481		mg/Kg-dry	1	2/13/2018 11:26:18 AM
Trichlorofluoromethane (CFC-11)	ND	0.0193		mg/Kg-dry	1	2/13/2018 11:26:18 AM
Chloroethane	ND	0.0481		mg/Kg-dry	1	2/13/2018 11:26:18 AM
1,1-Dichloroethene	ND	0.0193		mg/Kg-dry	1	2/13/2018 11:26:18 AM
Methylene chloride	ND	0.0193		mg/Kg-dry	1	2/13/2018 11:26:18 AM
trans-1,2-Dichloroethene	ND	0.0193		mg/Kg-dry	1	2/13/2018 11:26:18 AM
Methyl tert-butyl ether (MTBE)	ND	0.0481		mg/Kg-dry	1	2/13/2018 11:26:18 AM
1,1-Dichloroethane	ND	0.0193		mg/Kg-dry	1	2/13/2018 11:26:18 AM
2,2-Dichloropropane	ND	0.0963		mg/Kg-dry	1	2/13/2018 11:26:18 AM
cis-1,2-Dichloroethene	ND	0.0193		mg/Kg-dry	1	2/13/2018 11:26:18 AM
Chloroform	ND	0.0193		mg/Kg-dry	1	2/13/2018 11:26:18 AM
1,1,1-Trichloroethane (TCA)	ND	0.0241		mg/Kg-dry	1	2/13/2018 11:26:18 AM
1,1-Dichloropropene	ND	0.0193		mg/Kg-dry	1	2/13/2018 11:26:18 AM
Carbon tetrachloride	ND	0.0241		mg/Kg-dry	1	2/13/2018 11:26:18 AM
1,2-Dichloroethane (EDC)	ND	0.0193		mg/Kg-dry	1	2/13/2018 11:26:18 AM
Benzene	ND	0.0193		mg/Kg-dry	1	2/13/2018 11:26:18 AM
Trichloroethene (TCE)	ND	0.0193		mg/Kg-dry	1	2/13/2018 11:26:18 AM
1,2-Dichloropropane	ND	0.0193		mg/Kg-dry	1	2/13/2018 11:26:18 AM
Bromodichloromethane	ND	0.0193		mg/Kg-dry	1	2/13/2018 11:26:18 AM
Dibromomethane	ND	0.0193		mg/Kg-dry	1	2/13/2018 11:26:18 AM
cis-1,3-Dichloropropene	ND	0.0193		mg/Kg-dry	1	2/13/2018 11:26:18 AM
Toluene	ND	0.0193		mg/Kg-dry	1	2/13/2018 11:26:18 AM
trans-1,3-Dichloropropylene	ND	0.0193		mg/Kg-dry	1	2/13/2018 11:26:18 AM
1,1,2-Trichloroethane	ND	0.0193		mg/Kg-dry	1	2/13/2018 11:26:18 AM
1,3-Dichloropropane	ND	0.0241		mg/Kg-dry	1	2/13/2018 11:26:18 AM
Tetrachloroethene (PCE)	ND	0.0241		mg/Kg-dry	1	2/13/2018 11:26:18 AM
Dibromochloromethane	ND	0.0241		mg/Kg-dry	1	2/13/2018 11:26:18 AM
1,2-Dibromoethane (EDB)	ND	0.00481		mg/Kg-dry	1	2/13/2018 11:26:18 AM
Chlorobenzene	ND	0.0241		mg/Kg-dry	1	2/13/2018 11:26:18 AM
1,1,1,2-Tetrachloroethane	ND	0.0241		mg/Kg-dry	1	2/13/2018 11:26:18 AM
Ethylbenzene	ND	0.0241		mg/Kg-dry	1	2/13/2018 11:26:18 AM
m,p-Xylene	ND	0.0481		mg/Kg-dry	1	2/13/2018 11:26:18 AM
o-Xylene	ND	0.0241		mg/Kg-dry	1	2/13/2018 11:26:18 AM
Styrene	ND	0.0241		mg/Kg-dry	1	2/13/2018 11:26:18 AM
Isopropylbenzene	ND	0.0241		mg/Kg-dry	1	2/13/2018 11:26:18 AM
Bromoform	ND	0.0481		mg/Kg-dry	1	2/13/2018 11:26:18 AM

Analytical Report

Work Order: **1802112**
Date Reported: **2/15/2018**

Client: GeoEngineers
Collection Date: 2/8/2018 10:55:00 AM
Project: Bucklin UCC
Lab ID: 1802112-001
Matrix: Soil
Client Sample ID: **GEI-B1-1.5-2**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260C				Batch ID: 19784		Analyst: MW
1,1,2,2-Tetrachloroethane	ND	0.0193		mg/Kg-dry	1	2/13/2018 11:26:18 AM
n-Propylbenzene	ND	0.0241		mg/Kg-dry	1	2/13/2018 11:26:18 AM
Bromobenzene	ND	0.0193		mg/Kg-dry	1	2/13/2018 11:26:18 AM
1,3,5-Trimethylbenzene	ND	0.0241		mg/Kg-dry	1	2/13/2018 11:26:18 AM
2-Chlorotoluene	ND	0.0241		mg/Kg-dry	1	2/13/2018 11:26:18 AM
4-Chlorotoluene	ND	0.0241		mg/Kg-dry	1	2/13/2018 11:26:18 AM
tert-Butylbenzene	ND	0.0241		mg/Kg-dry	1	2/13/2018 11:26:18 AM
1,2,3-Trichloropropane	ND	0.0241		mg/Kg-dry	1	2/13/2018 11:26:18 AM
1,2,4-Trichlorobenzene	ND	0.0241		mg/Kg-dry	1	2/13/2018 11:26:18 AM
sec-Butylbenzene	ND	0.0481		mg/Kg-dry	1	2/13/2018 11:26:18 AM
4-Isopropyltoluene	ND	0.0481		mg/Kg-dry	1	2/13/2018 11:26:18 AM
1,3-Dichlorobenzene	ND	0.0193		mg/Kg-dry	1	2/13/2018 11:26:18 AM
1,4-Dichlorobenzene	ND	0.0193		mg/Kg-dry	1	2/13/2018 11:26:18 AM
n-Butylbenzene	ND	0.0241		mg/Kg-dry	1	2/13/2018 11:26:18 AM
1,2-Dichlorobenzene	ND	0.0193		mg/Kg-dry	1	2/13/2018 11:26:18 AM
1,2-Dibromo-3-chloropropane	ND	0.481		mg/Kg-dry	1	2/13/2018 11:26:18 AM
1,2,4-Trimethylbenzene	ND	0.0193		mg/Kg-dry	1	2/13/2018 11:26:18 AM
Hexachlorobutadiene	ND	0.0481		mg/Kg-dry	1	2/13/2018 11:26:18 AM
Naphthalene	ND	0.0481		mg/Kg-dry	1	2/13/2018 11:26:18 AM
1,2,3-Trichlorobenzene	ND	0.0193		mg/Kg-dry	1	2/13/2018 11:26:18 AM
Surr: Dibromofluoromethane	91.3	56.5 - 129		%Rec	1	2/13/2018 11:26:18 AM
Surr: Toluene-d8	96.5	64.5 - 151		%Rec	1	2/13/2018 11:26:18 AM
Surr: 1-Bromo-4-fluorobenzene	98.2	43.2 - 143		%Rec	1	2/13/2018 11:26:18 AM
Sample Moisture (Percent Moisture)				Batch ID: R41682		Analyst: CG
Percent Moisture	8.24	0.500		wt%	1	2/13/2018 12:00:34 PM

Client: GeoEngineers
Collection Date: 2/8/2018 11:05:00 AM
Project: Bucklin UCC
Lab ID: 1802112-002
Matrix: Soil
Client Sample ID: **GEI-B1-3.5-4**

Volatile Organic Compounds by EPA Method 8260C

Batch ID: 19784 Analyst: MW

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Dichlorodifluoromethane (CFC-12)	ND	0.0214		mg/Kg-dry	1	2/13/2018 11:57:29 AM
Chloromethane	ND	0.0535		mg/Kg-dry	1	2/13/2018 11:57:29 AM
Vinyl chloride	ND	0.0267		mg/Kg-dry	1	2/13/2018 11:57:29 AM
Bromomethane	ND	0.0535		mg/Kg-dry	1	2/13/2018 11:57:29 AM
Trichlorofluoromethane (CFC-11)	ND	0.0214		mg/Kg-dry	1	2/13/2018 11:57:29 AM
Chloroethane	ND	0.0535		mg/Kg-dry	1	2/13/2018 11:57:29 AM
1,1-Dichloroethene	ND	0.0214		mg/Kg-dry	1	2/13/2018 11:57:29 AM
Methylene chloride	ND	0.0214		mg/Kg-dry	1	2/13/2018 11:57:29 AM
trans-1,2-Dichloroethene	ND	0.0214		mg/Kg-dry	1	2/13/2018 11:57:29 AM
Methyl tert-butyl ether (MTBE)	ND	0.0535		mg/Kg-dry	1	2/13/2018 11:57:29 AM
1,1-Dichloroethane	ND	0.0214		mg/Kg-dry	1	2/13/2018 11:57:29 AM
2,2-Dichloropropane	ND	0.107		mg/Kg-dry	1	2/13/2018 11:57:29 AM
cis-1,2-Dichloroethene	ND	0.0214		mg/Kg-dry	1	2/13/2018 11:57:29 AM
Chloroform	ND	0.0214		mg/Kg-dry	1	2/13/2018 11:57:29 AM
1,1,1-Trichloroethane (TCA)	ND	0.0267		mg/Kg-dry	1	2/13/2018 11:57:29 AM
1,1-Dichloropropene	ND	0.0214		mg/Kg-dry	1	2/13/2018 11:57:29 AM
Carbon tetrachloride	ND	0.0267		mg/Kg-dry	1	2/13/2018 11:57:29 AM
1,2-Dichloroethane (EDC)	ND	0.0214		mg/Kg-dry	1	2/13/2018 11:57:29 AM
Benzene	ND	0.0214		mg/Kg-dry	1	2/13/2018 11:57:29 AM
Trichloroethene (TCE)	ND	0.0214		mg/Kg-dry	1	2/13/2018 11:57:29 AM
1,2-Dichloropropane	ND	0.0214		mg/Kg-dry	1	2/13/2018 11:57:29 AM
Bromodichloromethane	ND	0.0214		mg/Kg-dry	1	2/13/2018 11:57:29 AM
Dibromomethane	ND	0.0214		mg/Kg-dry	1	2/13/2018 11:57:29 AM
cis-1,3-Dichloropropene	ND	0.0214		mg/Kg-dry	1	2/13/2018 11:57:29 AM
Toluene	ND	0.0214		mg/Kg-dry	1	2/13/2018 11:57:29 AM
trans-1,3-Dichloropropylene	ND	0.0214		mg/Kg-dry	1	2/13/2018 11:57:29 AM
1,1,2-Trichloroethane	ND	0.0214		mg/Kg-dry	1	2/13/2018 11:57:29 AM
1,3-Dichloropropane	ND	0.0267		mg/Kg-dry	1	2/13/2018 11:57:29 AM
Tetrachloroethene (PCE)	ND	0.0267		mg/Kg-dry	1	2/13/2018 11:57:29 AM
Dibromochloromethane	ND	0.0267		mg/Kg-dry	1	2/13/2018 11:57:29 AM
1,2-Dibromoethane (EDB)	ND	0.00535		mg/Kg-dry	1	2/13/2018 11:57:29 AM
Chlorobenzene	ND	0.0267		mg/Kg-dry	1	2/13/2018 11:57:29 AM
1,1,1,2-Tetrachloroethane	ND	0.0267		mg/Kg-dry	1	2/13/2018 11:57:29 AM
Ethylbenzene	ND	0.0267		mg/Kg-dry	1	2/13/2018 11:57:29 AM
m,p-Xylene	ND	0.0535		mg/Kg-dry	1	2/13/2018 11:57:29 AM
o-Xylene	ND	0.0267		mg/Kg-dry	1	2/13/2018 11:57:29 AM
Styrene	ND	0.0267		mg/Kg-dry	1	2/13/2018 11:57:29 AM
Isopropylbenzene	ND	0.0267		mg/Kg-dry	1	2/13/2018 11:57:29 AM
Bromoform	ND	0.0535		mg/Kg-dry	1	2/13/2018 11:57:29 AM

Analytical Report

Work Order: **1802112**
Date Reported: **2/15/2018**

Client: GeoEngineers
Collection Date: 2/8/2018 11:05:00 AM
Project: Bucklin UCC
Lab ID: 1802112-002
Matrix: Soil
Client Sample ID: **GEI-B1-3.5-4**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260C				Batch ID: 19784		Analyst: MW
1,1,2,2-Tetrachloroethane	ND	0.0214		mg/Kg-dry	1	2/13/2018 11:57:29 AM
n-Propylbenzene	ND	0.0267		mg/Kg-dry	1	2/13/2018 11:57:29 AM
Bromobenzene	ND	0.0214		mg/Kg-dry	1	2/13/2018 11:57:29 AM
1,3,5-Trimethylbenzene	ND	0.0267		mg/Kg-dry	1	2/13/2018 11:57:29 AM
2-Chlorotoluene	ND	0.0267		mg/Kg-dry	1	2/13/2018 11:57:29 AM
4-Chlorotoluene	ND	0.0267		mg/Kg-dry	1	2/13/2018 11:57:29 AM
tert-Butylbenzene	ND	0.0267		mg/Kg-dry	1	2/13/2018 11:57:29 AM
1,2,3-Trichloropropane	ND	0.0267		mg/Kg-dry	1	2/13/2018 11:57:29 AM
1,2,4-Trichlorobenzene	ND	0.0267		mg/Kg-dry	1	2/13/2018 11:57:29 AM
sec-Butylbenzene	ND	0.0535		mg/Kg-dry	1	2/13/2018 11:57:29 AM
4-Isopropyltoluene	ND	0.0535		mg/Kg-dry	1	2/13/2018 11:57:29 AM
1,3-Dichlorobenzene	ND	0.0214		mg/Kg-dry	1	2/13/2018 11:57:29 AM
1,4-Dichlorobenzene	ND	0.0214		mg/Kg-dry	1	2/13/2018 11:57:29 AM
n-Butylbenzene	ND	0.0267		mg/Kg-dry	1	2/13/2018 11:57:29 AM
1,2-Dichlorobenzene	ND	0.0214		mg/Kg-dry	1	2/13/2018 11:57:29 AM
1,2-Dibromo-3-chloropropane	ND	0.535		mg/Kg-dry	1	2/13/2018 11:57:29 AM
1,2,4-Trimethylbenzene	ND	0.0214		mg/Kg-dry	1	2/13/2018 11:57:29 AM
Hexachlorobutadiene	ND	0.0535		mg/Kg-dry	1	2/13/2018 11:57:29 AM
Naphthalene	ND	0.0535		mg/Kg-dry	1	2/13/2018 11:57:29 AM
1,2,3-Trichlorobenzene	ND	0.0214		mg/Kg-dry	1	2/13/2018 11:57:29 AM
Surr: Dibromofluoromethane	91.2	56.5 - 129		%Rec	1	2/13/2018 11:57:29 AM
Surr: Toluene-d8	96.3	64.5 - 151		%Rec	1	2/13/2018 11:57:29 AM
Surr: 1-Bromo-4-fluorobenzene	98.6	43.2 - 143		%Rec	1	2/13/2018 11:57:29 AM
Sample Moisture (Percent Moisture)				Batch ID: R41682		Analyst: CG
Percent Moisture	8.42	0.500		wt%	1	2/13/2018 12:00:34 PM

Client: GeoEngineers
Project: Bucklin UCC
Lab ID: 1802112-003
Client Sample ID: **GEI-B2-1.5-2**

Collection Date: 2/8/2018 9:10:00 AM
Matrix: Soil

Volatile Organic Compounds by EPA Method 8260C Batch ID: 19784 Analyst: MW

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Dichlorodifluoromethane (CFC-12)	ND	0.0202		mg/Kg-dry	1	2/13/2018 12:28:30 PM
Chloromethane	ND	0.0506		mg/Kg-dry	1	2/13/2018 12:28:30 PM
Vinyl chloride	ND	0.0253		mg/Kg-dry	1	2/13/2018 12:28:30 PM
Bromomethane	ND	0.0506		mg/Kg-dry	1	2/13/2018 12:28:30 PM
Trichlorofluoromethane (CFC-11)	ND	0.0202		mg/Kg-dry	1	2/13/2018 12:28:30 PM
Chloroethane	ND	0.0506		mg/Kg-dry	1	2/13/2018 12:28:30 PM
1,1-Dichloroethene	ND	0.0202		mg/Kg-dry	1	2/13/2018 12:28:30 PM
Methylene chloride	ND	0.0202		mg/Kg-dry	1	2/13/2018 12:28:30 PM
trans-1,2-Dichloroethene	ND	0.0202		mg/Kg-dry	1	2/13/2018 12:28:30 PM
Methyl tert-butyl ether (MTBE)	ND	0.0506		mg/Kg-dry	1	2/13/2018 12:28:30 PM
1,1-Dichloroethane	ND	0.0202		mg/Kg-dry	1	2/13/2018 12:28:30 PM
2,2-Dichloropropane	ND	0.101		mg/Kg-dry	1	2/13/2018 12:28:30 PM
cis-1,2-Dichloroethene	ND	0.0202		mg/Kg-dry	1	2/13/2018 12:28:30 PM
Chloroform	ND	0.0202		mg/Kg-dry	1	2/13/2018 12:28:30 PM
1,1,1-Trichloroethane (TCA)	ND	0.0253		mg/Kg-dry	1	2/13/2018 12:28:30 PM
1,1-Dichloropropene	ND	0.0202		mg/Kg-dry	1	2/13/2018 12:28:30 PM
Carbon tetrachloride	ND	0.0253		mg/Kg-dry	1	2/13/2018 12:28:30 PM
1,2-Dichloroethane (EDC)	ND	0.0202		mg/Kg-dry	1	2/13/2018 12:28:30 PM
Benzene	ND	0.0202		mg/Kg-dry	1	2/13/2018 12:28:30 PM
Trichloroethene (TCE)	ND	0.0202		mg/Kg-dry	1	2/13/2018 12:28:30 PM
1,2-Dichloropropane	ND	0.0202		mg/Kg-dry	1	2/13/2018 12:28:30 PM
Bromodichloromethane	ND	0.0202		mg/Kg-dry	1	2/13/2018 12:28:30 PM
Dibromomethane	ND	0.0202		mg/Kg-dry	1	2/13/2018 12:28:30 PM
cis-1,3-Dichloropropene	ND	0.0202		mg/Kg-dry	1	2/13/2018 12:28:30 PM
Toluene	ND	0.0202		mg/Kg-dry	1	2/13/2018 12:28:30 PM
trans-1,3-Dichloropropylene	ND	0.0202		mg/Kg-dry	1	2/13/2018 12:28:30 PM
1,1,2-Trichloroethane	ND	0.0202		mg/Kg-dry	1	2/13/2018 12:28:30 PM
1,3-Dichloropropane	ND	0.0253		mg/Kg-dry	1	2/13/2018 12:28:30 PM
Tetrachloroethene (PCE)	ND	0.0253		mg/Kg-dry	1	2/13/2018 12:28:30 PM
Dibromochloromethane	ND	0.0253		mg/Kg-dry	1	2/13/2018 12:28:30 PM
1,2-Dibromoethane (EDB)	ND	0.00506		mg/Kg-dry	1	2/13/2018 12:28:30 PM
Chlorobenzene	ND	0.0253		mg/Kg-dry	1	2/13/2018 12:28:30 PM
1,1,1,2-Tetrachloroethane	ND	0.0253		mg/Kg-dry	1	2/13/2018 12:28:30 PM
Ethylbenzene	ND	0.0253		mg/Kg-dry	1	2/13/2018 12:28:30 PM
m,p-Xylene	ND	0.0506		mg/Kg-dry	1	2/13/2018 12:28:30 PM
o-Xylene	ND	0.0253		mg/Kg-dry	1	2/13/2018 12:28:30 PM
Styrene	ND	0.0253		mg/Kg-dry	1	2/13/2018 12:28:30 PM
Isopropylbenzene	ND	0.0253		mg/Kg-dry	1	2/13/2018 12:28:30 PM
Bromoform	ND	0.0506		mg/Kg-dry	1	2/13/2018 12:28:30 PM

Analytical Report

Work Order: **1802112**
Date Reported: **2/15/2018**

Client: GeoEngineers
Collection Date: 2/8/2018 9:10:00 AM
Project: Bucklin UCC
Lab ID: 1802112-003
Matrix: Soil
Client Sample ID: **GEI-B2-1.5-2**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260C				Batch ID: 19784		Analyst: MW
1,1,2,2-Tetrachloroethane	ND	0.0202		mg/Kg-dry	1	2/13/2018 12:28:30 PM
n-Propylbenzene	ND	0.0253		mg/Kg-dry	1	2/13/2018 12:28:30 PM
Bromobenzene	ND	0.0202		mg/Kg-dry	1	2/13/2018 12:28:30 PM
1,3,5-Trimethylbenzene	ND	0.0253		mg/Kg-dry	1	2/13/2018 12:28:30 PM
2-Chlorotoluene	ND	0.0253		mg/Kg-dry	1	2/13/2018 12:28:30 PM
4-Chlorotoluene	ND	0.0253		mg/Kg-dry	1	2/13/2018 12:28:30 PM
tert-Butylbenzene	ND	0.0253		mg/Kg-dry	1	2/13/2018 12:28:30 PM
1,2,3-Trichloropropane	ND	0.0253		mg/Kg-dry	1	2/13/2018 12:28:30 PM
1,2,4-Trichlorobenzene	ND	0.0253		mg/Kg-dry	1	2/13/2018 12:28:30 PM
sec-Butylbenzene	ND	0.0506		mg/Kg-dry	1	2/13/2018 12:28:30 PM
4-Isopropyltoluene	ND	0.0506		mg/Kg-dry	1	2/13/2018 12:28:30 PM
1,3-Dichlorobenzene	ND	0.0202		mg/Kg-dry	1	2/13/2018 12:28:30 PM
1,4-Dichlorobenzene	ND	0.0202		mg/Kg-dry	1	2/13/2018 12:28:30 PM
n-Butylbenzene	ND	0.0253		mg/Kg-dry	1	2/13/2018 12:28:30 PM
1,2-Dichlorobenzene	ND	0.0202		mg/Kg-dry	1	2/13/2018 12:28:30 PM
1,2-Dibromo-3-chloropropane	ND	0.506		mg/Kg-dry	1	2/13/2018 12:28:30 PM
1,2,4-Trimethylbenzene	ND	0.0202		mg/Kg-dry	1	2/13/2018 12:28:30 PM
Hexachlorobutadiene	ND	0.0506		mg/Kg-dry	1	2/13/2018 12:28:30 PM
Naphthalene	ND	0.0506		mg/Kg-dry	1	2/13/2018 12:28:30 PM
1,2,3-Trichlorobenzene	ND	0.0202		mg/Kg-dry	1	2/13/2018 12:28:30 PM
Surr: Dibromofluoromethane	91.7	56.5 - 129		%Rec	1	2/13/2018 12:28:30 PM
Surr: Toluene-d8	96.2	64.5 - 151		%Rec	1	2/13/2018 12:28:30 PM
Surr: 1-Bromo-4-fluorobenzene	98.3	43.2 - 143		%Rec	1	2/13/2018 12:28:30 PM
Sample Moisture (Percent Moisture)				Batch ID: R41682		Analyst: CG
Percent Moisture	12.3	0.500		wt%	1	2/13/2018 12:00:34 PM

Client: GeoEngineers
Collection Date: 2/8/2018 9:20:00 AM
Project: Bucklin UCC
Lab ID: 1802112-004
Matrix: Soil
Client Sample ID: **GEI-B2-3.5-4**

Volatile Organic Compounds by EPA Method 8260C

Batch ID: 19784 Analyst: MW

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Dichlorodifluoromethane (CFC-12)	ND	0.0218		mg/Kg-dry	1	2/13/2018 4:05:38 PM
Chloromethane	ND	0.0544		mg/Kg-dry	1	2/13/2018 4:05:38 PM
Vinyl chloride	ND	0.0272		mg/Kg-dry	1	2/13/2018 4:05:38 PM
Bromomethane	ND	0.0544		mg/Kg-dry	1	2/13/2018 4:05:38 PM
Trichlorofluoromethane (CFC-11)	ND	0.0218		mg/Kg-dry	1	2/13/2018 4:05:38 PM
Chloroethane	ND	0.0544		mg/Kg-dry	1	2/13/2018 4:05:38 PM
1,1-Dichloroethene	ND	0.0218		mg/Kg-dry	1	2/13/2018 4:05:38 PM
Methylene chloride	ND	0.0218		mg/Kg-dry	1	2/13/2018 4:05:38 PM
trans-1,2-Dichloroethene	ND	0.0218		mg/Kg-dry	1	2/13/2018 4:05:38 PM
Methyl tert-butyl ether (MTBE)	ND	0.0544		mg/Kg-dry	1	2/13/2018 4:05:38 PM
1,1-Dichloroethane	ND	0.0218		mg/Kg-dry	1	2/13/2018 4:05:38 PM
2,2-Dichloropropane	ND	0.109		mg/Kg-dry	1	2/13/2018 4:05:38 PM
cis-1,2-Dichloroethene	ND	0.0218		mg/Kg-dry	1	2/13/2018 4:05:38 PM
Chloroform	ND	0.0218		mg/Kg-dry	1	2/13/2018 4:05:38 PM
1,1,1-Trichloroethane (TCA)	ND	0.0272		mg/Kg-dry	1	2/13/2018 4:05:38 PM
1,1-Dichloropropene	ND	0.0218		mg/Kg-dry	1	2/13/2018 4:05:38 PM
Carbon tetrachloride	ND	0.0272		mg/Kg-dry	1	2/13/2018 4:05:38 PM
1,2-Dichloroethane (EDC)	ND	0.0218		mg/Kg-dry	1	2/13/2018 4:05:38 PM
Benzene	ND	0.0218		mg/Kg-dry	1	2/13/2018 4:05:38 PM
Trichloroethene (TCE)	ND	0.0218		mg/Kg-dry	1	2/13/2018 4:05:38 PM
1,2-Dichloropropane	ND	0.0218		mg/Kg-dry	1	2/13/2018 4:05:38 PM
Bromodichloromethane	ND	0.0218		mg/Kg-dry	1	2/13/2018 4:05:38 PM
Dibromomethane	ND	0.0218		mg/Kg-dry	1	2/13/2018 4:05:38 PM
cis-1,3-Dichloropropene	ND	0.0218		mg/Kg-dry	1	2/13/2018 4:05:38 PM
Toluene	ND	0.0218		mg/Kg-dry	1	2/13/2018 4:05:38 PM
trans-1,3-Dichloropropylene	ND	0.0218		mg/Kg-dry	1	2/13/2018 4:05:38 PM
1,1,2-Trichloroethane	ND	0.0218		mg/Kg-dry	1	2/13/2018 4:05:38 PM
1,3-Dichloropropane	ND	0.0272		mg/Kg-dry	1	2/13/2018 4:05:38 PM
Tetrachloroethene (PCE)	ND	0.0272		mg/Kg-dry	1	2/13/2018 4:05:38 PM
Dibromochloromethane	ND	0.0272		mg/Kg-dry	1	2/13/2018 4:05:38 PM
1,2-Dibromoethane (EDB)	ND	0.00544		mg/Kg-dry	1	2/13/2018 4:05:38 PM
Chlorobenzene	ND	0.0272		mg/Kg-dry	1	2/13/2018 4:05:38 PM
1,1,1,2-Tetrachloroethane	ND	0.0272		mg/Kg-dry	1	2/13/2018 4:05:38 PM
Ethylbenzene	ND	0.0272		mg/Kg-dry	1	2/13/2018 4:05:38 PM
m,p-Xylene	ND	0.0544		mg/Kg-dry	1	2/13/2018 4:05:38 PM
o-Xylene	ND	0.0272		mg/Kg-dry	1	2/13/2018 4:05:38 PM
Styrene	ND	0.0272		mg/Kg-dry	1	2/13/2018 4:05:38 PM
Isopropylbenzene	ND	0.0272		mg/Kg-dry	1	2/13/2018 4:05:38 PM
Bromoform	ND	0.0544		mg/Kg-dry	1	2/13/2018 4:05:38 PM

Analytical Report

Work Order: **1802112**
Date Reported: **2/15/2018**

Client: GeoEngineers
Collection Date: 2/8/2018 9:20:00 AM
Project: Bucklin UCC
Lab ID: 1802112-004
Matrix: Soil
Client Sample ID: **GEI-B2-3.5-4**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260C				Batch ID: 19784		Analyst: MW
1,1,2,2-Tetrachloroethane	ND	0.0218		mg/Kg-dry	1	2/13/2018 4:05:38 PM
n-Propylbenzene	ND	0.0272		mg/Kg-dry	1	2/13/2018 4:05:38 PM
Bromobenzene	ND	0.0218		mg/Kg-dry	1	2/13/2018 4:05:38 PM
1,3,5-Trimethylbenzene	ND	0.0272		mg/Kg-dry	1	2/13/2018 4:05:38 PM
2-Chlorotoluene	ND	0.0272		mg/Kg-dry	1	2/13/2018 4:05:38 PM
4-Chlorotoluene	ND	0.0272		mg/Kg-dry	1	2/13/2018 4:05:38 PM
tert-Butylbenzene	ND	0.0272		mg/Kg-dry	1	2/13/2018 4:05:38 PM
1,2,3-Trichloropropane	ND	0.0272		mg/Kg-dry	1	2/13/2018 4:05:38 PM
1,2,4-Trichlorobenzene	ND	0.0272		mg/Kg-dry	1	2/13/2018 4:05:38 PM
sec-Butylbenzene	ND	0.0544		mg/Kg-dry	1	2/13/2018 4:05:38 PM
4-Isopropyltoluene	ND	0.0544		mg/Kg-dry	1	2/13/2018 4:05:38 PM
1,3-Dichlorobenzene	ND	0.0218		mg/Kg-dry	1	2/13/2018 4:05:38 PM
1,4-Dichlorobenzene	ND	0.0218		mg/Kg-dry	1	2/13/2018 4:05:38 PM
n-Butylbenzene	ND	0.0272		mg/Kg-dry	1	2/13/2018 4:05:38 PM
1,2-Dichlorobenzene	ND	0.0218		mg/Kg-dry	1	2/13/2018 4:05:38 PM
1,2-Dibromo-3-chloropropane	ND	0.544		mg/Kg-dry	1	2/13/2018 4:05:38 PM
1,2,4-Trimethylbenzene	ND	0.0218		mg/Kg-dry	1	2/13/2018 4:05:38 PM
Hexachlorobutadiene	ND	0.0544		mg/Kg-dry	1	2/13/2018 4:05:38 PM
Naphthalene	ND	0.0544		mg/Kg-dry	1	2/13/2018 4:05:38 PM
1,2,3-Trichlorobenzene	ND	0.0218		mg/Kg-dry	1	2/13/2018 4:05:38 PM
Surr: Dibromofluoromethane	92.8	56.5 - 129		%Rec	1	2/13/2018 4:05:38 PM
Surr: Toluene-d8	98.9	64.5 - 151		%Rec	1	2/13/2018 4:05:38 PM
Surr: 1-Bromo-4-fluorobenzene	98.6	43.2 - 143		%Rec	1	2/13/2018 4:05:38 PM
Sample Moisture (Percent Moisture)				Batch ID: R41682		Analyst: CG
Percent Moisture	6.95	0.500		wt%	1	2/13/2018 12:00:34 PM

Client: GeoEngineers
Project: Bucklin UCC
Lab ID: 1802112-007
Client Sample ID: **GEI-B3-3.5-4**

Collection Date: 2/8/2018 8:22:00 AM
Matrix: Soil

Volatile Organic Compounds by EPA Method 8260C Batch ID: 19784 Analyst: MW

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Dichlorodifluoromethane (CFC-12)	ND	0.0200		mg/Kg-dry	1	2/13/2018 4:36:33 PM
Chloromethane	ND	0.0499		mg/Kg-dry	1	2/13/2018 4:36:33 PM
Vinyl chloride	ND	0.0249		mg/Kg-dry	1	2/13/2018 4:36:33 PM
Bromomethane	ND	0.0499		mg/Kg-dry	1	2/13/2018 4:36:33 PM
Trichlorofluoromethane (CFC-11)	ND	0.0200		mg/Kg-dry	1	2/13/2018 4:36:33 PM
Chloroethane	ND	0.0499		mg/Kg-dry	1	2/13/2018 4:36:33 PM
1,1-Dichloroethene	ND	0.0200		mg/Kg-dry	1	2/13/2018 4:36:33 PM
Methylene chloride	ND	0.0200		mg/Kg-dry	1	2/13/2018 4:36:33 PM
trans-1,2-Dichloroethene	ND	0.0200		mg/Kg-dry	1	2/13/2018 4:36:33 PM
Methyl tert-butyl ether (MTBE)	ND	0.0499		mg/Kg-dry	1	2/13/2018 4:36:33 PM
1,1-Dichloroethane	ND	0.0200		mg/Kg-dry	1	2/13/2018 4:36:33 PM
2,2-Dichloropropane	ND	0.0998		mg/Kg-dry	1	2/13/2018 4:36:33 PM
cis-1,2-Dichloroethene	ND	0.0200		mg/Kg-dry	1	2/13/2018 4:36:33 PM
Chloroform	ND	0.0200		mg/Kg-dry	1	2/13/2018 4:36:33 PM
1,1,1-Trichloroethane (TCA)	ND	0.0249		mg/Kg-dry	1	2/13/2018 4:36:33 PM
1,1-Dichloropropene	ND	0.0200		mg/Kg-dry	1	2/13/2018 4:36:33 PM
Carbon tetrachloride	ND	0.0249		mg/Kg-dry	1	2/13/2018 4:36:33 PM
1,2-Dichloroethane (EDC)	ND	0.0200		mg/Kg-dry	1	2/13/2018 4:36:33 PM
Benzene	ND	0.0200		mg/Kg-dry	1	2/13/2018 4:36:33 PM
Trichloroethene (TCE)	ND	0.0200		mg/Kg-dry	1	2/13/2018 4:36:33 PM
1,2-Dichloropropane	ND	0.0200		mg/Kg-dry	1	2/13/2018 4:36:33 PM
Bromodichloromethane	ND	0.0200		mg/Kg-dry	1	2/13/2018 4:36:33 PM
Dibromomethane	ND	0.0200		mg/Kg-dry	1	2/13/2018 4:36:33 PM
cis-1,3-Dichloropropene	ND	0.0200		mg/Kg-dry	1	2/13/2018 4:36:33 PM
Toluene	ND	0.0200		mg/Kg-dry	1	2/13/2018 4:36:33 PM
trans-1,3-Dichloropropylene	ND	0.0200		mg/Kg-dry	1	2/13/2018 4:36:33 PM
1,1,2-Trichloroethane	ND	0.0200		mg/Kg-dry	1	2/13/2018 4:36:33 PM
1,3-Dichloropropane	ND	0.0249		mg/Kg-dry	1	2/13/2018 4:36:33 PM
Tetrachloroethene (PCE)	0.0905	0.0249		mg/Kg-dry	1	2/13/2018 4:36:33 PM
Dibromochloromethane	ND	0.0249		mg/Kg-dry	1	2/13/2018 4:36:33 PM
1,2-Dibromoethane (EDB)	ND	0.00499		mg/Kg-dry	1	2/13/2018 4:36:33 PM
Chlorobenzene	ND	0.0249		mg/Kg-dry	1	2/13/2018 4:36:33 PM
1,1,1,2-Tetrachloroethane	ND	0.0249		mg/Kg-dry	1	2/13/2018 4:36:33 PM
Ethylbenzene	ND	0.0249		mg/Kg-dry	1	2/13/2018 4:36:33 PM
m,p-Xylene	ND	0.0499		mg/Kg-dry	1	2/13/2018 4:36:33 PM
o-Xylene	ND	0.0249		mg/Kg-dry	1	2/13/2018 4:36:33 PM
Styrene	ND	0.0249		mg/Kg-dry	1	2/13/2018 4:36:33 PM
Isopropylbenzene	ND	0.0249		mg/Kg-dry	1	2/13/2018 4:36:33 PM
Bromoform	ND	0.0499		mg/Kg-dry	1	2/13/2018 4:36:33 PM

Analytical Report

Work Order: **1802112**
Date Reported: **2/15/2018**

Client: GeoEngineers
Collection Date: 2/8/2018 8:22:00 AM
Project: Bucklin UCC
Lab ID: 1802112-007
Matrix: Soil
Client Sample ID: **GEI-B3-3.5-4**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260C				Batch ID: 19784		Analyst: MW
1,1,2,2-Tetrachloroethane	ND	0.0200		mg/Kg-dry	1	2/13/2018 4:36:33 PM
n-Propylbenzene	ND	0.0249		mg/Kg-dry	1	2/13/2018 4:36:33 PM
Bromobenzene	ND	0.0200		mg/Kg-dry	1	2/13/2018 4:36:33 PM
1,3,5-Trimethylbenzene	ND	0.0249		mg/Kg-dry	1	2/13/2018 4:36:33 PM
2-Chlorotoluene	ND	0.0249		mg/Kg-dry	1	2/13/2018 4:36:33 PM
4-Chlorotoluene	ND	0.0249		mg/Kg-dry	1	2/13/2018 4:36:33 PM
tert-Butylbenzene	ND	0.0249		mg/Kg-dry	1	2/13/2018 4:36:33 PM
1,2,3-Trichloropropane	ND	0.0249		mg/Kg-dry	1	2/13/2018 4:36:33 PM
1,2,4-Trichlorobenzene	ND	0.0249		mg/Kg-dry	1	2/13/2018 4:36:33 PM
sec-Butylbenzene	ND	0.0499		mg/Kg-dry	1	2/13/2018 4:36:33 PM
4-Isopropyltoluene	ND	0.0499		mg/Kg-dry	1	2/13/2018 4:36:33 PM
1,3-Dichlorobenzene	ND	0.0200		mg/Kg-dry	1	2/13/2018 4:36:33 PM
1,4-Dichlorobenzene	ND	0.0200		mg/Kg-dry	1	2/13/2018 4:36:33 PM
n-Butylbenzene	ND	0.0249		mg/Kg-dry	1	2/13/2018 4:36:33 PM
1,2-Dichlorobenzene	ND	0.0200		mg/Kg-dry	1	2/13/2018 4:36:33 PM
1,2-Dibromo-3-chloropropane	ND	0.499		mg/Kg-dry	1	2/13/2018 4:36:33 PM
1,2,4-Trimethylbenzene	ND	0.0200		mg/Kg-dry	1	2/13/2018 4:36:33 PM
Hexachlorobutadiene	ND	0.0499		mg/Kg-dry	1	2/13/2018 4:36:33 PM
Naphthalene	ND	0.0499		mg/Kg-dry	1	2/13/2018 4:36:33 PM
1,2,3-Trichlorobenzene	ND	0.0200		mg/Kg-dry	1	2/13/2018 4:36:33 PM
Surr: Dibromofluoromethane	92.4	56.5 - 129		%Rec	1	2/13/2018 4:36:33 PM
Surr: Toluene-d8	97.1	64.5 - 151		%Rec	1	2/13/2018 4:36:33 PM
Surr: 1-Bromo-4-fluorobenzene	98.1	43.2 - 143		%Rec	1	2/13/2018 4:36:33 PM
Sample Moisture (Percent Moisture)				Batch ID: R41682		Analyst: CG
Percent Moisture	10.9	0.500		wt%	1	2/13/2018 12:00:34 PM

Client: GeoEngineers
Collection Date: 2/8/2018 8:31:00 AM
Project: Bucklin UCC
Lab ID: 1802112-008
Matrix: Soil
Client Sample ID: **GEI-B3-5.5-6**

Volatile Organic Compounds by EPA Method 8260C

Batch ID: 19784 Analyst: MW

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Dichlorodifluoromethane (CFC-12)	ND	0.0232		mg/Kg-dry	1	2/13/2018 5:07:32 PM
Chloromethane	ND	0.0581		mg/Kg-dry	1	2/13/2018 5:07:32 PM
Vinyl chloride	ND	0.0290		mg/Kg-dry	1	2/13/2018 5:07:32 PM
Bromomethane	ND	0.0581		mg/Kg-dry	1	2/13/2018 5:07:32 PM
Trichlorofluoromethane (CFC-11)	ND	0.0232		mg/Kg-dry	1	2/13/2018 5:07:32 PM
Chloroethane	ND	0.0581		mg/Kg-dry	1	2/13/2018 5:07:32 PM
1,1-Dichloroethene	ND	0.0232		mg/Kg-dry	1	2/13/2018 5:07:32 PM
Methylene chloride	ND	0.0232		mg/Kg-dry	1	2/13/2018 5:07:32 PM
trans-1,2-Dichloroethene	ND	0.0232		mg/Kg-dry	1	2/13/2018 5:07:32 PM
Methyl tert-butyl ether (MTBE)	ND	0.0581		mg/Kg-dry	1	2/13/2018 5:07:32 PM
1,1-Dichloroethane	ND	0.0232		mg/Kg-dry	1	2/13/2018 5:07:32 PM
2,2-Dichloropropane	ND	0.116		mg/Kg-dry	1	2/13/2018 5:07:32 PM
cis-1,2-Dichloroethene	ND	0.0232		mg/Kg-dry	1	2/13/2018 5:07:32 PM
Chloroform	ND	0.0232		mg/Kg-dry	1	2/13/2018 5:07:32 PM
1,1,1-Trichloroethane (TCA)	ND	0.0290		mg/Kg-dry	1	2/13/2018 5:07:32 PM
1,1-Dichloropropene	ND	0.0232		mg/Kg-dry	1	2/13/2018 5:07:32 PM
Carbon tetrachloride	ND	0.0290		mg/Kg-dry	1	2/13/2018 5:07:32 PM
1,2-Dichloroethane (EDC)	ND	0.0232		mg/Kg-dry	1	2/13/2018 5:07:32 PM
Benzene	ND	0.0232		mg/Kg-dry	1	2/13/2018 5:07:32 PM
Trichloroethene (TCE)	ND	0.0232		mg/Kg-dry	1	2/13/2018 5:07:32 PM
1,2-Dichloropropane	ND	0.0232		mg/Kg-dry	1	2/13/2018 5:07:32 PM
Bromodichloromethane	ND	0.0232		mg/Kg-dry	1	2/13/2018 5:07:32 PM
Dibromomethane	ND	0.0232		mg/Kg-dry	1	2/13/2018 5:07:32 PM
cis-1,3-Dichloropropene	ND	0.0232		mg/Kg-dry	1	2/13/2018 5:07:32 PM
Toluene	ND	0.0232		mg/Kg-dry	1	2/13/2018 5:07:32 PM
trans-1,3-Dichloropropylene	ND	0.0232		mg/Kg-dry	1	2/13/2018 5:07:32 PM
1,1,2-Trichloroethane	ND	0.0232		mg/Kg-dry	1	2/13/2018 5:07:32 PM
1,3-Dichloropropane	ND	0.0290		mg/Kg-dry	1	2/13/2018 5:07:32 PM
Tetrachloroethene (PCE)	0.0653	0.0290		mg/Kg-dry	1	2/13/2018 5:07:32 PM
Dibromochloromethane	ND	0.0290		mg/Kg-dry	1	2/13/2018 5:07:32 PM
1,2-Dibromoethane (EDB)	ND	0.00581		mg/Kg-dry	1	2/13/2018 5:07:32 PM
Chlorobenzene	ND	0.0290		mg/Kg-dry	1	2/13/2018 5:07:32 PM
1,1,1,2-Tetrachloroethane	ND	0.0290		mg/Kg-dry	1	2/13/2018 5:07:32 PM
Ethylbenzene	ND	0.0290		mg/Kg-dry	1	2/13/2018 5:07:32 PM
m,p-Xylene	ND	0.0581		mg/Kg-dry	1	2/13/2018 5:07:32 PM
o-Xylene	ND	0.0290		mg/Kg-dry	1	2/13/2018 5:07:32 PM
Styrene	ND	0.0290		mg/Kg-dry	1	2/13/2018 5:07:32 PM
Isopropylbenzene	ND	0.0290		mg/Kg-dry	1	2/13/2018 5:07:32 PM
Bromoform	ND	0.0581		mg/Kg-dry	1	2/13/2018 5:07:32 PM

Analytical Report

Work Order: **1802112**
Date Reported: **2/15/2018**

Client: GeoEngineers
Collection Date: 2/8/2018 8:31:00 AM
Project: Bucklin UCC
Lab ID: 1802112-008
Matrix: Soil
Client Sample ID: **GEI-B3-5.5-6**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260C				Batch ID: 19784		Analyst: MW
1,1,2,2-Tetrachloroethane	ND	0.0232		mg/Kg-dry	1	2/13/2018 5:07:32 PM
n-Propylbenzene	ND	0.0290		mg/Kg-dry	1	2/13/2018 5:07:32 PM
Bromobenzene	ND	0.0232		mg/Kg-dry	1	2/13/2018 5:07:32 PM
1,3,5-Trimethylbenzene	ND	0.0290		mg/Kg-dry	1	2/13/2018 5:07:32 PM
2-Chlorotoluene	ND	0.0290		mg/Kg-dry	1	2/13/2018 5:07:32 PM
4-Chlorotoluene	ND	0.0290		mg/Kg-dry	1	2/13/2018 5:07:32 PM
tert-Butylbenzene	ND	0.0290		mg/Kg-dry	1	2/13/2018 5:07:32 PM
1,2,3-Trichloropropane	ND	0.0290		mg/Kg-dry	1	2/13/2018 5:07:32 PM
1,2,4-Trichlorobenzene	ND	0.0290		mg/Kg-dry	1	2/13/2018 5:07:32 PM
sec-Butylbenzene	ND	0.0581		mg/Kg-dry	1	2/13/2018 5:07:32 PM
4-Isopropyltoluene	ND	0.0581		mg/Kg-dry	1	2/13/2018 5:07:32 PM
1,3-Dichlorobenzene	ND	0.0232		mg/Kg-dry	1	2/13/2018 5:07:32 PM
1,4-Dichlorobenzene	ND	0.0232		mg/Kg-dry	1	2/13/2018 5:07:32 PM
n-Butylbenzene	ND	0.0290		mg/Kg-dry	1	2/13/2018 5:07:32 PM
1,2-Dichlorobenzene	ND	0.0232		mg/Kg-dry	1	2/13/2018 5:07:32 PM
1,2-Dibromo-3-chloropropane	ND	0.581		mg/Kg-dry	1	2/13/2018 5:07:32 PM
1,2,4-Trimethylbenzene	ND	0.0232		mg/Kg-dry	1	2/13/2018 5:07:32 PM
Hexachlorobutadiene	ND	0.0581		mg/Kg-dry	1	2/13/2018 5:07:32 PM
Naphthalene	ND	0.0581		mg/Kg-dry	1	2/13/2018 5:07:32 PM
1,2,3-Trichlorobenzene	ND	0.0232		mg/Kg-dry	1	2/13/2018 5:07:32 PM
Surr: Dibromofluoromethane	92.7	56.5 - 129		%Rec	1	2/13/2018 5:07:32 PM
Surr: Toluene-d8	98.7	64.5 - 151		%Rec	1	2/13/2018 5:07:32 PM
Surr: 1-Bromo-4-fluorobenzene	98.0	43.2 - 143		%Rec	1	2/13/2018 5:07:32 PM
Sample Moisture (Percent Moisture)				Batch ID: R41682		Analyst: CG
Percent Moisture	10.9	0.500		wt%	1	2/13/2018 12:00:34 PM

Client: GeoEngineers
Collection Date: 2/8/2018 12:10:00 PM
Project: Bucklin UCC
Lab ID: 1802112-009
Matrix: Soil
Client Sample ID: **GEI-B4-1.5-2**

Volatile Organic Compounds by EPA Method 8260C

Batch ID: 19784 Analyst: MW

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Dichlorodifluoromethane (CFC-12)	ND	0.0215		mg/Kg-dry	1	2/13/2018 6:09:24 PM
Chloromethane	ND	0.0537		mg/Kg-dry	1	2/13/2018 6:09:24 PM
Vinyl chloride	ND	0.0268		mg/Kg-dry	1	2/13/2018 6:09:24 PM
Bromomethane	ND	0.0537		mg/Kg-dry	1	2/13/2018 6:09:24 PM
Trichlorofluoromethane (CFC-11)	ND	0.0215		mg/Kg-dry	1	2/13/2018 6:09:24 PM
Chloroethane	ND	0.0537		mg/Kg-dry	1	2/13/2018 6:09:24 PM
1,1-Dichloroethene	ND	0.0215		mg/Kg-dry	1	2/13/2018 6:09:24 PM
Methylene chloride	ND	0.0215		mg/Kg-dry	1	2/13/2018 6:09:24 PM
trans-1,2-Dichloroethene	ND	0.0215		mg/Kg-dry	1	2/13/2018 6:09:24 PM
Methyl tert-butyl ether (MTBE)	ND	0.0537		mg/Kg-dry	1	2/13/2018 6:09:24 PM
1,1-Dichloroethane	ND	0.0215		mg/Kg-dry	1	2/13/2018 6:09:24 PM
2,2-Dichloropropane	ND	0.107		mg/Kg-dry	1	2/13/2018 6:09:24 PM
cis-1,2-Dichloroethene	ND	0.0215		mg/Kg-dry	1	2/13/2018 6:09:24 PM
Chloroform	ND	0.0215		mg/Kg-dry	1	2/13/2018 6:09:24 PM
1,1,1-Trichloroethane (TCA)	ND	0.0268		mg/Kg-dry	1	2/13/2018 6:09:24 PM
1,1-Dichloropropene	ND	0.0215		mg/Kg-dry	1	2/13/2018 6:09:24 PM
Carbon tetrachloride	ND	0.0268		mg/Kg-dry	1	2/13/2018 6:09:24 PM
1,2-Dichloroethane (EDC)	ND	0.0215		mg/Kg-dry	1	2/13/2018 6:09:24 PM
Benzene	ND	0.0215		mg/Kg-dry	1	2/13/2018 6:09:24 PM
Trichloroethene (TCE)	ND	0.0215		mg/Kg-dry	1	2/13/2018 6:09:24 PM
1,2-Dichloropropane	ND	0.0215		mg/Kg-dry	1	2/13/2018 6:09:24 PM
Bromodichloromethane	ND	0.0215		mg/Kg-dry	1	2/13/2018 6:09:24 PM
Dibromomethane	ND	0.0215		mg/Kg-dry	1	2/13/2018 6:09:24 PM
cis-1,3-Dichloropropene	ND	0.0215		mg/Kg-dry	1	2/13/2018 6:09:24 PM
Toluene	ND	0.0215		mg/Kg-dry	1	2/13/2018 6:09:24 PM
trans-1,3-Dichloropropylene	ND	0.0215		mg/Kg-dry	1	2/13/2018 6:09:24 PM
1,1,2-Trichloroethane	ND	0.0215		mg/Kg-dry	1	2/13/2018 6:09:24 PM
1,3-Dichloropropane	ND	0.0268		mg/Kg-dry	1	2/13/2018 6:09:24 PM
Tetrachloroethene (PCE)	ND	0.0268		mg/Kg-dry	1	2/13/2018 6:09:24 PM
Dibromochloromethane	ND	0.0268		mg/Kg-dry	1	2/13/2018 6:09:24 PM
1,2-Dibromoethane (EDB)	ND	0.00537		mg/Kg-dry	1	2/13/2018 6:09:24 PM
Chlorobenzene	ND	0.0268		mg/Kg-dry	1	2/13/2018 6:09:24 PM
1,1,1,2-Tetrachloroethane	ND	0.0268		mg/Kg-dry	1	2/13/2018 6:09:24 PM
Ethylbenzene	ND	0.0268		mg/Kg-dry	1	2/13/2018 6:09:24 PM
m,p-Xylene	ND	0.0537		mg/Kg-dry	1	2/13/2018 6:09:24 PM
o-Xylene	ND	0.0268		mg/Kg-dry	1	2/13/2018 6:09:24 PM
Styrene	ND	0.0268		mg/Kg-dry	1	2/13/2018 6:09:24 PM
Isopropylbenzene	ND	0.0268		mg/Kg-dry	1	2/13/2018 6:09:24 PM
Bromoform	ND	0.0537		mg/Kg-dry	1	2/13/2018 6:09:24 PM

Analytical Report

Work Order: **1802112**
Date Reported: **2/15/2018**

Client: GeoEngineers
Collection Date: 2/8/2018 12:10:00 PM
Project: Bucklin UCC
Lab ID: 1802112-009
Matrix: Soil
Client Sample ID: **GEI-B4-1.5-2**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260C				Batch ID: 19784		Analyst: MW
1,1,2,2-Tetrachloroethane	ND	0.0215		mg/Kg-dry	1	2/13/2018 6:09:24 PM
n-Propylbenzene	ND	0.0268		mg/Kg-dry	1	2/13/2018 6:09:24 PM
Bromobenzene	ND	0.0215		mg/Kg-dry	1	2/13/2018 6:09:24 PM
1,3,5-Trimethylbenzene	ND	0.0268		mg/Kg-dry	1	2/13/2018 6:09:24 PM
2-Chlorotoluene	ND	0.0268		mg/Kg-dry	1	2/13/2018 6:09:24 PM
4-Chlorotoluene	ND	0.0268		mg/Kg-dry	1	2/13/2018 6:09:24 PM
tert-Butylbenzene	ND	0.0268		mg/Kg-dry	1	2/13/2018 6:09:24 PM
1,2,3-Trichloropropane	ND	0.0268		mg/Kg-dry	1	2/13/2018 6:09:24 PM
1,2,4-Trichlorobenzene	ND	0.0268		mg/Kg-dry	1	2/13/2018 6:09:24 PM
sec-Butylbenzene	ND	0.0537		mg/Kg-dry	1	2/13/2018 6:09:24 PM
4-Isopropyltoluene	ND	0.0537		mg/Kg-dry	1	2/13/2018 6:09:24 PM
1,3-Dichlorobenzene	ND	0.0215		mg/Kg-dry	1	2/13/2018 6:09:24 PM
1,4-Dichlorobenzene	ND	0.0215		mg/Kg-dry	1	2/13/2018 6:09:24 PM
n-Butylbenzene	ND	0.0268		mg/Kg-dry	1	2/13/2018 6:09:24 PM
1,2-Dichlorobenzene	ND	0.0215		mg/Kg-dry	1	2/13/2018 6:09:24 PM
1,2-Dibromo-3-chloropropane	ND	0.537		mg/Kg-dry	1	2/13/2018 6:09:24 PM
1,2,4-Trimethylbenzene	ND	0.0215		mg/Kg-dry	1	2/13/2018 6:09:24 PM
Hexachlorobutadiene	ND	0.0537		mg/Kg-dry	1	2/13/2018 6:09:24 PM
Naphthalene	ND	0.0537		mg/Kg-dry	1	2/13/2018 6:09:24 PM
1,2,3-Trichlorobenzene	ND	0.0215		mg/Kg-dry	1	2/13/2018 6:09:24 PM
Surr: Dibromofluoromethane	91.6	56.5 - 129		%Rec	1	2/13/2018 6:09:24 PM
Surr: Toluene-d8	96.5	64.5 - 151		%Rec	1	2/13/2018 6:09:24 PM
Surr: 1-Bromo-4-fluorobenzene	98.1	43.2 - 143		%Rec	1	2/13/2018 6:09:24 PM
Sample Moisture (Percent Moisture)				Batch ID: R41682		Analyst: CG
Percent Moisture	5.55	0.500		wt%	1	2/13/2018 12:00:34 PM

Client: GeoEngineers
Collection Date: 2/8/2018 12:56:00 PM
Project: Bucklin UCC
Lab ID: 1802112-011
Matrix: Soil
Client Sample ID: **GEI-B5-3.5-4**

Volatile Organic Compounds by EPA Method 8260C

Batch ID: 19784 Analyst: MW

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Dichlorodifluoromethane (CFC-12)	ND	0.0176		mg/Kg-dry	1	2/13/2018 6:40:21 PM
Chloromethane	ND	0.0441		mg/Kg-dry	1	2/13/2018 6:40:21 PM
Vinyl chloride	ND	0.0220		mg/Kg-dry	1	2/13/2018 6:40:21 PM
Bromomethane	ND	0.0441		mg/Kg-dry	1	2/13/2018 6:40:21 PM
Trichlorofluoromethane (CFC-11)	ND	0.0176		mg/Kg-dry	1	2/13/2018 6:40:21 PM
Chloroethane	ND	0.0441		mg/Kg-dry	1	2/13/2018 6:40:21 PM
1,1-Dichloroethene	ND	0.0176		mg/Kg-dry	1	2/13/2018 6:40:21 PM
Methylene chloride	ND	0.0176		mg/Kg-dry	1	2/13/2018 6:40:21 PM
trans-1,2-Dichloroethene	ND	0.0176		mg/Kg-dry	1	2/13/2018 6:40:21 PM
Methyl tert-butyl ether (MTBE)	ND	0.0441		mg/Kg-dry	1	2/13/2018 6:40:21 PM
1,1-Dichloroethane	ND	0.0176		mg/Kg-dry	1	2/13/2018 6:40:21 PM
2,2-Dichloropropane	ND	0.0882		mg/Kg-dry	1	2/13/2018 6:40:21 PM
cis-1,2-Dichloroethene	ND	0.0176		mg/Kg-dry	1	2/13/2018 6:40:21 PM
Chloroform	ND	0.0176		mg/Kg-dry	1	2/13/2018 6:40:21 PM
1,1,1-Trichloroethane (TCA)	ND	0.0220		mg/Kg-dry	1	2/13/2018 6:40:21 PM
1,1-Dichloropropene	ND	0.0176		mg/Kg-dry	1	2/13/2018 6:40:21 PM
Carbon tetrachloride	ND	0.0220		mg/Kg-dry	1	2/13/2018 6:40:21 PM
1,2-Dichloroethane (EDC)	ND	0.0176		mg/Kg-dry	1	2/13/2018 6:40:21 PM
Benzene	ND	0.0176		mg/Kg-dry	1	2/13/2018 6:40:21 PM
Trichloroethene (TCE)	ND	0.0176		mg/Kg-dry	1	2/13/2018 6:40:21 PM
1,2-Dichloropropane	ND	0.0176		mg/Kg-dry	1	2/13/2018 6:40:21 PM
Bromodichloromethane	ND	0.0176		mg/Kg-dry	1	2/13/2018 6:40:21 PM
Dibromomethane	ND	0.0176		mg/Kg-dry	1	2/13/2018 6:40:21 PM
cis-1,3-Dichloropropene	ND	0.0176		mg/Kg-dry	1	2/13/2018 6:40:21 PM
Toluene	ND	0.0176		mg/Kg-dry	1	2/13/2018 6:40:21 PM
trans-1,3-Dichloropropylene	ND	0.0176		mg/Kg-dry	1	2/13/2018 6:40:21 PM
1,1,2-Trichloroethane	ND	0.0176		mg/Kg-dry	1	2/13/2018 6:40:21 PM
1,3-Dichloropropane	ND	0.0220		mg/Kg-dry	1	2/13/2018 6:40:21 PM
Tetrachloroethene (PCE)	ND	0.0220		mg/Kg-dry	1	2/13/2018 6:40:21 PM
Dibromochloromethane	ND	0.0220		mg/Kg-dry	1	2/13/2018 6:40:21 PM
1,2-Dibromoethane (EDB)	ND	0.00441		mg/Kg-dry	1	2/13/2018 6:40:21 PM
Chlorobenzene	ND	0.0220		mg/Kg-dry	1	2/13/2018 6:40:21 PM
1,1,1,2-Tetrachloroethane	ND	0.0220		mg/Kg-dry	1	2/13/2018 6:40:21 PM
Ethylbenzene	ND	0.0220		mg/Kg-dry	1	2/13/2018 6:40:21 PM
m,p-Xylene	ND	0.0441		mg/Kg-dry	1	2/13/2018 6:40:21 PM
o-Xylene	ND	0.0220		mg/Kg-dry	1	2/13/2018 6:40:21 PM
Styrene	ND	0.0220		mg/Kg-dry	1	2/13/2018 6:40:21 PM
Isopropylbenzene	ND	0.0220		mg/Kg-dry	1	2/13/2018 6:40:21 PM
Bromoform	ND	0.0441		mg/Kg-dry	1	2/13/2018 6:40:21 PM

Analytical Report

Work Order: **1802112**
Date Reported: **2/15/2018**

Client: GeoEngineers
Collection Date: 2/8/2018 12:56:00 PM
Project: Bucklin UCC
Lab ID: 1802112-011
Matrix: Soil
Client Sample ID: **GEI-B5-3.5-4**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260C				Batch ID: 19784		Analyst: MW
1,1,2,2-Tetrachloroethane	ND	0.0176		mg/Kg-dry	1	2/13/2018 6:40:21 PM
n-Propylbenzene	ND	0.0220		mg/Kg-dry	1	2/13/2018 6:40:21 PM
Bromobenzene	ND	0.0176		mg/Kg-dry	1	2/13/2018 6:40:21 PM
1,3,5-Trimethylbenzene	ND	0.0220		mg/Kg-dry	1	2/13/2018 6:40:21 PM
2-Chlorotoluene	ND	0.0220		mg/Kg-dry	1	2/13/2018 6:40:21 PM
4-Chlorotoluene	ND	0.0220		mg/Kg-dry	1	2/13/2018 6:40:21 PM
tert-Butylbenzene	ND	0.0220		mg/Kg-dry	1	2/13/2018 6:40:21 PM
1,2,3-Trichloropropane	ND	0.0220		mg/Kg-dry	1	2/13/2018 6:40:21 PM
1,2,4-Trichlorobenzene	ND	0.0220		mg/Kg-dry	1	2/13/2018 6:40:21 PM
sec-Butylbenzene	ND	0.0441		mg/Kg-dry	1	2/13/2018 6:40:21 PM
4-Isopropyltoluene	ND	0.0441		mg/Kg-dry	1	2/13/2018 6:40:21 PM
1,3-Dichlorobenzene	ND	0.0176		mg/Kg-dry	1	2/13/2018 6:40:21 PM
1,4-Dichlorobenzene	ND	0.0176		mg/Kg-dry	1	2/13/2018 6:40:21 PM
n-Butylbenzene	ND	0.0220		mg/Kg-dry	1	2/13/2018 6:40:21 PM
1,2-Dichlorobenzene	ND	0.0176		mg/Kg-dry	1	2/13/2018 6:40:21 PM
1,2-Dibromo-3-chloropropane	ND	0.441		mg/Kg-dry	1	2/13/2018 6:40:21 PM
1,2,4-Trimethylbenzene	ND	0.0176		mg/Kg-dry	1	2/13/2018 6:40:21 PM
Hexachlorobutadiene	ND	0.0441		mg/Kg-dry	1	2/13/2018 6:40:21 PM
Naphthalene	ND	0.0441		mg/Kg-dry	1	2/13/2018 6:40:21 PM
1,2,3-Trichlorobenzene	ND	0.0176		mg/Kg-dry	1	2/13/2018 6:40:21 PM
Surr: Dibromofluoromethane	91.7	56.5 - 129		%Rec	1	2/13/2018 6:40:21 PM
Surr: Toluene-d8	99.5	64.5 - 151		%Rec	1	2/13/2018 6:40:21 PM
Surr: 1-Bromo-4-fluorobenzene	97.8	43.2 - 143		%Rec	1	2/13/2018 6:40:21 PM
Sample Moisture (Percent Moisture)				Batch ID: R41682		Analyst: CG
Percent Moisture	10.2	0.500		wt%	1	2/13/2018 12:00:34 PM

Client: GeoEngineers
Collection Date: 2/8/2018 1:13:00 PM
Project: Bucklin UCC
Lab ID: 1802112-012
Matrix: Soil
Client Sample ID: **GEI-B5-5.5-6**

Volatile Organic Compounds by EPA Method 8260C

Batch ID: 19784 Analyst: MW

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Dichlorodifluoromethane (CFC-12)	ND	0.0214		mg/Kg-dry	1	2/13/2018 7:11:18 PM
Chloromethane	ND	0.0535		mg/Kg-dry	1	2/13/2018 7:11:18 PM
Vinyl chloride	ND	0.0267		mg/Kg-dry	1	2/13/2018 7:11:18 PM
Bromomethane	ND	0.0535		mg/Kg-dry	1	2/13/2018 7:11:18 PM
Trichlorofluoromethane (CFC-11)	ND	0.0214		mg/Kg-dry	1	2/13/2018 7:11:18 PM
Chloroethane	ND	0.0535		mg/Kg-dry	1	2/13/2018 7:11:18 PM
1,1-Dichloroethene	ND	0.0214		mg/Kg-dry	1	2/13/2018 7:11:18 PM
Methylene chloride	ND	0.0214		mg/Kg-dry	1	2/13/2018 7:11:18 PM
trans-1,2-Dichloroethene	ND	0.0214		mg/Kg-dry	1	2/13/2018 7:11:18 PM
Methyl tert-butyl ether (MTBE)	ND	0.0535		mg/Kg-dry	1	2/13/2018 7:11:18 PM
1,1-Dichloroethane	ND	0.0214		mg/Kg-dry	1	2/13/2018 7:11:18 PM
2,2-Dichloropropane	ND	0.107		mg/Kg-dry	1	2/13/2018 7:11:18 PM
cis-1,2-Dichloroethene	ND	0.0214		mg/Kg-dry	1	2/13/2018 7:11:18 PM
Chloroform	ND	0.0214		mg/Kg-dry	1	2/13/2018 7:11:18 PM
1,1,1-Trichloroethane (TCA)	ND	0.0267		mg/Kg-dry	1	2/13/2018 7:11:18 PM
1,1-Dichloropropene	ND	0.0214		mg/Kg-dry	1	2/13/2018 7:11:18 PM
Carbon tetrachloride	ND	0.0267		mg/Kg-dry	1	2/13/2018 7:11:18 PM
1,2-Dichloroethane (EDC)	ND	0.0214		mg/Kg-dry	1	2/13/2018 7:11:18 PM
Benzene	ND	0.0214		mg/Kg-dry	1	2/13/2018 7:11:18 PM
Trichloroethene (TCE)	ND	0.0214		mg/Kg-dry	1	2/13/2018 7:11:18 PM
1,2-Dichloropropane	ND	0.0214		mg/Kg-dry	1	2/13/2018 7:11:18 PM
Bromodichloromethane	ND	0.0214		mg/Kg-dry	1	2/13/2018 7:11:18 PM
Dibromomethane	ND	0.0214		mg/Kg-dry	1	2/13/2018 7:11:18 PM
cis-1,3-Dichloropropene	ND	0.0214		mg/Kg-dry	1	2/13/2018 7:11:18 PM
Toluene	ND	0.0214		mg/Kg-dry	1	2/13/2018 7:11:18 PM
trans-1,3-Dichloropropylene	ND	0.0214		mg/Kg-dry	1	2/13/2018 7:11:18 PM
1,1,2-Trichloroethane	ND	0.0214		mg/Kg-dry	1	2/13/2018 7:11:18 PM
1,3-Dichloropropane	ND	0.0267		mg/Kg-dry	1	2/13/2018 7:11:18 PM
Tetrachloroethene (PCE)	0.0373	0.0267		mg/Kg-dry	1	2/13/2018 7:11:18 PM
Dibromochloromethane	ND	0.0267		mg/Kg-dry	1	2/13/2018 7:11:18 PM
1,2-Dibromoethane (EDB)	ND	0.00535		mg/Kg-dry	1	2/13/2018 7:11:18 PM
Chlorobenzene	ND	0.0267		mg/Kg-dry	1	2/13/2018 7:11:18 PM
1,1,1,2-Tetrachloroethane	ND	0.0267		mg/Kg-dry	1	2/13/2018 7:11:18 PM
Ethylbenzene	ND	0.0267		mg/Kg-dry	1	2/13/2018 7:11:18 PM
m,p-Xylene	ND	0.0535		mg/Kg-dry	1	2/13/2018 7:11:18 PM
o-Xylene	ND	0.0267		mg/Kg-dry	1	2/13/2018 7:11:18 PM
Styrene	ND	0.0267		mg/Kg-dry	1	2/13/2018 7:11:18 PM
Isopropylbenzene	ND	0.0267		mg/Kg-dry	1	2/13/2018 7:11:18 PM
Bromoform	ND	0.0535		mg/Kg-dry	1	2/13/2018 7:11:18 PM

Client: GeoEngineers
Collection Date: 2/8/2018 1:13:00 PM
Project: Bucklin UCC
Lab ID: 1802112-012
Matrix: Soil
Client Sample ID: **GEI-B5-5.5-6**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260C				Batch ID: 19784		Analyst: MW
1,1,2,2-Tetrachloroethane	ND	0.0214		mg/Kg-dry	1	2/13/2018 7:11:18 PM
n-Propylbenzene	ND	0.0267		mg/Kg-dry	1	2/13/2018 7:11:18 PM
Bromobenzene	ND	0.0214		mg/Kg-dry	1	2/13/2018 7:11:18 PM
1,3,5-Trimethylbenzene	ND	0.0267		mg/Kg-dry	1	2/13/2018 7:11:18 PM
2-Chlorotoluene	ND	0.0267		mg/Kg-dry	1	2/13/2018 7:11:18 PM
4-Chlorotoluene	ND	0.0267		mg/Kg-dry	1	2/13/2018 7:11:18 PM
tert-Butylbenzene	ND	0.0267		mg/Kg-dry	1	2/13/2018 7:11:18 PM
1,2,3-Trichloropropane	ND	0.0267		mg/Kg-dry	1	2/13/2018 7:11:18 PM
1,2,4-Trichlorobenzene	ND	0.0267		mg/Kg-dry	1	2/13/2018 7:11:18 PM
sec-Butylbenzene	ND	0.0535		mg/Kg-dry	1	2/13/2018 7:11:18 PM
4-Isopropyltoluene	ND	0.0535		mg/Kg-dry	1	2/13/2018 7:11:18 PM
1,3-Dichlorobenzene	ND	0.0214		mg/Kg-dry	1	2/13/2018 7:11:18 PM
1,4-Dichlorobenzene	ND	0.0214		mg/Kg-dry	1	2/13/2018 7:11:18 PM
n-Butylbenzene	ND	0.0267		mg/Kg-dry	1	2/13/2018 7:11:18 PM
1,2-Dichlorobenzene	ND	0.0214		mg/Kg-dry	1	2/13/2018 7:11:18 PM
1,2-Dibromo-3-chloropropane	ND	0.535		mg/Kg-dry	1	2/13/2018 7:11:18 PM
1,2,4-Trimethylbenzene	ND	0.0214		mg/Kg-dry	1	2/13/2018 7:11:18 PM
Hexachlorobutadiene	ND	0.0535		mg/Kg-dry	1	2/13/2018 7:11:18 PM
Naphthalene	ND	0.0535		mg/Kg-dry	1	2/13/2018 7:11:18 PM
1,2,3-Trichlorobenzene	ND	0.0214		mg/Kg-dry	1	2/13/2018 7:11:18 PM
Surr: Dibromofluoromethane	91.9	56.5 - 129		%Rec	1	2/13/2018 7:11:18 PM
Surr: Toluene-d8	99.5	64.5 - 151		%Rec	1	2/13/2018 7:11:18 PM
Surr: 1-Bromo-4-fluorobenzene	98.4	43.2 - 143		%Rec	1	2/13/2018 7:11:18 PM
Sample Moisture (Percent Moisture)				Batch ID: R41682		Analyst: CG
Percent Moisture	10.9	0.500		wt%	1	2/13/2018 12:00:34 PM

Client: GeoEngineers
Project: Bucklin UCC
Lab ID: 1802112-013
Client Sample ID: **GEI-B6-1.5-2**

Collection Date: 2/8/2018 2:00:00 PM
Matrix: Soil

Volatile Organic Compounds by EPA Method 8260C Batch ID: 19784 Analyst: MW

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Dichlorodifluoromethane (CFC-12)	ND	0.0173		mg/Kg-dry	1	2/13/2018 8:13:12 PM
Chloromethane	ND	0.0432		mg/Kg-dry	1	2/13/2018 8:13:12 PM
Vinyl chloride	ND	0.0216		mg/Kg-dry	1	2/13/2018 8:13:12 PM
Bromomethane	ND	0.0432		mg/Kg-dry	1	2/13/2018 8:13:12 PM
Trichlorofluoromethane (CFC-11)	ND	0.0173		mg/Kg-dry	1	2/13/2018 8:13:12 PM
Chloroethane	ND	0.0432		mg/Kg-dry	1	2/13/2018 8:13:12 PM
1,1-Dichloroethene	ND	0.0173		mg/Kg-dry	1	2/13/2018 8:13:12 PM
Methylene chloride	ND	0.0173		mg/Kg-dry	1	2/13/2018 8:13:12 PM
trans-1,2-Dichloroethene	ND	0.0173		mg/Kg-dry	1	2/13/2018 8:13:12 PM
Methyl tert-butyl ether (MTBE)	ND	0.0432		mg/Kg-dry	1	2/13/2018 8:13:12 PM
1,1-Dichloroethane	ND	0.0173		mg/Kg-dry	1	2/13/2018 8:13:12 PM
2,2-Dichloropropane	ND	0.0865		mg/Kg-dry	1	2/13/2018 8:13:12 PM
cis-1,2-Dichloroethene	ND	0.0173		mg/Kg-dry	1	2/13/2018 8:13:12 PM
Chloroform	ND	0.0173		mg/Kg-dry	1	2/13/2018 8:13:12 PM
1,1,1-Trichloroethane (TCA)	ND	0.0216		mg/Kg-dry	1	2/13/2018 8:13:12 PM
1,1-Dichloropropene	ND	0.0173		mg/Kg-dry	1	2/13/2018 8:13:12 PM
Carbon tetrachloride	ND	0.0216		mg/Kg-dry	1	2/13/2018 8:13:12 PM
1,2-Dichloroethane (EDC)	ND	0.0173		mg/Kg-dry	1	2/13/2018 8:13:12 PM
Benzene	ND	0.0173		mg/Kg-dry	1	2/13/2018 8:13:12 PM
Trichloroethene (TCE)	ND	0.0173		mg/Kg-dry	1	2/13/2018 8:13:12 PM
1,2-Dichloropropane	ND	0.0173		mg/Kg-dry	1	2/13/2018 8:13:12 PM
Bromodichloromethane	ND	0.0173		mg/Kg-dry	1	2/13/2018 8:13:12 PM
Dibromomethane	ND	0.0173		mg/Kg-dry	1	2/13/2018 8:13:12 PM
cis-1,3-Dichloropropene	ND	0.0173		mg/Kg-dry	1	2/13/2018 8:13:12 PM
Toluene	ND	0.0173		mg/Kg-dry	1	2/13/2018 8:13:12 PM
trans-1,3-Dichloropropylene	ND	0.0173		mg/Kg-dry	1	2/13/2018 8:13:12 PM
1,1,2-Trichloroethane	ND	0.0173		mg/Kg-dry	1	2/13/2018 8:13:12 PM
1,3-Dichloropropane	ND	0.0216		mg/Kg-dry	1	2/13/2018 8:13:12 PM
Tetrachloroethene (PCE)	ND	0.0216		mg/Kg-dry	1	2/13/2018 8:13:12 PM
Dibromochloromethane	ND	0.0216		mg/Kg-dry	1	2/13/2018 8:13:12 PM
1,2-Dibromoethane (EDB)	ND	0.00432		mg/Kg-dry	1	2/13/2018 8:13:12 PM
Chlorobenzene	ND	0.0216		mg/Kg-dry	1	2/13/2018 8:13:12 PM
1,1,1,2-Tetrachloroethane	ND	0.0216		mg/Kg-dry	1	2/13/2018 8:13:12 PM
Ethylbenzene	ND	0.0216		mg/Kg-dry	1	2/13/2018 8:13:12 PM
m,p-Xylene	ND	0.0432		mg/Kg-dry	1	2/13/2018 8:13:12 PM
o-Xylene	ND	0.0216		mg/Kg-dry	1	2/13/2018 8:13:12 PM
Styrene	ND	0.0216		mg/Kg-dry	1	2/13/2018 8:13:12 PM
Isopropylbenzene	ND	0.0216		mg/Kg-dry	1	2/13/2018 8:13:12 PM
Bromoform	ND	0.0432		mg/Kg-dry	1	2/13/2018 8:13:12 PM

Analytical Report

Work Order: **1802112**
Date Reported: **2/15/2018**

Client: GeoEngineers
Collection Date: 2/8/2018 2:00:00 PM
Project: Bucklin UCC
Lab ID: 1802112-013
Matrix: Soil
Client Sample ID: **GEI-B6-1.5-2**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260C				Batch ID: 19784		Analyst: MW
1,1,2,2-Tetrachloroethane	ND	0.0173		mg/Kg-dry	1	2/13/2018 8:13:12 PM
n-Propylbenzene	ND	0.0216		mg/Kg-dry	1	2/13/2018 8:13:12 PM
Bromobenzene	ND	0.0173		mg/Kg-dry	1	2/13/2018 8:13:12 PM
1,3,5-Trimethylbenzene	ND	0.0216		mg/Kg-dry	1	2/13/2018 8:13:12 PM
2-Chlorotoluene	ND	0.0216		mg/Kg-dry	1	2/13/2018 8:13:12 PM
4-Chlorotoluene	ND	0.0216		mg/Kg-dry	1	2/13/2018 8:13:12 PM
tert-Butylbenzene	ND	0.0216		mg/Kg-dry	1	2/13/2018 8:13:12 PM
1,2,3-Trichloropropane	ND	0.0216		mg/Kg-dry	1	2/13/2018 8:13:12 PM
1,2,4-Trichlorobenzene	ND	0.0216		mg/Kg-dry	1	2/13/2018 8:13:12 PM
sec-Butylbenzene	ND	0.0432		mg/Kg-dry	1	2/13/2018 8:13:12 PM
4-Isopropyltoluene	ND	0.0432		mg/Kg-dry	1	2/13/2018 8:13:12 PM
1,3-Dichlorobenzene	ND	0.0173		mg/Kg-dry	1	2/13/2018 8:13:12 PM
1,4-Dichlorobenzene	ND	0.0173		mg/Kg-dry	1	2/13/2018 8:13:12 PM
n-Butylbenzene	ND	0.0216		mg/Kg-dry	1	2/13/2018 8:13:12 PM
1,2-Dichlorobenzene	ND	0.0173		mg/Kg-dry	1	2/13/2018 8:13:12 PM
1,2-Dibromo-3-chloropropane	ND	0.432		mg/Kg-dry	1	2/13/2018 8:13:12 PM
1,2,4-Trimethylbenzene	ND	0.0173		mg/Kg-dry	1	2/13/2018 8:13:12 PM
Hexachlorobutadiene	ND	0.0432		mg/Kg-dry	1	2/13/2018 8:13:12 PM
Naphthalene	ND	0.0432		mg/Kg-dry	1	2/13/2018 8:13:12 PM
1,2,3-Trichlorobenzene	ND	0.0173		mg/Kg-dry	1	2/13/2018 8:13:12 PM
Surr: Dibromofluoromethane	90.8	56.5 - 129		%Rec	1	2/13/2018 8:13:12 PM
Surr: Toluene-d8	99.9	64.5 - 151		%Rec	1	2/13/2018 8:13:12 PM
Surr: 1-Bromo-4-fluorobenzene	98.1	43.2 - 143		%Rec	1	2/13/2018 8:13:12 PM
Sample Moisture (Percent Moisture)				Batch ID: R41682		Analyst: CG
Percent Moisture	6.72	0.500		wt%	1	2/13/2018 12:00:34 PM

Client: GeoEngineers
Project: Bucklin UCC
Lab ID: 1802112-015
Client Sample ID: **GEI-B6-5.5-6**

Collection Date: 2/8/2018 2:25:00 PM
Matrix: Soil

Volatile Organic Compounds by EPA Method 8260C Batch ID: 19784 Analyst: MW

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Dichlorodifluoromethane (CFC-12)	ND	0.0207		mg/Kg-dry	1	2/13/2018 7:42:15 PM
Chloromethane	ND	0.0517		mg/Kg-dry	1	2/13/2018 7:42:15 PM
Vinyl chloride	ND	0.0258		mg/Kg-dry	1	2/13/2018 7:42:15 PM
Bromomethane	ND	0.0517		mg/Kg-dry	1	2/13/2018 7:42:15 PM
Trichlorofluoromethane (CFC-11)	ND	0.0207		mg/Kg-dry	1	2/13/2018 7:42:15 PM
Chloroethane	ND	0.0517		mg/Kg-dry	1	2/13/2018 7:42:15 PM
1,1-Dichloroethene	ND	0.0207		mg/Kg-dry	1	2/13/2018 7:42:15 PM
Methylene chloride	ND	0.0207		mg/Kg-dry	1	2/13/2018 7:42:15 PM
trans-1,2-Dichloroethene	ND	0.0207		mg/Kg-dry	1	2/13/2018 7:42:15 PM
Methyl tert-butyl ether (MTBE)	ND	0.0517		mg/Kg-dry	1	2/13/2018 7:42:15 PM
1,1-Dichloroethane	ND	0.0207		mg/Kg-dry	1	2/13/2018 7:42:15 PM
2,2-Dichloropropane	ND	0.103		mg/Kg-dry	1	2/13/2018 7:42:15 PM
cis-1,2-Dichloroethene	ND	0.0207		mg/Kg-dry	1	2/13/2018 7:42:15 PM
Chloroform	ND	0.0207		mg/Kg-dry	1	2/13/2018 7:42:15 PM
1,1,1-Trichloroethane (TCA)	ND	0.0258		mg/Kg-dry	1	2/13/2018 7:42:15 PM
1,1-Dichloropropene	ND	0.0207		mg/Kg-dry	1	2/13/2018 7:42:15 PM
Carbon tetrachloride	ND	0.0258		mg/Kg-dry	1	2/13/2018 7:42:15 PM
1,2-Dichloroethane (EDC)	ND	0.0207		mg/Kg-dry	1	2/13/2018 7:42:15 PM
Benzene	ND	0.0207		mg/Kg-dry	1	2/13/2018 7:42:15 PM
Trichloroethene (TCE)	ND	0.0207		mg/Kg-dry	1	2/13/2018 7:42:15 PM
1,2-Dichloropropane	ND	0.0207		mg/Kg-dry	1	2/13/2018 7:42:15 PM
Bromodichloromethane	ND	0.0207		mg/Kg-dry	1	2/13/2018 7:42:15 PM
Dibromomethane	ND	0.0207		mg/Kg-dry	1	2/13/2018 7:42:15 PM
cis-1,3-Dichloropropene	ND	0.0207		mg/Kg-dry	1	2/13/2018 7:42:15 PM
Toluene	ND	0.0207		mg/Kg-dry	1	2/13/2018 7:42:15 PM
trans-1,3-Dichloropropylene	ND	0.0207		mg/Kg-dry	1	2/13/2018 7:42:15 PM
1,1,2-Trichloroethane	ND	0.0207		mg/Kg-dry	1	2/13/2018 7:42:15 PM
1,3-Dichloropropane	ND	0.0258		mg/Kg-dry	1	2/13/2018 7:42:15 PM
Tetrachloroethene (PCE)	ND	0.0258		mg/Kg-dry	1	2/13/2018 7:42:15 PM
Dibromochloromethane	ND	0.0258		mg/Kg-dry	1	2/13/2018 7:42:15 PM
1,2-Dibromoethane (EDB)	ND	0.00517		mg/Kg-dry	1	2/13/2018 7:42:15 PM
Chlorobenzene	ND	0.0258		mg/Kg-dry	1	2/13/2018 7:42:15 PM
1,1,1,2-Tetrachloroethane	ND	0.0258		mg/Kg-dry	1	2/13/2018 7:42:15 PM
Ethylbenzene	ND	0.0258		mg/Kg-dry	1	2/13/2018 7:42:15 PM
m,p-Xylene	ND	0.0517		mg/Kg-dry	1	2/13/2018 7:42:15 PM
o-Xylene	ND	0.0258		mg/Kg-dry	1	2/13/2018 7:42:15 PM
Styrene	ND	0.0258		mg/Kg-dry	1	2/13/2018 7:42:15 PM
Isopropylbenzene	ND	0.0258		mg/Kg-dry	1	2/13/2018 7:42:15 PM
Bromoform	ND	0.0517		mg/Kg-dry	1	2/13/2018 7:42:15 PM

Analytical Report

Work Order: **1802112**
Date Reported: **2/15/2018**

Client: GeoEngineers
Collection Date: 2/8/2018 2:25:00 PM
Project: Bucklin UCC
Lab ID: 1802112-015
Matrix: Soil
Client Sample ID: **GEI-B6-5.5-6**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260C				Batch ID: 19784		Analyst: MW
1,1,2,2-Tetrachloroethane	ND	0.0207		mg/Kg-dry	1	2/13/2018 7:42:15 PM
n-Propylbenzene	ND	0.0258		mg/Kg-dry	1	2/13/2018 7:42:15 PM
Bromobenzene	ND	0.0207		mg/Kg-dry	1	2/13/2018 7:42:15 PM
1,3,5-Trimethylbenzene	ND	0.0258		mg/Kg-dry	1	2/13/2018 7:42:15 PM
2-Chlorotoluene	ND	0.0258		mg/Kg-dry	1	2/13/2018 7:42:15 PM
4-Chlorotoluene	ND	0.0258		mg/Kg-dry	1	2/13/2018 7:42:15 PM
tert-Butylbenzene	ND	0.0258		mg/Kg-dry	1	2/13/2018 7:42:15 PM
1,2,3-Trichloropropane	ND	0.0258		mg/Kg-dry	1	2/13/2018 7:42:15 PM
1,2,4-Trichlorobenzene	ND	0.0258		mg/Kg-dry	1	2/13/2018 7:42:15 PM
sec-Butylbenzene	ND	0.0517		mg/Kg-dry	1	2/13/2018 7:42:15 PM
4-Isopropyltoluene	ND	0.0517		mg/Kg-dry	1	2/13/2018 7:42:15 PM
1,3-Dichlorobenzene	ND	0.0207		mg/Kg-dry	1	2/13/2018 7:42:15 PM
1,4-Dichlorobenzene	ND	0.0207		mg/Kg-dry	1	2/13/2018 7:42:15 PM
n-Butylbenzene	ND	0.0258		mg/Kg-dry	1	2/13/2018 7:42:15 PM
1,2-Dichlorobenzene	ND	0.0207		mg/Kg-dry	1	2/13/2018 7:42:15 PM
1,2-Dibromo-3-chloropropane	ND	0.517		mg/Kg-dry	1	2/13/2018 7:42:15 PM
1,2,4-Trimethylbenzene	ND	0.0207		mg/Kg-dry	1	2/13/2018 7:42:15 PM
Hexachlorobutadiene	ND	0.0517		mg/Kg-dry	1	2/13/2018 7:42:15 PM
Naphthalene	ND	0.0517		mg/Kg-dry	1	2/13/2018 7:42:15 PM
1,2,3-Trichlorobenzene	ND	0.0207		mg/Kg-dry	1	2/13/2018 7:42:15 PM
Surr: Dibromofluoromethane	91.7	56.5 - 129		%Rec	1	2/13/2018 7:42:15 PM
Surr: Toluene-d8	97.4	64.5 - 151		%Rec	1	2/13/2018 7:42:15 PM
Surr: 1-Bromo-4-fluorobenzene	97.5	43.2 - 143		%Rec	1	2/13/2018 7:42:15 PM
Sample Moisture (Percent Moisture)				Batch ID: R41682		Analyst: CG
Percent Moisture	9.10	0.500		wt%	1	2/13/2018 12:00:34 PM

Work Order: 1802112
CLIENT: GeoEngineers
Project: Bucklin UCC

QC SUMMARY REPORT

Sample Moisture (Percent Moisture)

Sample ID **1802112-009ADUP**	SampType: **DUP**			Units: **wt%**		Prep Date: **2/13/2018**		RunNo: **41682**		
Client ID: **GEI-B4-1.5-2**	Batch ID: **R41682**					Analysis Date: **2/13/2018**		SeqNo: **803485**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	4.76	0.500						5.551	15.4	10	R

Sample ID **1802123-001ADUP**	SampType: **DUP**			Units: **wt%**		Prep Date: **2/13/2018**		RunNo: **41682**		
Client ID: **BATCH**	Batch ID: **R41682**					Analysis Date: **2/13/2018**		SeqNo: **803493**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	27.7	0.500						27.84	0.552	10	

Work Order: 1802112
CLIENT: GeoEngineers
Project: Bucklin UCC

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID **LCS-19784** SampType: **LCS** Units: **mg/Kg** Prep Date: **2/12/2018** RunNo: **41697**
Client ID: **LCSS** Batch ID: **19784** Analysis Date: **2/13/2018** SeqNo: **803788**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	0.608	0.0200	1.000	0	60.8	14.3	167				
Chloromethane	0.782	0.0500	1.000	0	78.2	32	156				
Vinyl chloride	0.808	0.0250	1.000	0	80.8	43.4	151				
Bromomethane	1.15	0.0500	1.000	0	115	35	155				
Trichlorofluoromethane (CFC-11)	1.00	0.0200	1.000	0	100	33.8	156				
Chloroethane	1.01	0.0500	1.000	0	101	33.1	147				
1,1-Dichloroethene	0.889	0.0200	1.000	0	88.9	39	144				
Methylene chloride	0.932	0.0200	1.000	0	93.2	46.3	140				
trans-1,2-Dichloroethene	0.925	0.0200	1.000	0	92.5	68	130				
Methyl tert-butyl ether (MTBE)	0.932	0.0500	1.000	0	93.2	66.3	145				
1,1-Dichloroethane	0.922	0.0200	1.000	0	92.2	61.9	137				
2,2-Dichloropropane	0.649	0.100	1.000	0	64.9	35.5	186				
cis-1,2-Dichloroethene	0.942	0.0200	1.000	0	94.2	71.3	135				
Chloroform	0.938	0.0200	1.000	0	93.8	69	145				
1,1,1-Trichloroethane (TCA)	0.879	0.0250	1.000	0	87.9	69	132				
1,1-Dichloropropene	0.897	0.0200	1.000	0	89.7	72.7	131				
Carbon tetrachloride	0.846	0.0250	1.000	0	84.6	63.4	137				
1,2-Dichloroethane (EDC)	0.934	0.0200	1.000	0	93.4	50.9	162				
Benzene	0.951	0.0200	1.000	0	95.1	64.3	133				
Trichloroethene (TCE)	0.942	0.0200	1.000	0	94.2	65.5	137				
1,2-Dichloropropane	0.946	0.0200	1.000	0	94.6	63.2	142				
Bromodichloromethane	0.903	0.0200	1.000	0	90.3	53.4	131				
Dibromomethane	0.950	0.0200	1.000	0	95.0	60.1	146				
cis-1,3-Dichloropropene	0.870	0.0200	1.000	0	87.0	59.1	143				
Toluene	0.931	0.0200	1.000	0	93.1	67.3	138				
trans-1,3-Dichloropropylene	0.839	0.0200	1.000	0	83.9	49.2	149				
1,1,2-Trichloroethane	0.969	0.0200	1.000	0	96.9	56.9	147				
1,3-Dichloropropane	0.972	0.0250	1.000	0	97.2	56.1	153				
Tetrachloroethene (PCE)	0.936	0.0250	1.000	0	93.6	52.7	150				
Dibromochloromethane	0.883	0.0250	1.000	0	88.3	70.6	144				
1,2-Dibromoethane (EDB)	0.967	0.00500	1.000	0	96.7	50.5	154				

Work Order: 1802112
CLIENT: GeoEngineers
Project: Bucklin UCC

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID **LCS-19784** SampType: **LCS** Units: **mg/Kg** Prep Date: **2/12/2018** RunNo: **41697**
Client ID: **LCSS** Batch ID: **19784** Analysis Date: **2/13/2018** SeqNo: **803788**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chlorobenzene	0.972	0.0250	1.000	0	97.2	84.9	125				
1,1,1,2-Tetrachloroethane	0.918	0.0250	1.000	0	91.8	65.9	141				
Ethylbenzene	1.00	0.0250	1.000	0	100	74	129				
m,p-Xylene	1.91	0.0500	2.000	0	95.6	70	124				
o-Xylene	0.950	0.0250	1.000	0	95.0	68.1	139				
Styrene	0.949	0.0250	1.000	0	94.9	73.3	146				
Isopropylbenzene	0.970	0.0250	1.000	0	97.0	70	130				
Bromoform	0.849	0.0500	1.000	0	84.9	44.3	130				
1,1,2,2-Tetrachloroethane	0.909	0.0200	1.000	0	90.9	44.8	165				
n-Propylbenzene	0.938	0.0250	1.000	0	93.8	75.8	139				
Bromobenzene	0.940	0.0200	1.000	0	94.0	49.2	144				
1,3,5-Trimethylbenzene	0.945	0.0250	1.000	0	94.5	76.5	135				
2-Chlorotoluene	0.924	0.0250	1.000	0	92.4	76.7	129				
4-Chlorotoluene	0.921	0.0250	1.000	0	92.1	77.5	125				
tert-Butylbenzene	0.916	0.0250	1.000	0	91.6	66.2	130				
1,2,3-Trichloropropane	0.874	0.0250	1.000	0	87.4	67.9	136				
1,2,4-Trichlorobenzene	0.997	0.0250	1.000	0	99.7	65.5	150				
sec-Butylbenzene	0.970	0.0500	1.000	0	97.0	75.6	133				
4-Isopropyltoluene	0.953	0.0500	1.000	0	95.3	76.8	131				
1,3-Dichlorobenzene	1.02	0.0200	1.000	0	102	72.8	128				
1,4-Dichlorobenzene	0.992	0.0200	1.000	0	99.2	72.6	126				
n-Butylbenzene	0.975	0.0250	1.000	0	97.5	78.4	140				
1,2-Dichlorobenzene	1.02	0.0200	1.000	0	102	72.8	126				
1,2-Dibromo-3-chloropropane	0.874	0.500	1.000	0	87.4	40.2	155				
1,2,4-Trimethylbenzene	0.961	0.0200	1.000	0	96.1	77.5	129				
Hexachlorobutadiene	0.931	0.0500	1.000	0	93.1	42	151				
Naphthalene	0.973	0.0500	1.000	0	97.3	46.5	167				
1,2,3-Trichlorobenzene	1.00	0.0200	1.000	0	100	64.5	149				
Surr: Dibromofluoromethane	1.24		1.250		99.1	56.5	129				
Surr: Toluene-d8	1.23		1.250		98.4	64.5	151				
Surr: 1-Bromo-4-fluorobenzene	1.20		1.250		96.2	43.2	143				

Work Order: 1802112
CLIENT: GeoEngineers
Project: Bucklin UCC

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID	**LCS-19784**	SampType:	**LCS**	Units:	**mg/Kg**	Prep Date:	**2/12/2018**	RunNo:	**41697**
Client ID:	**LCSS**	Batch ID:	**19784**			Analysis Date:	**2/13/2018**	SeqNo:	**803788**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sample ID	**MB-19784**	SampType:	**MBLK**	Units:	**mg/Kg**	Prep Date:	**2/12/2018**	RunNo:	**41697**
Client ID:	**MBLKS**	Batch ID:	**19784**			Analysis Date:	**2/13/2018**	SeqNo:	**803789**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	ND	0.0200									
Chloromethane	ND	0.0500									
Vinyl chloride	ND	0.0250									
Bromomethane	ND	0.0500									
Trichlorofluoromethane (CFC-11)	ND	0.0200									
Chloroethane	ND	0.0500									
1,1-Dichloroethene	ND	0.0200									
Methylene chloride	ND	0.0200									
trans-1,2-Dichloroethene	ND	0.0200									
Methyl tert-butyl ether (MTBE)	ND	0.0500									
1,1-Dichloroethane	ND	0.0200									
2,2-Dichloropropane	ND	0.100									
cis-1,2-Dichloroethene	ND	0.0200									
Chloroform	ND	0.0200									
1,1,1-Trichloroethane (TCA)	ND	0.0250									
1,1-Dichloropropene	ND	0.0200									
Carbon tetrachloride	ND	0.0250									
1,2-Dichloroethane (EDC)	ND	0.0200									
Benzene	ND	0.0200									
Trichloroethene (TCE)	ND	0.0200									
1,2-Dichloropropane	ND	0.0200									
Bromodichloromethane	ND	0.0200									
Dibromomethane	ND	0.0200									
cis-1,3-Dichloropropene	ND	0.0200									
Toluene	ND	0.0200									

Work Order: 1802112
CLIENT: GeoEngineers
Project: Bucklin UCC

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID **MB-19784** SampType: **MBLK** Units: **mg/Kg** Prep Date: **2/12/2018** RunNo: **41697**
Client ID: **MBLKS** Batch ID: **19784** Analysis Date: **2/13/2018** SeqNo: **803789**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
trans-1,3-Dichloropropylene	ND	0.0200									
1,1,2-Trichloroethane	ND	0.0200									
1,3-Dichloropropane	ND	0.0250									
Tetrachloroethene (PCE)	ND	0.0250									
Dibromochloromethane	ND	0.0250									
1,2-Dibromoethane (EDB)	ND	0.00500									
Chlorobenzene	ND	0.0250									
1,1,1,2-Tetrachloroethane	ND	0.0250									
Ethylbenzene	ND	0.0250									
m,p-Xylene	ND	0.0500									
o-Xylene	ND	0.0250									
Styrene	ND	0.0250									
Isopropylbenzene	ND	0.0250									
Bromoform	ND	0.0500									
1,1,2,2-Tetrachloroethane	ND	0.0200									
n-Propylbenzene	ND	0.0250									
Bromobenzene	ND	0.0200									
1,3,5-Trimethylbenzene	ND	0.0250									
2-Chlorotoluene	ND	0.0250									
4-Chlorotoluene	ND	0.0250									
tert-Butylbenzene	ND	0.0250									
1,2,3-Trichloropropane	ND	0.0250									
1,2,4-Trichlorobenzene	ND	0.0250									
sec-Butylbenzene	ND	0.0500									
4-Isopropyltoluene	ND	0.0500									
1,3-Dichlorobenzene	ND	0.0200									
1,4-Dichlorobenzene	ND	0.0200									
n-Butylbenzene	ND	0.0250									
1,2-Dichlorobenzene	ND	0.0200									
1,2-Dibromo-3-chloropropane	ND	0.500									
1,2,4-Trimethylbenzene	ND	0.0200									

Work Order: 1802112
CLIENT: GeoEngineers
Project: Bucklin UCC

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID **MB-19784** SampType: **MBLK** Units: **mg/Kg** Prep Date: **2/12/2018** RunNo: **41697**
Client ID: **MBLKS** Batch ID: **19784** Analysis Date: **2/13/2018** SeqNo: **803789**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexachlorobutadiene	ND	0.0500									
Naphthalene	ND	0.0500									
1,2,3-Trichlorobenzene	ND	0.0200									
Surr: Dibromofluoromethane	1.18		1.250		94.1	56.5	129				
Surr: Toluene-d8	1.23		1.250		98.3	64.5	151				
Surr: 1-Bromo-4-fluorobenzene	1.21		1.250		96.7	43.2	143				

Sample ID **1802033-018BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **2/12/2018** RunNo: **41697**
Client ID: **BATCH** Batch ID: **19784** Analysis Date: **2/13/2018** SeqNo: **803774**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	ND	0.0325						0		30	
Chloromethane	ND	0.0812						0		30	
Vinyl chloride	ND	0.0406						0		30	
Bromomethane	ND	0.0812						0		30	
Trichlorofluoromethane (CFC-11)	ND	0.0325						0		30	
Chloroethane	ND	0.0812						0		30	
1,1-Dichloroethene	ND	0.0325						0		30	
Methylene chloride	ND	0.0325						0		30	
trans-1,2-Dichloroethene	ND	0.0325						0		30	
Methyl tert-butyl ether (MTBE)	ND	0.0812						0		30	
1,1-Dichloroethane	ND	0.0325						0		30	
2,2-Dichloropropane	ND	0.162						0		30	
cis-1,2-Dichloroethene	ND	0.0325						0		30	
Chloroform	ND	0.0325						0		30	
1,1,1-Trichloroethane (TCA)	ND	0.0406						0		30	
1,1-Dichloropropene	ND	0.0325						0		30	
Carbon tetrachloride	ND	0.0406						0		30	
1,2-Dichloroethane (EDC)	ND	0.0325						0		30	
Benzene	ND	0.0325						0		30	

Work Order: 1802112
CLIENT: GeoEngineers
Project: Bucklin UCC

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID **1802033-018BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **2/12/2018** RunNo: **41697**
Client ID: **BATCH** Batch ID: **19784** Analysis Date: **2/13/2018** SeqNo: **803774**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichloroethene (TCE)	ND	0.0325						0		30	
1,2-Dichloropropane	ND	0.0325						0		30	
Bromodichloromethane	ND	0.0325						0		30	
Dibromomethane	ND	0.0325						0		30	
cis-1,3-Dichloropropene	ND	0.0325						0		30	
Toluene	ND	0.0325						0		30	
trans-1,3-Dichloropropylene	ND	0.0325						0		30	
1,1,2-Trichloroethane	ND	0.0325						0		30	
1,3-Dichloropropane	ND	0.0406						0		30	
Tetrachloroethene (PCE)	ND	0.0406						0		30	
Dibromochloromethane	ND	0.0406						0		30	
1,2-Dibromoethane (EDB)	ND	0.00812						0		30	
Chlorobenzene	ND	0.0406						0		30	
1,1,1,2-Tetrachloroethane	ND	0.0406						0		30	
Ethylbenzene	ND	0.0406						0		30	
m,p-Xylene	ND	0.0812						0		30	
o-Xylene	ND	0.0406						0		30	
Styrene	ND	0.0406						0		30	
Isopropylbenzene	ND	0.0406						0		30	
Bromoform	ND	0.0812						0		30	
1,1,2,2-Tetrachloroethane	ND	0.0325						0		30	
n-Propylbenzene	ND	0.0406						0		30	
Bromobenzene	ND	0.0325						0		30	
1,3,5-Trimethylbenzene	ND	0.0406						0		30	
2-Chlorotoluene	ND	0.0406						0		30	
4-Chlorotoluene	ND	0.0406						0		30	
tert-Butylbenzene	ND	0.0406						0		30	
1,2,3-Trichloropropane	ND	0.0406						0		30	
1,2,4-Trichlorobenzene	ND	0.0406						0		30	
sec-Butylbenzene	ND	0.0812						0		30	
4-Isopropyltoluene	ND	0.0812						0		30	

Work Order: 1802112
CLIENT: GeoEngineers
Project: Bucklin UCC

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID **1802033-018BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **2/12/2018** RunNo: **41697**
Client ID: **BATCH** Batch ID: **19784** Analysis Date: **2/13/2018** SeqNo: **803774**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,3-Dichlorobenzene	ND	0.0325						0		30	
1,4-Dichlorobenzene	ND	0.0325						0		30	
n-Butylbenzene	ND	0.0406						0		30	
1,2-Dichlorobenzene	ND	0.0325						0		30	
1,2-Dibromo-3-chloropropane	ND	0.812						0		30	
1,2,4-Trimethylbenzene	ND	0.0325						0		30	
Hexachlorobutadiene	ND	0.0812						0		30	
Naphthalene	ND	0.0812						0		30	
1,2,3-Trichlorobenzene	ND	0.0325						0		30	
Surr: Dibromofluoromethane	1.89		2.030		93.1	56.5	129		0		
Surr: Toluene-d8	2.01		2.030		98.8	64.5	151		0		
Surr: 1-Bromo-4-fluorobenzene	1.94		2.030		95.8	43.2	143		0		

Sample ID **1802069-004BMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **2/12/2018** RunNo: **41697**
Client ID: **BATCH** Batch ID: **19784** Analysis Date: **2/13/2018** SeqNo: **803777**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	1.27	0.0267	1.334	0	95.2	43.5	121				
Chloromethane	1.18	0.0667	1.334	0	88.7	45	130				
Vinyl chloride	1.31	0.0333	1.334	0	98.0	43.6	150				
Bromomethane	1.43	0.0667	1.334	0	107	21.3	120				
Trichlorofluoromethane (CFC-11)	1.31	0.0267	1.334	0	98.4	35	131				
Chloroethane	1.37	0.0667	1.334	0	103	31.9	123				
1,1-Dichloroethene	1.32	0.0267	1.334	0	98.6	47.3	147				
Methylene chloride	1.38	0.0267	1.334	0	104	54.7	142				
trans-1,2-Dichloroethene	1.32	0.0267	1.334	0	98.9	52	136				
Methyl tert-butyl ether (MTBE)	1.29	0.0667	1.334	0	96.6	58.5	167				
1,1-Dichloroethane	1.31	0.0267	1.334	0	97.9	51.8	141				
2,2-Dichloropropane	0.572	0.133	1.334	0	42.9	36	123				
cis-1,2-Dichloroethene	1.32	0.0267	1.334	0	99.1	58.6	136				

Work Order: 1802112
CLIENT: GeoEngineers
Project: Bucklin UCC

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID **1802069-004BMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **2/12/2018** RunNo: **41697**
Client ID: **BATCH** Batch ID: **19784** Analysis Date: **2/13/2018** SeqNo: **803777**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloroform	1.30	0.0267	1.334	0	97.7	53.2	129				
1,1,1-Trichloroethane (TCA)	1.23	0.0333	1.334	0	92.3	58.3	145				
1,1-Dichloropropene	1.31	0.0267	1.334	0	98.1	55.1	138				
Carbon tetrachloride	1.16	0.0333	1.334	0	86.8	53.3	144				
1,2-Dichloroethane (EDC)	1.30	0.0267	1.334	0	97.7	51.3	139				
Benzene	1.35	0.0267	1.334	0	101	63.5	133				
Trichloroethene (TCE)	1.34	0.0267	1.334	0	100	61.6	147				
1,2-Dichloropropane	1.32	0.0267	1.334	0	98.8	59	136				
Bromodichloromethane	1.17	0.0267	1.334	0	87.7	50.7	141				
Dibromomethane	1.33	0.0267	1.334	0	99.6	50.6	137				
cis-1,3-Dichloropropene	1.08	0.0267	1.334	0	81.3	50.4	138				
Toluene	1.33	0.0267	1.334	0	99.7	63.4	132				
trans-1,3-Dichloropropylene	1.03	0.0267	1.334	0	77.4	44.1	147				
1,1,2-Trichloroethane	1.37	0.0267	1.334	0	103	51.6	137				
1,3-Dichloropropane	1.37	0.0333	1.334	0	103	53.1	134				
Tetrachloroethene (PCE)	1.35	0.0333	1.334	0.02559	99.6	35.6	158				
Dibromochloromethane	1.09	0.0333	1.334	0	81.7	55.3	140				
1,2-Dibromoethane (EDB)	1.33	0.00667	1.334	0	99.6	50.4	136				
Chlorobenzene	1.34	0.0333	1.334	0	100	60	133				
1,1,1,2-Tetrachloroethane	1.20	0.0333	1.334	0	90.0	53.1	142				
Ethylbenzene	1.38	0.0333	1.334	0	104	54.5	134				
m,p-Xylene	2.66	0.0667	2.668	0	99.5	53.1	132				
o-Xylene	1.32	0.0333	1.334	0	98.8	53.3	139				
Styrene	1.31	0.0333	1.334	0	98.0	51.1	132				
Isopropylbenzene	1.40	0.0333	1.334	0	105	58.9	138				
Bromoform	1.14	0.0667	1.334	0	85.4	57.9	130				
1,1,2,2-Tetrachloroethane	1.29	0.0267	1.334	0	96.6	51.9	131				
n-Propylbenzene	1.37	0.0333	1.334	0	103	53.6	140				
Bromobenzene	1.32	0.0267	1.334	0	98.9	54.2	140				
1,3,5-Trimethylbenzene	1.34	0.0333	1.334	0	101	51.8	136				
2-Chlorotoluene	1.30	0.0333	1.334	0	97.5	51.6	136				

Work Order: 1802112
CLIENT: GeoEngineers
Project: Bucklin UCC

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID **1802069-004BMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **2/12/2018** RunNo: **41697**
Client ID: **BATCH** Batch ID: **19784** Analysis Date: **2/13/2018** SeqNo: **803777**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
4-Chlorotoluene	1.31	0.0333	1.334	0	98.1	50.1	139				
tert-Butylbenzene	1.31	0.0333	1.334	0	98.5	50.5	135				
1,2,3-Trichloropropane	1.14	0.0333	1.334	0	85.4	50.5	131				
1,2,4-Trichlorobenzene	1.40	0.0333	1.334	0	105	50.8	130				
sec-Butylbenzene	1.40	0.0667	1.334	0	105	52.6	141				
4-Isopropyltoluene	1.37	0.0667	1.334	0	103	52.9	134				
1,3-Dichlorobenzene	1.36	0.0267	1.334	0	102	52.6	131				
1,4-Dichlorobenzene	1.37	0.0267	1.334	0	103	52.9	129				
n-Butylbenzene	1.35	0.0333	1.334	0	101	52.6	130				
1,2-Dichlorobenzene	1.39	0.0267	1.334	0	104	55.8	129				
1,2-Dibromo-3-chloropropane	1.16	0.667	1.334	0	86.7	40.5	131				
1,2,4-Trimethylbenzene	1.37	0.0267	1.334	0	103	50.6	137				
Hexachlorobutadiene	1.33	0.0667	1.334	0	99.8	40.6	158				
Naphthalene	1.42	0.0667	1.334	0	106	52.3	124				
1,2,3-Trichlorobenzene	1.43	0.0267	1.334	0	107	54.4	124				
Surr: Dibromofluoromethane	1.64		1.667		98.6	56.5	129				
Surr: Toluene-d8	1.67		1.667		100	64.5	151				
Surr: 1-Bromo-4-fluorobenzene	1.66		1.667		99.4	43.2	143				

Sample ID **1802069-004BMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **2/12/2018** RunNo: **41697**
Client ID: **BATCH** Batch ID: **19784** Analysis Date: **2/13/2018** SeqNo: **803778**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	1.21	0.0267	1.334	0	90.6	43.5	121	1.270	4.89	30	
Chloromethane	1.20	0.0667	1.334	0	89.8	45	130	1.183	1.24	30	
Vinyl chloride	1.25	0.0333	1.334	0	93.8	43.6	150	1.308	4.46	30	
Bromomethane	1.35	0.0667	1.334	0	101	21.3	120	1.429	5.50	30	
Trichlorofluoromethane (CFC-11)	1.27	0.0267	1.334	0	94.8	35	131	1.313	3.72	30	
Chloroethane	1.29	0.0667	1.334	0	97.0	31.9	123	1.367	5.55	30	
1,1-Dichloroethene	1.29	0.0267	1.334	0	96.5	47.3	147	1.315	2.13	30	

Work Order: 1802112
CLIENT: GeoEngineers
Project: Bucklin UCC

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID **1802069-004BMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **2/12/2018** RunNo: **41697**
Client ID: **BATCH** Batch ID: **19784** Analysis Date: **2/13/2018** SeqNo: **803778**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methylene chloride	1.33	0.0267	1.334	0	99.5	54.7	142	1.383	4.10	30	
trans-1,2-Dichloroethene	1.30	0.0267	1.334	0	97.2	52	136	1.320	1.75	30	
Methyl tert-butyl ether (MTBE)	1.28	0.0667	1.334	0	95.9	58.5	167	1.289	0.744	30	
1,1-Dichloroethane	1.27	0.0267	1.334	0	95.5	51.8	141	1.305	2.42	30	
2,2-Dichloropropane	0.563	0.133	1.334	0	42.2	36	123	0.5719	1.58	30	
cis-1,2-Dichloroethene	1.30	0.0267	1.334	0	97.8	58.6	136	1.322	1.35	30	
Chloroform	1.28	0.0267	1.334	0	95.7	53.2	129	1.303	2.02	30	
1,1,1-Trichloroethane (TCA)	1.20	0.0333	1.334	0	89.6	58.3	145	1.231	2.93	30	
1,1-Dichloropropene	1.27	0.0267	1.334	0	95.4	55.1	138	1.308	2.75	30	
Carbon tetrachloride	1.14	0.0333	1.334	0	85.3	53.3	144	1.158	1.76	30	
1,2-Dichloroethane (EDC)	1.27	0.0267	1.334	0	95.2	51.3	139	1.303	2.64	30	
Benzene	1.31	0.0267	1.334	0	98.3	63.5	133	1.348	2.82	30	
Trichloroethene (TCE)	1.31	0.0267	1.334	0	98.0	61.6	147	1.339	2.44	30	
1,2-Dichloropropane	1.27	0.0267	1.334	0	95.4	59	136	1.318	3.53	30	
Bromodichloromethane	1.16	0.0267	1.334	0	86.6	50.7	141	1.169	1.19	30	
Dibromomethane	1.28	0.0267	1.334	0	96.3	50.6	137	1.328	3.40	30	
cis-1,3-Dichloropropene	1.07	0.0267	1.334	0	80.1	50.4	138	1.085	1.47	30	
Toluene	1.29	0.0267	1.334	0	96.6	63.4	132	1.330	3.13	30	
trans-1,3-Dichloropropylene	1.01	0.0267	1.334	0	75.5	44.1	147	1.032	2.49	30	
1,1,2-Trichloroethane	1.31	0.0267	1.334	0	98.4	51.6	137	1.369	4.13	30	
1,3-Dichloropropane	1.28	0.0333	1.334	0	96.3	53.1	134	1.371	6.46	30	
Tetrachloroethene (PCE)	1.28	0.0333	1.334	0.02559	93.9	35.6	158	1.355	5.82	30	
Dibromochloromethane	1.08	0.0333	1.334	0	81.2	55.3	140	1.090	0.560	30	
1,2-Dibromoethane (EDB)	1.30	0.00667	1.334	0	97.1	50.4	136	1.329	2.54	30	
Chlorobenzene	1.30	0.0333	1.334	0	97.5	60	133	1.335	2.66	30	
1,1,1,2-Tetrachloroethane	1.20	0.0333	1.334	0	89.7	53.1	142	1.201	0.378	30	
Ethylbenzene	1.35	0.0333	1.334	0	101	54.5	134	1.383	2.65	30	
m,p-Xylene	2.58	0.0667	2.668	0	96.9	53.1	132	2.655	2.71	30	
o-Xylene	1.28	0.0333	1.334	0	96.1	53.3	139	1.318	2.77	30	
Styrene	1.28	0.0333	1.334	0	95.8	51.1	132	1.307	2.29	30	
Isopropylbenzene	1.35	0.0333	1.334	0	101	58.9	138	1.401	3.50	30	

Work Order: 1802112
CLIENT: GeoEngineers
Project: Bucklin UCC

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID **1802069-004BMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **2/12/2018** RunNo: **41697**
Client ID: **BATCH** Batch ID: **19784** Analysis Date: **2/13/2018** SeqNo: **803778**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Bromoform	1.16	0.0667	1.334	0	86.9	57.9	130	1.139	1.74	30	
1,1,2,2-Tetrachloroethane	1.31	0.0267	1.334	0	98.2	51.9	131	1.289	1.59	30	
n-Propylbenzene	1.32	0.0333	1.334	0	99.1	53.6	140	1.372	3.67	30	
Bromobenzene	1.29	0.0267	1.334	0	96.8	54.2	140	1.319	2.11	30	
1,3,5-Trimethylbenzene	1.31	0.0333	1.334	0	98.0	51.8	136	1.342	2.69	30	
2-Chlorotoluene	1.27	0.0333	1.334	0	95.2	51.6	136	1.301	2.38	30	
4-Chlorotoluene	1.27	0.0333	1.334	0	95.1	50.1	139	1.309	3.11	30	
tert-Butylbenzene	1.28	0.0333	1.334	0	95.7	50.5	135	1.313	2.81	30	
1,2,3-Trichloropropane	1.13	0.0333	1.334	0	84.7	50.5	131	1.139	0.818	30	
1,2,4-Trichlorobenzene	1.38	0.0333	1.334	0	103	50.8	130	1.399	1.52	30	
sec-Butylbenzene	1.37	0.0667	1.334	0	103	52.6	141	1.403	2.48	30	
4-Isopropyltoluene	1.33	0.0667	1.334	0	100	52.9	134	1.372	2.79	30	
1,3-Dichlorobenzene	1.33	0.0267	1.334	0	99.8	52.6	131	1.355	1.78	30	
1,4-Dichlorobenzene	1.34	0.0267	1.334	0	101	52.9	129	1.371	2.18	30	
n-Butylbenzene	1.32	0.0333	1.334	0	98.8	52.6	130	1.346	2.08	30	
1,2-Dichlorobenzene	1.36	0.0267	1.334	0	102	55.8	129	1.390	2.10	30	
1,2-Dibromo-3-chloropropane	1.19	0.667	1.334	0	88.8	40.5	131	1.156	2.46	30	
1,2,4-Trimethylbenzene	1.33	0.0267	1.334	0	99.6	50.6	137	1.373	3.27	30	
Hexachlorobutadiene	1.32	0.0667	1.334	0	99.3	40.6	158	1.331	0.513	30	
Naphthalene	1.42	0.0667	1.334	0	107	52.3	124	1.417	0.541	30	
1,2,3-Trichlorobenzene	1.39	0.0267	1.334	0	104	54.4	124	1.427	2.52	30	
Surr: Dibromofluoromethane	1.65		1.667		99.0	56.5	129		0		
Surr: Toluene-d8	1.65		1.667		99.0	64.5	151		0		
Surr: 1-Bromo-4-fluorobenzene	1.65		1.667		98.8	43.2	143		0		

Sample ID **1802112-008BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **2/12/2018** RunNo: **41697**
Client ID: **GEI-B3-5.5-6** Batch ID: **19784** Analysis Date: **2/13/2018** SeqNo: **804073**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	ND	0.0232						0		30	

Work Order: 1802112
CLIENT: GeoEngineers
Project: Bucklin UCC

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID **1802112-008BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **2/12/2018** RunNo: **41697**
Client ID: **GEI-B3-5.5-6** Batch ID: **19784** Analysis Date: **2/13/2018** SeqNo: **804073**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	ND	0.0581						0		30	
Vinyl chloride	ND	0.0290						0		30	
Bromomethane	ND	0.0581						0		30	
Trichlorofluoromethane (CFC-11)	ND	0.0232						0		30	
Chloroethane	ND	0.0581						0		30	
1,1-Dichloroethene	ND	0.0232						0		30	
Methylene chloride	ND	0.0232						0		30	
trans-1,2-Dichloroethene	ND	0.0232						0		30	
Methyl tert-butyl ether (MTBE)	ND	0.0581						0		30	
1,1-Dichloroethane	ND	0.0232						0		30	
2,2-Dichloropropane	ND	0.116						0		30	
cis-1,2-Dichloroethene	ND	0.0232						0		30	
Chloroform	ND	0.0232						0		30	
1,1,1-Trichloroethane (TCA)	ND	0.0290						0		30	
1,1-Dichloropropene	ND	0.0232						0		30	
Carbon tetrachloride	ND	0.0290						0		30	
1,2-Dichloroethane (EDC)	ND	0.0232						0		30	
Benzene	ND	0.0232						0		30	
Trichloroethene (TCE)	ND	0.0232						0		30	
1,2-Dichloropropane	ND	0.0232						0		30	
Bromodichloromethane	ND	0.0232						0		30	
Dibromomethane	ND	0.0232						0		30	
cis-1,3-Dichloropropene	ND	0.0232						0		30	
Toluene	ND	0.0232						0		30	
trans-1,3-Dichloropropylene	ND	0.0232						0		30	
1,1,2-Trichloroethane	ND	0.0232						0		30	
1,3-Dichloropropane	ND	0.0290						0		30	
Tetrachloroethene (PCE)	0.0750	0.0290						0.06525	13.9	30	
Dibromochloromethane	ND	0.0290						0		30	
1,2-Dibromoethane (EDB)	ND	0.00581						0		30	
Chlorobenzene	ND	0.0290						0		30	

Work Order: 1802112
CLIENT: GeoEngineers
Project: Bucklin UCC

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID **1802112-008BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **2/12/2018** RunNo: **41697**
Client ID: **GEI-B3-5.5-6** Batch ID: **19784** Analysis Date: **2/13/2018** SeqNo: **804073**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1,1,2-Tetrachloroethane	ND	0.0290						0		30	
Ethylbenzene	ND	0.0290						0		30	
m,p-Xylene	ND	0.0581						0		30	
o-Xylene	ND	0.0290						0		30	
Styrene	ND	0.0290						0		30	
Isopropylbenzene	ND	0.0290						0		30	
Bromoform	ND	0.0581						0		30	
1,1,2,2-Tetrachloroethane	ND	0.0232						0		30	
n-Propylbenzene	ND	0.0290						0		30	
Bromobenzene	ND	0.0232						0		30	
1,3,5-Trimethylbenzene	ND	0.0290						0		30	
2-Chlorotoluene	ND	0.0290						0		30	
4-Chlorotoluene	ND	0.0290						0		30	
tert-Butylbenzene	ND	0.0290						0		30	
1,2,3-Trichloropropane	ND	0.0290						0		30	
1,2,4-Trichlorobenzene	ND	0.0290						0		30	
sec-Butylbenzene	ND	0.0581						0		30	
4-Isopropyltoluene	ND	0.0581						0		30	
1,3-Dichlorobenzene	ND	0.0232						0		30	
1,4-Dichlorobenzene	ND	0.0232						0		30	
n-Butylbenzene	ND	0.0290						0		30	
1,2-Dichlorobenzene	ND	0.0232						0		30	
1,2-Dibromo-3-chloropropane	ND	0.581						0		30	
1,2,4-Trimethylbenzene	ND	0.0232						0		30	
Hexachlorobutadiene	ND	0.0581						0		30	
Naphthalene	ND	0.0581						0		30	
1,2,3-Trichlorobenzene	ND	0.0232						0		30	
Surr: Dibromofluoromethane	1.33		1.452		91.3	56.5	129		0		
Surr: Toluene-d8	1.41		1.452		96.9	64.5	151		0		
Surr: 1-Bromo-4-fluorobenzene	1.42		1.452		98.0	43.2	143		0		

Sample Log-In Check List

Client Name:	**GEI**	Work Order Number:	**1802112**
Logged by:	**Brianna Barnes**	Date Received:	**2/9/2018 2:00:00 PM**

Chain of Custody

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

Log In

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

Special Handling (if applicable)

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

Person Notified:	Ian Young	Date	2/12/2018
By Whom:	Brianna Barnes	Via:	☑ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:	No volume received for "GEI-B6-3.5-4"		
Client Instructions:	Run "GEI-B6-1.5-2" for VOCs instead. STD TAT.		

19. Additional remarks:

Item Information

Item #	Temp ºC
Cooler	3.9
Sample	1.0
Temp Blank	8.1

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

Fremont Analytical
3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Chain of Custody Record & Laboratory Services Agreement

Date: 2/8/18 Page: 1 of: 2

Laboratory Project No (internal): 1902112

Special Remarks: PM was contacted w/ results

Project Name: Bocklin UCC

Project No: 22828-001-01

Client: GeoEngineers

Address: 600 Stewart St Suite 1700

City, State, Zip: Seattle, WA 98101

Telephone: 206-728-2674

Fax: 206-728-2732

Collected by: Paul Robinette

Location: Silverdale, WA

Report To (PM): Ian Young

PM Email: iyoung@geoengineers.com

Sample Disposal: ☐ Return to client ☐ Disposal by lab (after 30 days)

	Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	VOCs (EPA 8260 / 624)	GX/BTEX	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics (DX)	SVOCs (EPA 8270 / 625)	PAHs (EPA 8270 - SIM)	PCBs (EPA 8082 / 608)	Metals** (EPA 6020 / 200.8)	Total (T) | Dissolved (D)	Anions (IC)***	EDB (8011)	HCID				Comments
1	GEI-B1-1.5-2	2/8	1055	S														X				
2	GEI-B1-3.5-4		1105	S																		
3	GEI-B2-1.5-2		0910	S																		
4	GEI-B2-3.5-4		0920	S																		
5	GEI-B3-0.5-1		0725	S																		
6	GEI-B3-1.5-2		0815	S																		
7	GEI-B3-3.5-4		0822	S																		
8	GEI-B3-5.5-6		0831	S																		
9	GEI-B4-1.5-2		1210	S																		
10	GEI-B5-1.5-2		1250	S																		

*Matrix: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water

**Metals (Circle): MTCA-5 RCRA-8 Priority Pollutants TAL *Individual:* Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sr Sn Ti Tl U V Zn

***Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate+Nitrite

Turn-around Time:
☐ Standard
☐ 3 Day
☐ 2 Day
☐ Next Day
Same Day ____ (specify)

I represent that I am authorized to enter into this Agreement with Fremont Analytical on behalf of the Client named above and that I have verified Client's agreement to each of the terms on the front and backside of this Agreement.

Relinquished x Paul Robinette	Date/Time 2/8/18 1300	Received x Adam Robinett	Date/Time 2/9/18
Relinquished x	Date/Time	Received x [signature]	Date/Time 2/9/18 14:00

Chain of Custody Record & Laboratory Services Agreement

Fremont Analytical
3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Date: 2/8/18 Page: 2 of: 2

Laboratory Project No (internal): 1802112

Project Name: Bucklin Hill

Project No: 22828-001-01

Special Remarks: PM will contact w/ Testing

Client: GeoEngineers

Collected by: Paul Robinette

Address:

Location: Silverdale

City, State, Zip: Seattle

Report To (PM): Ian Young

Telephone:

PM Email: iyoung@geoengineers.com

Fax:

Sample Disposal: ☐ Return to client ☐ Disposal by lab (after 30 days)

	Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	VOCs (EPA 8260 / 624)	GX/BTEX	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics (DX)	SVOCs (EPA 8270 / 625)	PAHs (EPA 8270 - SIM)	PCBs (EPA 8082 / 608)	Metals** (EPA 6020 / 200.8)	Total (T) | Dissolved (D)	Anions (IC)***	EDB (8011)	H2S				Comments
1	GE1-B5-3.5-4	2/8/18	1252	S																		
2	GE1-B5-5.5-6		1313	S																		
3	GE1-B6-1.5-2		1400	S																		
4	GE1-B6-3.5-4		1410	S																		
5	GE1-B6-5.5-6		1425	S																		
6																						
7																						
8																						
9																						
10																						

*Matrix: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water

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***Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate+Nitrite

Turn-around Time:

☐ Standard
☐ 3 Day
☐ 2 Day
☐ Next Day
Same Day _____ (specify)

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Relinquished	Date/Time	Received	Date/Time
x Paul Robinette	2/8/18 1300	x Adam Robnett	2/9/18
Relinquished	Date/Time	Received	Date/Time
x		x	2/9/18 14:00

Chain of Custody Record & Laboratory Services Agreement

Fremont Analytical
3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Date: 2/8/18 Page: 1 of: 2

Laboratory Project No (internal): 1902112

Project Name: Bocklin UCC

Special Remarks: PM was contacted w/ Test codes
Edits per IanYoung 2/12/18 BB

Client: GeoEngineers

Project No: 22828-001-01

Address: 600 Stewart St Suite 1700

Collected by: Paul Robinette

City, State, Zip: Seattle, WA 98101

Location: Silverdale, WA

Telephone: 206-728-2674

Report To (PM): Ian Young

Sample Disposal: ☐ Return to client ☐ Disposal by lab (after 30 days)

Fax: 206-728-2732

PM Email: iyoung@geoengineers.com

	Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	VOCs (EPA 8260 / 624)	GX/BTEX	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics (DX)	SVOCs (EPA 8270 / 625)	PAHs (EPA 8270 - SIM)	PCBs (EPA 8082 / 608)	Metals** (EPA 6020 / 200.8)	Total (T) | Dissolved (D)	Anions (IC)***	EDB (8011)	HEID				Comments
1	GEI-B1-1.5-2	2/8	1055	S	X																	
2	GEI-B1-3.5-4		1105	S	X																	
3	GEI-B2-1.5-2		0910	S	X																	
4	GEI-B2-3.5-4		0920	S	X																	
5	GEI-B3-0.5-1		0725	S																		
6	GEI-B3-1.5-2		0815	S																		
7	GEI-B3-3.5-4		0822	S	X																	
8	GEI-B3-5.5-6		0831	S	X																	
9	GEI-B4-1.5-2		1210	S	X																	
10	GEI-B5-1.5-2		1250	S																		

*Matrix: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water

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Turn-around Time:
☐ Standard
☐ 3 Day
☐ 2 Day
☐ Next Day
Same Day ____ (specify)

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Relinquished	Date/Time	Received	Date/Time
x Paul Robinette	2/9/18 1300	x Adam Robinett	2/9/18
Relinquished	Date/Time	Received	Date/Time
x		x	2/9/18 14:00

Chain of Custody Record & Laboratory Services Agreement

Fremont Analytical
3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Date: 2/8/18 Page: 2 of: 2

Laboratory Project No (internal): 1802112

Project Name: Bucklin VLC

Special Remarks: PM will contact w/ Testing

Project No: 22828-001-01

Client: GeoEngineers

Collected by: Paul Robinette

Address:

Location: Silverdale

City, State, Zip: Seattle

Report To (PM): Ian Young

Sample Disposal: ☐ Return to client ☐ Disposal by lab (after 30 days)

Telephone:

PM Email: iyoung@geoengineers

Fax:

	Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	VOCs (EPA 8260 / 624)	GX/BTEX	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics (Dx)	SVOCs (EPA 8270 / 625)	PAHs (EPA 8270 - SIM)	PCBs (EPA 8082 / 608)	Metals** (EPA 6020 / 200.8) Total (T) | Dissolved (D)	Anions (IC)***	EDB (8011)	H2S				Comments
1	GE1-B5-3.5-4	2/8/18	1254	S	X																
2	GE1-B5-5.5-6		1313	S	X																
3	GE1-B6-1.5-2		1400	S																	
4	GE1-B6-3.5-4		1410	S	X																
5	GE1-B6-5.5-6		1425	S	X																
6																					
7																					
8																					
9																					
10																					

*Matrix: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water

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- ☐ 3 Day
- ☐ 2 Day
- ☐ Next Day
- Same Day ____ (specify)

Relinquished x	Paul Robinette	Date/Time 2/8/18 1300	Received x Adam Rabinett Date/Time 2/9/18
Relinquished x		Date/Time	Received x [signature] Date/Time 2/9/18 14:00

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

GeoEngineers
Ian Young
600 Stewart Street, Suite 1700
Seattle, WA 98101

RE: UCC Bucklin
Work Order Number: 1802133

February 15, 2018

Attention Ian Young:

Fremont Analytical, Inc. received 2 sample(s) on 2/13/2018 for the analyses presented in the following report.

Sample Moisture (Percent Moisture)
Volatile Organic Compounds by EPA Method 8260C

This report consists of the following:

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

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

Thank you for using Fremont Analytical.

Sincerely,

Mike Ridgeway
Laboratory Director

Date: *03/09/2018*

CLIENT: GeoEngineers
Project: UCC Bucklin
Work Order: 1802133

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1802133-001	GEI-B6-3.5-4	02/08/2018 11:10 AM	02/13/2018 1:42 PM
1802133-002	Trip Blank	02/06/2018 3:40 PM	02/13/2018 1:42 PM

Case Narrative

WO#: **1802133**
Date: **2/15/2018**

CLIENT: GeoEngineers
Project: UCC Bucklin

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

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

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

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

Revision1: Corrected Project Name

Qualifiers:

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

Acronyms:

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

Client: GeoEngineers
Collection Date: 2/8/2018 11:10:00 AM
Project: UCC Bucklin
Lab ID: 1802133-001
Matrix: Soil
Client Sample ID: **GEI-B6-3.5-4**

Volatile Organic Compounds by EPA Method 8260C

Batch ID: 19801 Analyst: MW

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Dichlorodifluoromethane (CFC-12)	ND	0.0208		mg/Kg-dry	1	2/14/2018 12:20:01 AM
Chloromethane	ND	0.0521		mg/Kg-dry	1	2/14/2018 12:20:01 AM
Vinyl chloride	ND	0.0260		mg/Kg-dry	1	2/14/2018 12:20:01 AM
Bromomethane	ND	0.0521		mg/Kg-dry	1	2/14/2018 12:20:01 AM
Trichlorofluoromethane (CFC-11)	ND	0.0208		mg/Kg-dry	1	2/14/2018 12:20:01 AM
Chloroethane	ND	0.0521		mg/Kg-dry	1	2/14/2018 12:20:01 AM
1,1-Dichloroethene	ND	0.0208		mg/Kg-dry	1	2/14/2018 12:20:01 AM
Methylene chloride	ND	0.0208		mg/Kg-dry	1	2/14/2018 12:20:01 AM
trans-1,2-Dichloroethene	ND	0.0208		mg/Kg-dry	1	2/14/2018 12:20:01 AM
Methyl tert-butyl ether (MTBE)	ND	0.0521		mg/Kg-dry	1	2/14/2018 12:20:01 AM
1,1-Dichloroethane	ND	0.0208		mg/Kg-dry	1	2/14/2018 12:20:01 AM
2,2-Dichloropropane	ND	0.104		mg/Kg-dry	1	2/14/2018 12:20:01 AM
cis-1,2-Dichloroethene	ND	0.0208		mg/Kg-dry	1	2/14/2018 12:20:01 AM
Chloroform	ND	0.0208		mg/Kg-dry	1	2/14/2018 12:20:01 AM
1,1,1-Trichloroethane (TCA)	ND	0.0260		mg/Kg-dry	1	2/14/2018 12:20:01 AM
1,1-Dichloropropene	ND	0.0208		mg/Kg-dry	1	2/14/2018 12:20:01 AM
Carbon tetrachloride	ND	0.0260		mg/Kg-dry	1	2/14/2018 12:20:01 AM
1,2-Dichloroethane (EDC)	ND	0.0208		mg/Kg-dry	1	2/14/2018 12:20:01 AM
Benzene	ND	0.0208		mg/Kg-dry	1	2/14/2018 12:20:01 AM
Trichloroethene (TCE)	ND	0.0208		mg/Kg-dry	1	2/14/2018 12:20:01 AM
1,2-Dichloropropane	ND	0.0208		mg/Kg-dry	1	2/14/2018 12:20:01 AM
Bromodichloromethane	ND	0.0208		mg/Kg-dry	1	2/14/2018 12:20:01 AM
Dibromomethane	ND	0.0208		mg/Kg-dry	1	2/14/2018 12:20:01 AM
cis-1,3-Dichloropropene	ND	0.0208		mg/Kg-dry	1	2/14/2018 12:20:01 AM
Toluene	ND	0.0208		mg/Kg-dry	1	2/14/2018 12:20:01 AM
trans-1,3-Dichloropropylene	ND	0.0208		mg/Kg-dry	1	2/14/2018 12:20:01 AM
1,1,2-Trichloroethane	ND	0.0208		mg/Kg-dry	1	2/14/2018 12:20:01 AM
1,3-Dichloropropane	ND	0.0260		mg/Kg-dry	1	2/14/2018 12:20:01 AM
Tetrachloroethene (PCE)	0.0475	0.0260		mg/Kg-dry	1	2/14/2018 12:20:01 AM
Dibromochloromethane	ND	0.0260		mg/Kg-dry	1	2/14/2018 12:20:01 AM
1,2-Dibromoethane (EDB)	ND	0.00521		mg/Kg-dry	1	2/14/2018 12:20:01 AM
Chlorobenzene	ND	0.0260		mg/Kg-dry	1	2/14/2018 12:20:01 AM
1,1,1,2-Tetrachloroethane	ND	0.0260		mg/Kg-dry	1	2/14/2018 12:20:01 AM
Ethylbenzene	ND	0.0260		mg/Kg-dry	1	2/14/2018 12:20:01 AM
m,p-Xylene	ND	0.0521		mg/Kg-dry	1	2/14/2018 12:20:01 AM
o-Xylene	ND	0.0260		mg/Kg-dry	1	2/14/2018 12:20:01 AM
Styrene	ND	0.0260		mg/Kg-dry	1	2/14/2018 12:20:01 AM
Isopropylbenzene	ND	0.0260		mg/Kg-dry	1	2/14/2018 12:20:01 AM
Bromoform	ND	0.0521		mg/Kg-dry	1	2/14/2018 12:20:01 AM

Analytical Report

Work Order: **1802133**
Date Reported: **2/15/2018**

Client: GeoEngineers
Collection Date: 2/8/2018 11:10:00 AM
Project: UCC Bucklin
Lab ID: 1802133-001
Matrix: Soil
Client Sample ID: **GEI-B6-3.5-4**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260C				Batch ID: 19801		Analyst: MW
1,1,2,2-Tetrachloroethane	ND	0.0208		mg/Kg-dry	1	2/14/2018 12:20:01 AM
n-Propylbenzene	ND	0.0260		mg/Kg-dry	1	2/14/2018 12:20:01 AM
Bromobenzene	ND	0.0208		mg/Kg-dry	1	2/14/2018 12:20:01 AM
1,3,5-Trimethylbenzene	ND	0.0260		mg/Kg-dry	1	2/14/2018 12:20:01 AM
2-Chlorotoluene	ND	0.0260		mg/Kg-dry	1	2/14/2018 12:20:01 AM
4-Chlorotoluene	ND	0.0260		mg/Kg-dry	1	2/14/2018 12:20:01 AM
tert-Butylbenzene	ND	0.0260		mg/Kg-dry	1	2/14/2018 12:20:01 AM
1,2,3-Trichloropropane	ND	0.0260		mg/Kg-dry	1	2/14/2018 12:20:01 AM
1,2,4-Trichlorobenzene	ND	0.0260		mg/Kg-dry	1	2/14/2018 12:20:01 AM
sec-Butylbenzene	ND	0.0521		mg/Kg-dry	1	2/14/2018 12:20:01 AM
4-Isopropyltoluene	ND	0.0521		mg/Kg-dry	1	2/14/2018 12:20:01 AM
1,3-Dichlorobenzene	ND	0.0208		mg/Kg-dry	1	2/14/2018 12:20:01 AM
1,4-Dichlorobenzene	ND	0.0208		mg/Kg-dry	1	2/14/2018 12:20:01 AM
n-Butylbenzene	ND	0.0260		mg/Kg-dry	1	2/14/2018 12:20:01 AM
1,2-Dichlorobenzene	ND	0.0208		mg/Kg-dry	1	2/14/2018 12:20:01 AM
1,2-Dibromo-3-chloropropane	ND	0.521		mg/Kg-dry	1	2/14/2018 12:20:01 AM
1,2,4-Trimethylbenzene	ND	0.0208		mg/Kg-dry	1	2/14/2018 12:20:01 AM
Hexachlorobutadiene	ND	0.0521		mg/Kg-dry	1	2/14/2018 12:20:01 AM
Naphthalene	ND	0.0521		mg/Kg-dry	1	2/14/2018 12:20:01 AM
1,2,3-Trichlorobenzene	ND	0.0208		mg/Kg-dry	1	2/14/2018 12:20:01 AM
Surr: Dibromofluoromethane	91.4	56.5 - 129		%Rec	1	2/14/2018 12:20:01 AM
Surr: Toluene-d8	99.5	64.5 - 151		%Rec	1	2/14/2018 12:20:01 AM
Surr: 1-Bromo-4-fluorobenzene	96.5	43.2 - 143		%Rec	1	2/14/2018 12:20:01 AM
Sample Moisture (Percent Moisture)				Batch ID: R41701		Analyst: CG
Percent Moisture	14.7	0.500		wt%	1	2/13/2018 4:11:57 PM

Work Order: 1802133
CLIENT: GeoEngineers
Project: UCC Bucklin

QC SUMMARY REPORT

Sample Moisture (Percent Moisture)

Sample ID **1802133-001ADUP** SampType: **DUP** Units: **wt%** Prep Date: **2/13/2018** RunNo: **41701**
Client ID: **GEI-B6-3.5-4** Batch ID: **R41701** Analysis Date: **2/13/2018** SeqNo: **803909**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	12.5	0.500						14.72	16.6	10	R

Work Order: 1802133
CLIENT: GeoEngineers
Project: UCC Bucklin

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID **LCS-19801** SampType: **LCS** Units: **mg/Kg** Prep Date: **2/13/2018** RunNo: **41711**
Client ID: **LCSS** Batch ID: **19801** Analysis Date: **2/13/2018** SeqNo: **804093**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	0.569	0.0200	1.000	0	56.9	14.3	167				
Chloromethane	0.775	0.0500	1.000	0	77.5	32	156				
Vinyl chloride	0.790	0.0250	1.000	0	79.0	43.4	151				
Bromomethane	1.17	0.0500	1.000	0	117	35	155				
Trichlorofluoromethane (CFC-11)	0.998	0.0200	1.000	0	99.8	33.8	156				
Chloroethane	1.06	0.0500	1.000	0	106	33.1	147				
1,1-Dichloroethene	0.876	0.0200	1.000	0	87.6	39	144				
Methylene chloride	0.938	0.0200	1.000	0	93.8	46.3	140				
trans-1,2-Dichloroethene	0.912	0.0200	1.000	0	91.2	68	130				
Methyl tert-butyl ether (MTBE)	0.881	0.0500	1.000	0	88.1	66.3	145				
1,1-Dichloroethane	0.900	0.0200	1.000	0	90.0	61.9	137				
2,2-Dichloropropane	0.730	0.100	1.000	0	73.0	35.5	186				
cis-1,2-Dichloroethene	0.920	0.0200	1.000	0	92.0	71.3	135				
Chloroform	0.911	0.0200	1.000	0	91.1	69	145				
1,1,1-Trichloroethane (TCA)	0.837	0.0250	1.000	0	83.7	69	132				
1,1-Dichloropropene	0.896	0.0200	1.000	0	89.6	72.7	131				
Carbon tetrachloride	0.783	0.0250	1.000	0	78.3	63.4	137				
1,2-Dichloroethane (EDC)	0.906	0.0200	1.000	0	90.6	50.9	162				
Benzene	0.936	0.0200	1.000	0	93.6	64.3	133				
Trichloroethene (TCE)	0.930	0.0200	1.000	0	93.0	65.5	137				
1,2-Dichloropropane	0.918	0.0200	1.000	0	91.8	63.2	142				
Bromodichloromethane	0.814	0.0200	1.000	0	81.4	53.4	131				
Dibromomethane	0.913	0.0200	1.000	0	91.3	60.1	146				
cis-1,3-Dichloropropene	0.832	0.0200	1.000	0	83.2	59.1	143				
Toluene	0.918	0.0200	1.000	0	91.8	67.3	138				
trans-1,3-Dichloropropylene	0.768	0.0200	1.000	0	76.8	49.2	149				
1,1,2-Trichloroethane	0.944	0.0200	1.000	0	94.4	56.9	147				
1,3-Dichloropropane	0.934	0.0250	1.000	0	93.4	56.1	153				
Tetrachloroethene (PCE)	0.920	0.0250	1.000	0	92.0	52.7	150				
Dibromochloromethane	0.753	0.0250	1.000	0	75.3	70.6	144				
1,2-Dibromoethane (EDB)	0.922	0.00500	1.000	0	92.2	50.5	154				

Work Order: 1802133
CLIENT: GeoEngineers
Project: UCC Bucklin

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID **LCS-19801** SampType: **LCS** Units: **mg/Kg** Prep Date: **2/13/2018** RunNo: **41711**
Client ID: **LCSS** Batch ID: **19801** Analysis Date: **2/13/2018** SeqNo: **804093**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chlorobenzene	0.944	0.0250	1.000	0	94.4	84.9	125				
1,1,1,2-Tetrachloroethane	0.848	0.0250	1.000	0	84.8	65.9	141				
Ethylbenzene	0.983	0.0250	1.000	0	98.3	74	129				
m,p-Xylene	1.88	0.0500	2.000	0	94.1	70	124				
o-Xylene	0.929	0.0250	1.000	0	92.9	68.1	139				
Styrene	0.932	0.0250	1.000	0	93.2	73.3	146				
Isopropylbenzene	0.992	0.0250	1.000	0	99.2	70	130				
Bromoform	0.792	0.0500	1.000	0	79.2	44.3	130				
1,1,2,2-Tetrachloroethane	0.917	0.0200	1.000	0	91.7	44.8	165				
n-Propylbenzene	0.973	0.0250	1.000	0	97.3	75.8	139				
Bromobenzene	0.929	0.0200	1.000	0	92.9	49.2	144				
1,3,5-Trimethylbenzene	0.959	0.0250	1.000	0	95.9	76.5	135				
2-Chlorotoluene	0.929	0.0250	1.000	0	92.9	76.7	129				
4-Chlorotoluene	0.937	0.0250	1.000	0	93.7	77.5	125				
tert-Butylbenzene	0.927	0.0250	1.000	0	92.7	66.2	130				
1,2,3-Trichloropropane	0.850	0.0250	1.000	0	85.0	67.9	136				
1,2,4-Trichlorobenzene	0.978	0.0250	1.000	0	97.8	65.5	150				
sec-Butylbenzene	1.00	0.0500	1.000	0	100	75.6	133				
4-Isopropyltoluene	0.985	0.0500	1.000	0	98.5	76.8	131				
1,3-Dichlorobenzene	0.976	0.0200	1.000	0	97.6	72.8	128				
1,4-Dichlorobenzene	0.978	0.0200	1.000	0	97.8	72.6	126				
n-Butylbenzene	0.990	0.0250	1.000	0	99.0	78.4	140				
1,2-Dichlorobenzene	0.983	0.0200	1.000	0	98.3	72.8	126				
1,2-Dibromo-3-chloropropane	0.786	0.500	1.000	0	78.6	40.2	155				
1,2,4-Trimethylbenzene	0.972	0.0200	1.000	0	97.2	77.5	129				
Hexachlorobutadiene	0.954	0.0500	1.000	0	95.4	42	151				
Naphthalene	0.947	0.0500	1.000	0	94.7	46.5	167				
1,2,3-Trichlorobenzene	0.981	0.0200	1.000	0	98.1	64.5	149				
Surr: Dibromofluoromethane	1.23		1.250		98.2	56.5	129				
Surr: Toluene-d8	1.24		1.250		99.5	64.5	151				
Surr: 1-Bromo-4-fluorobenzene	1.24		1.250		99.3	43.2	143				

Work Order: 1802133
CLIENT: GeoEngineers
Project: UCC Bucklin

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID	**LCS-19801**	SampType: **LCS**		Units: **mg/Kg**		Prep Date: **2/13/2018**		RunNo: **41711**	
Client ID:	**LCSS**	Batch ID: **19801**				Analysis Date: **2/13/2018**		SeqNo: **804093**	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sample ID	**MB-19801**	SampType: **MBLK**		Units: **mg/Kg**		Prep Date: **2/13/2018**		RunNo: **41711**	
Client ID:	**MBLKS**	Batch ID: **19801**				Analysis Date: **2/13/2018**		SeqNo: **804094**	

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	ND	0.0200									
Chloromethane	ND	0.0500									
Vinyl chloride	ND	0.0250									
Bromomethane	ND	0.0500									
Trichlorofluoromethane (CFC-11)	ND	0.0200									
Chloroethane	ND	0.0500									
1,1-Dichloroethene	ND	0.0200									
Methylene chloride	ND	0.0200									
trans-1,2-Dichloroethene	ND	0.0200									
Methyl tert-butyl ether (MTBE)	ND	0.0500									
1,1-Dichloroethane	ND	0.0200									
2,2-Dichloropropane	ND	0.100									
cis-1,2-Dichloroethene	ND	0.0200									
Chloroform	ND	0.0200									
1,1,1-Trichloroethane (TCA)	ND	0.0250									
1,1-Dichloropropene	ND	0.0200									
Carbon tetrachloride	ND	0.0250									
1,2-Dichloroethane (EDC)	ND	0.0200									
Benzene	ND	0.0200									
Trichloroethene (TCE)	ND	0.0200									
1,2-Dichloropropane	ND	0.0200									
Bromodichloromethane	ND	0.0200									
Dibromomethane	ND	0.0200									
cis-1,3-Dichloropropene	ND	0.0200									
Toluene	ND	0.0200									

Work Order: 1802133
CLIENT: GeoEngineers
Project: UCC Bucklin

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID **MB-19801** SampType: **MBLK** Units: **mg/Kg** Prep Date: **2/13/2018** RunNo: **41711**
Client ID: **MBLKS** Batch ID: **19801** Analysis Date: **2/13/2018** SeqNo: **804094**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
trans-1,3-Dichloropropylene	ND	0.0200									
1,1,2-Trichloroethane	ND	0.0200									
1,3-Dichloropropane	ND	0.0250									
Tetrachloroethene (PCE)	ND	0.0250									
Dibromochloromethane	ND	0.0250									
1,2-Dibromoethane (EDB)	ND	0.00500									
Chlorobenzene	ND	0.0250									
1,1,1,2-Tetrachloroethane	ND	0.0250									
Ethylbenzene	ND	0.0250									
m,p-Xylene	ND	0.0500									
o-Xylene	ND	0.0250									
Styrene	ND	0.0250									
Isopropylbenzene	ND	0.0250									
Bromoform	ND	0.0500									
1,1,2,2-Tetrachloroethane	ND	0.0200									
n-Propylbenzene	ND	0.0250									
Bromobenzene	ND	0.0200									
1,3,5-Trimethylbenzene	ND	0.0250									
2-Chlorotoluene	ND	0.0250									
4-Chlorotoluene	ND	0.0250									
tert-Butylbenzene	ND	0.0250									
1,2,3-Trichloropropane	ND	0.0250									
1,2,4-Trichlorobenzene	ND	0.0250									
sec-Butylbenzene	ND	0.0500									
4-Isopropyltoluene	ND	0.0500									
1,3-Dichlorobenzene	ND	0.0200									
1,4-Dichlorobenzene	ND	0.0200									
n-Butylbenzene	ND	0.0250									
1,2-Dichlorobenzene	ND	0.0200									
1,2-Dibromo-3-chloropropane	ND	0.500									
1,2,4-Trimethylbenzene	ND	0.0200									

Work Order: 1802133
CLIENT: GeoEngineers
Project: UCC Bucklin

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID **MB-19801** SampType: **MBLK** Units: **mg/Kg** Prep Date: **2/13/2018** RunNo: **41711**
Client ID: **MBLKS** Batch ID: **19801** Analysis Date: **2/13/2018** SeqNo: **804094**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexachlorobutadiene	ND	0.0500									
Naphthalene	ND	0.0500									
1,2,3-Trichlorobenzene	ND	0.0200									
Surr: Dibromofluoromethane	1.15		1.250		92.0	56.5	129				
Surr: Toluene-d8	1.24		1.250		99.0	64.5	151				
Surr: 1-Bromo-4-fluorobenzene	1.19		1.250		95.0	43.2	143				

Sample ID **1802136-001BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **2/13/2018** RunNo: **41711**
Client ID: **BATCH** Batch ID: **19801** Analysis Date: **2/14/2018** SeqNo: **804090**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	ND	0.0240						0		30	
Chloromethane	ND	0.0599						0		30	
Vinyl chloride	ND	0.0300						0		30	
Bromomethane	ND	0.0599						0		30	
Trichlorofluoromethane (CFC-11)	ND	0.0240						0		30	
Chloroethane	ND	0.0599						0		30	
1,1-Dichloroethene	ND	0.0240						0		30	
Methylene chloride	ND	0.0240						0		30	
trans-1,2-Dichloroethene	ND	0.0240						0		30	
Methyl tert-butyl ether (MTBE)	ND	0.0599						0		30	
1,1-Dichloroethane	ND	0.0240						0		30	
2,2-Dichloropropane	ND	0.120						0		30	
cis-1,2-Dichloroethene	1.12	0.0240						1.107	0.757	30	
Chloroform	ND	0.0240						0		30	
1,1,1-Trichloroethane (TCA)	ND	0.0300						0		30	
1,1-Dichloropropene	ND	0.0240						0		30	
Carbon tetrachloride	ND	0.0300						0		30	
1,2-Dichloroethane (EDC)	ND	0.0240						0		30	
Benzene	ND	0.0240						0		30	

Work Order: 1802133
CLIENT: GeoEngineers
Project: UCC Bucklin

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID **1802136-001BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **2/13/2018** RunNo: **41711**
Client ID: **BATCH** Batch ID: **19801** Analysis Date: **2/14/2018** SeqNo: **804090**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichloroethene (TCE)	0.403	0.0240						0.4007	0.463	30	
1,2-Dichloropropane	ND	0.0240						0		30	
Bromodichloromethane	ND	0.0240						0		30	
Dibromomethane	ND	0.0240						0		30	
cis-1,3-Dichloropropene	ND	0.0240						0		30	
Toluene	ND	0.0240						0		30	
trans-1,3-Dichloropropylene	ND	0.0240						0		30	
1,1,2-Trichloroethane	ND	0.0240						0		30	
1,3-Dichloropropane	ND	0.0300						0		30	
Tetrachloroethene (PCE)	19.3	0.0300						19.40	0.302	30	E
Dibromochloromethane	ND	0.0300						0		30	
1,2-Dibromoethane (EDB)	ND	0.00599						0		30	
Chlorobenzene	ND	0.0300						0		30	
1,1,1,2-Tetrachloroethane	ND	0.0300						0		30	
Ethylbenzene	ND	0.0300						0		30	
m,p-Xylene	ND	0.0599						0		30	
o-Xylene	ND	0.0300						0		30	
Styrene	ND	0.0300						0		30	
Isopropylbenzene	ND	0.0300						0		30	
Bromoform	ND	0.0599						0		30	
1,1,2,2-Tetrachloroethane	ND	0.0240						0		30	
n-Propylbenzene	ND	0.0300						0		30	
Bromobenzene	ND	0.0240						0		30	
1,3,5-Trimethylbenzene	ND	0.0300						0		30	
2-Chlorotoluene	ND	0.0300						0		30	
4-Chlorotoluene	ND	0.0300						0		30	
tert-Butylbenzene	ND	0.0300						0		30	
1,2,3-Trichloropropane	ND	0.0300						0		30	
1,2,4-Trichlorobenzene	ND	0.0300						0		30	
sec-Butylbenzene	ND	0.0599						0		30	
4-Isopropyltoluene	ND	0.0599						0		30	

Work Order: 1802133
CLIENT: GeoEngineers
Project: UCC Bucklin

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID **1802136-001BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **2/13/2018** RunNo: **41711**
Client ID: **BATCH** Batch ID: **19801** Analysis Date: **2/14/2018** SeqNo: **804090**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,3-Dichlorobenzene	ND	0.0240						0		30	
1,4-Dichlorobenzene	ND	0.0240						0		30	
n-Butylbenzene	ND	0.0300						0		30	
1,2-Dichlorobenzene	ND	0.0240						0		30	
1,2-Dibromo-3-chloropropane	ND	0.599						0		30	
1,2,4-Trimethylbenzene	ND	0.0240						0		30	
Hexachlorobutadiene	ND	0.0599						0		30	
Naphthalene	ND	0.0599						0		30	
1,2,3-Trichlorobenzene	ND	0.0240						0		30	
Surr: Dibromofluoromethane	1.40		1.498		93.2	56.5	129		0		
Surr: Toluene-d8	1.50		1.498		100	64.5	151		0		
Surr: 1-Bromo-4-fluorobenzene	1.44		1.498		95.9	43.2	143		0		

NOTES:
E - Estimated value. The amount exceeds the linear working range of the instrument.

Sample ID **1802133-001BMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **2/13/2018** RunNo: **41711**
Client ID: **GEI-B6-3.5-4** Batch ID: **19801** Analysis Date: **2/14/2018** SeqNo: **804086**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	1.44	0.0208	1.042	0	138	43.5	121				S
Chloromethane	1.12	0.0521	1.042	0	108	45	130				
Vinyl chloride	1.19	0.0260	1.042	0	114	43.6	150				
Bromomethane	1.56	0.0521	1.042	0	149	21.3	120				S
Trichlorofluoromethane (CFC-11)	1.59	0.0208	1.042	0	153	35	131				S
Chloroethane	1.47	0.0521	1.042	0	141	31.9	123				S
1,1-Dichloroethene	1.10	0.0208	1.042	0	106	47.3	147				
Methylene chloride	1.09	0.0208	1.042	0	104	54.7	142				
trans-1,2-Dichloroethene	1.09	0.0208	1.042	0	105	52	136				
Methyl tert-butyl ether (MTBE)	0.995	0.0521	1.042	0	95.5	58.5	167				
1,1-Dichloroethane	1.05	0.0208	1.042	0	101	51.8	141				
2,2-Dichloropropane	0.697	0.104	1.042	0	66.9	36	123				

Work Order: 1802133
CLIENT: GeoEngineers
Project: UCC Bucklin

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID **1802133-001BMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **2/13/2018** RunNo: **41711**
Client ID: **GEI-B6-3.5-4** Batch ID: **19801** Analysis Date: **2/14/2018** SeqNo: **804086**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
cis-1,2-Dichloroethene	1.07	0.0208	1.042	0	103	58.6	136				
Chloroform	1.05	0.0208	1.042	0	101	53.2	129				
1,1,1-Trichloroethane (TCA)	0.983	0.0260	1.042	0	94.3	58.3	145				
1,1-Dichloropropene	1.08	0.0208	1.042	0	103	55.1	138				
Carbon tetrachloride	0.931	0.0260	1.042	0	89.4	53.3	144				
1,2-Dichloroethane (EDC)	1.03	0.0208	1.042	0	98.8	51.3	139				
Benzene	1.09	0.0208	1.042	0	105	63.5	133				
Trichloroethene (TCE)	1.10	0.0208	1.042	0	105	61.6	147				
1,2-Dichloropropane	1.05	0.0208	1.042	0	101	59	136				
Bromodichloromethane	0.914	0.0208	1.042	0	87.7	50.7	141				
Dibromomethane	1.02	0.0208	1.042	0	98.3	50.6	137				
cis-1,3-Dichloropropene	0.900	0.0208	1.042	0	86.3	50.4	138				
Toluene	1.06	0.0208	1.042	0	102	63.4	132				
trans-1,3-Dichloropropylene	0.829	0.0208	1.042	0	79.5	44.1	147				
1,1,2-Trichloroethane	1.06	0.0208	1.042	0	102	51.6	137				
1,3-Dichloropropane	1.07	0.0260	1.042	0	103	53.1	134				
Tetrachloroethene (PCE)	1.31	0.0260	1.042	0.04752	121	35.6	158				
Dibromochloromethane	0.854	0.0260	1.042	0	82.0	55.3	140				
1,2-Dibromoethane (EDB)	1.05	0.00521	1.042	0	101	50.4	136				
Chlorobenzene	1.07	0.0260	1.042	0	103	60	133				
1,1,1,2-Tetrachloroethane	0.923	0.0260	1.042	0	88.6	53.1	142				
Ethylbenzene	1.13	0.0260	1.042	0	108	54.5	134				
m,p-Xylene	2.17	0.0521	2.084	0	104	53.1	132				
o-Xylene	1.06	0.0260	1.042	0	102	53.3	139				
Styrene	1.05	0.0260	1.042	0	101	51.1	132				
Isopropylbenzene	1.13	0.0260	1.042	0	109	58.9	138				
Bromoform	0.793	0.0521	1.042	0	76.1	57.9	130				
1,1,2,2-Tetrachloroethane	0.988	0.0208	1.042	0	94.8	51.9	131				
n-Propylbenzene	1.10	0.0260	1.042	0	106	53.6	140				
Bromobenzene	1.03	0.0208	1.042	0	98.5	54.2	140				
1,3,5-Trimethylbenzene	1.05	0.0260	1.042	0	101	51.8	136				

Work Order: 1802133
CLIENT: GeoEngineers
Project: UCC Bucklin

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID **1802133-001BMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **2/13/2018** RunNo: **41711**
Client ID: **GEI-B6-3.5-4** Batch ID: **19801** Analysis Date: **2/14/2018** SeqNo: **804086**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
2-Chlorotoluene	1.01	0.0260	1.042	0	97.1	51.6	136				
4-Chlorotoluene	1.02	0.0260	1.042	0	98.0	50.1	139				
tert-Butylbenzene	1.03	0.0260	1.042	0	99.0	50.5	135				
1,2,3-Trichloropropane	0.910	0.0260	1.042	0	87.3	50.5	131				
1,2,4-Trichlorobenzene	1.04	0.0260	1.042	0	100	50.8	130				
sec-Butylbenzene	1.12	0.0521	1.042	0	107	52.6	141				
4-Isopropyltoluene	1.09	0.0521	1.042	0	104	52.9	134				
1,3-Dichlorobenzene	1.11	0.0208	1.042	0	106	52.6	131				
1,4-Dichlorobenzene	1.08	0.0208	1.042	0	103	52.9	129				
n-Butylbenzene	1.13	0.0260	1.042	0	108	52.6	130				
1,2-Dichlorobenzene	1.08	0.0208	1.042	0	104	55.8	129				
1,2-Dibromo-3-chloropropane	0.819	0.521	1.042	0	78.6	40.5	131				
1,2,4-Trimethylbenzene	1.06	0.0208	1.042	0	102	50.6	137				
Hexachlorobutadiene	0.999	0.0521	1.042	0	95.9	40.6	158				
Naphthalene	1.04	0.0521	1.042	0	99.8	52.3	124				
1,2,3-Trichlorobenzene	1.05	0.0208	1.042	0	101	54.4	124				
Surr: Dibromofluoromethane	1.28		1.302		98.5	56.5	129				
Surr: Toluene-d8	1.30		1.302		99.6	64.5	151				
Surr: 1-Bromo-4-fluorobenzene	1.28		1.302		98.4	43.2	143				

NOTES:
S - Outlying spike recoveries observed.

Sample ID **1802133-001BMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **2/13/2018** RunNo: **41711**
Client ID: **GEI-B6-3.5-4** Batch ID: **19801** Analysis Date: **2/14/2018** SeqNo: **804087**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	1.33	0.0208	1.042	0	128	43.5	121	1.440	7.99	30	S
Chloromethane	1.10	0.0521	1.042	0	105	45	130	1.123	2.23	30	
Vinyl chloride	1.11	0.0260	1.042	0	106	43.6	150	1.187	6.75	30	
Bromomethane	1.56	0.0521	1.042	0	149	21.3	120	1.556	0.0411	30	S
Trichlorofluoromethane (CFC-11)	1.48	0.0208	1.042	0	142	35	131	1.594	7.15	30	S

Work Order: 1802133
CLIENT: GeoEngineers
Project: UCC Bucklin

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID **1802133-001BMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **2/13/2018** RunNo: **41711**
Client ID: **GEI-B6-3.5-4** Batch ID: **19801** Analysis Date: **2/14/2018** SeqNo: **804087**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloroethane	1.39	0.0521	1.042	0	133	31.9	123	1.469	5.55	30	S
1,1-Dichloroethene	1.04	0.0208	1.042	0	99.5	47.3	147	1.101	6.09	30	
Methylene chloride	1.04	0.0208	1.042	0	100	54.7	142	1.087	4.05	30	
trans-1,2-Dichloroethene	1.03	0.0208	1.042	0	98.4	52	136	1.089	5.99	30	
Methyl tert-butyl ether (MTBE)	0.961	0.0521	1.042	0	92.2	58.5	167	0.9950	3.52	30	
1,1-Dichloroethane	1.00	0.0208	1.042	0	96.2	51.8	141	1.051	4.75	30	
2,2-Dichloropropane	0.651	0.104	1.042	0	62.5	36	123	0.6971	6.82	30	
cis-1,2-Dichloroethene	1.02	0.0208	1.042	0	98.0	58.6	136	1.073	4.92	30	
Chloroform	0.999	0.0208	1.042	0	95.8	53.2	129	1.047	4.76	30	
1,1,1-Trichloroethane (TCA)	0.933	0.0260	1.042	0	89.6	58.3	145	0.9829	5.15	30	
1,1-Dichloropropene	1.00	0.0208	1.042	0	96.4	55.1	138	1.078	7.04	30	
Carbon tetrachloride	0.880	0.0260	1.042	0	84.4	53.3	144	0.9315	5.71	30	
1,2-Dichloroethane (EDC)	0.984	0.0208	1.042	0	94.5	51.3	139	1.029	4.46	30	
Benzene	1.04	0.0208	1.042	0	99.4	63.5	133	1.090	5.14	30	
Trichloroethene (TCE)	1.02	0.0208	1.042	0	97.7	61.6	147	1.096	7.34	30	
1,2-Dichloropropane	1.01	0.0208	1.042	0	96.7	59	136	1.053	4.41	30	
Bromodichloromethane	0.879	0.0208	1.042	0	84.4	50.7	141	0.9138	3.83	30	
Dibromomethane	0.989	0.0208	1.042	0	94.9	50.6	137	1.024	3.55	30	
cis-1,3-Dichloropropene	0.865	0.0208	1.042	0	83.0	50.4	138	0.8996	3.90	30	
Toluene	1.00	0.0208	1.042	0	96.3	63.4	132	1.064	5.81	30	
trans-1,3-Dichloropropylene	0.796	0.0208	1.042	0	76.4	44.1	147	0.8288	4.00	30	
1,1,2-Trichloroethane	1.02	0.0208	1.042	0	98.0	51.6	137	1.060	3.71	30	
1,3-Dichloropropane	1.03	0.0260	1.042	0	98.6	53.1	134	1.073	4.37	30	
Tetrachloroethene (PCE)	1.14	0.0260	1.042	0.04752	105	35.6	158	1.309	13.5	30	
Dibromochloromethane	0.826	0.0260	1.042	0	79.3	55.3	140	0.8544	3.34	30	
1,2-Dibromoethane (EDB)	1.01	0.00521	1.042	0	97.2	50.4	136	1.051	3.74	30	
Chlorobenzene	1.02	0.0260	1.042	0	98.1	60	133	1.069	4.50	30	
1,1,1,2-Tetrachloroethane	0.893	0.0260	1.042	0	85.7	53.1	142	0.9234	3.36	30	
Ethylbenzene	1.07	0.0260	1.042	0	103	54.5	134	1.129	5.23	30	
m,p-Xylene	2.06	0.0521	2.084	0	98.7	53.1	132	2.169	5.32	30	
o-Xylene	1.01	0.0260	1.042	0	96.7	53.3	139	1.059	4.99	30	

Work Order: 1802133
CLIENT: GeoEngineers
Project: UCC Bucklin

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID **1802133-001BMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **2/13/2018** RunNo: **41711**
Client ID: **GEI-B6-3.5-4** Batch ID: **19801** Analysis Date: **2/14/2018** SeqNo: **804087**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Styrene	1.01	0.0260	1.042	0	96.6	51.1	132	1.049	4.12	30	
Isopropylbenzene	1.07	0.0260	1.042	0	103	58.9	138	1.130	5.30	30	
Bromoform	0.787	0.0521	1.042	0	75.5	57.9	130	0.7926	0.758	30	
1,1,2,2-Tetrachloroethane	0.948	0.0208	1.042	0	91.0	51.9	131	0.9875	4.08	30	
n-Propylbenzene	1.03	0.0260	1.042	0	98.7	53.6	140	1.102	6.90	30	
Bromobenzene	0.988	0.0208	1.042	0	94.8	54.2	140	1.026	3.78	30	
1,3,5-Trimethylbenzene	1.00	0.0260	1.042	0	96.2	51.8	136	1.051	4.73	30	
2-Chlorotoluene	0.973	0.0260	1.042	0	93.3	51.6	136	1.012	3.92	30	
4-Chlorotoluene	0.975	0.0260	1.042	0	93.5	50.1	139	1.021	4.68	30	
tert-Butylbenzene	0.988	0.0260	1.042	0	94.8	50.5	135	1.031	4.26	30	
1,2,3-Trichloropropane	0.865	0.0260	1.042	0	83.0	50.5	131	0.9096	5.00	30	
1,2,4-Trichlorobenzene	1.01	0.0260	1.042	0	97.4	50.8	130	1.044	2.87	30	
sec-Butylbenzene	1.06	0.0521	1.042	0	102	52.6	141	1.116	5.08	30	
4-Isopropyltoluene	1.03	0.0521	1.042	0	99.1	52.9	134	1.087	5.11	30	
1,3-Dichlorobenzene	1.06	0.0208	1.042	0	102	52.6	131	1.109	4.47	30	
1,4-Dichlorobenzene	1.04	0.0208	1.042	0	99.8	52.9	129	1.077	3.47	30	
n-Butylbenzene	1.06	0.0260	1.042	0	102	52.6	130	1.127	6.28	30	
1,2-Dichlorobenzene	1.05	0.0208	1.042	0	101	55.8	129	1.085	2.94	30	
1,2-Dibromo-3-chloropropane	0.806	0.521	1.042	0	77.4	40.5	131	0.8190	1.55	30	
1,2,4-Trimethylbenzene	1.01	0.0208	1.042	0	97.3	50.6	137	1.064	4.87	30	
Hexachlorobutadiene	0.963	0.0521	1.042	0	92.4	40.6	158	0.9993	3.69	30	
Naphthalene	1.03	0.0521	1.042	0	99.2	52.3	124	1.040	0.608	30	
1,2,3-Trichlorobenzene	1.03	0.0208	1.042	0	98.6	54.4	124	1.050	2.15	30	
Surr: Dibromofluoromethane	1.28		1.302		98.6	56.5	129		0		
Surr: Toluene-d8	1.30		1.302		99.5	64.5	151		0		
Surr: 1-Bromo-4-fluorobenzene	1.29		1.302		98.8	43.2	143		0		

NOTES:
S - Outlying spike recoveries observed.

Sample Log-In Check List

Client Name:	**GEI**	Work Order Number:	**1802133**
Logged by:	**Clare Griggs**	Date Received:	**2/13/2018 1:42:00 PM**

Chain of Custody

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

Log In

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

Special Handling (if applicable)

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

Person Notified: _____ Date _____

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

Regarding: _____

Client Instructions: _____

19. Additional remarks:

Item Information

Item #	Temp ºC
Cooler	10.0
Sample	9.3

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

Fremont Analytical
3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Chain of Custody Record & Laboratory Services Agreement

Date: 2/8/18 Page: 1 of: 1

Laboratory Project No (internal): 1802133

Project Name: VCE Bucklin

Special Remarks:

Project No: 22828-001-01

Client: GeoEngineers

Collected by: Paul Robinette

Address: 600 Stewart Suite 1700

Location: Silverdale, WA

City, State, Zip: Seattle, WA 98101

Report To (PM): Ian Young

Telephone: 206-728-2674

Sample Disposal: ☐ Return to client ☐ Disposal by lab (after 30 days)

Fax: 206-728-2732

PM Email: iyoung@geoengineers.com

	Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	VOCs (EPA 8260 / 624)	GX/BTEX	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics (DX)	SVOCs (EPA 8270 / 625)	PAHs (EPA 8270 - SIM)	PCBs (EPA 8082 / 608)	Metals** (EPA 6020 / 200.8)	Total (T) | Dissolved (D)	Anions (IC)***	EDB (8011)	Hold				Comments
1	LEI-B6-3.5-4	2/8/18	1110	S	X												X					
2																						
3																						
4																						
5																						
6																						
7																						
8																						
9																						
10																						

*Matrix: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water

**Metals (Circle): MTCA-5 RCRA-8 Priority Pollutants TAL *Individual:* Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sr Sn Ti Tl U V Zn

***Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate+Nitrite

Turn-around Time:

- ☐ Standard
- ☐ 3 Day
- ☐ 2 Day
- ☐ Next Day
- Same Day _____ (specify)

I represent that I am authorized to enter into this Agreement with Fremont Analytical on behalf of the Client named above and that I have verified Client's agreement to each of the terms on the front and backside of this Agreement.

Relinquished	Date/Time	Received	Date/Time
x	2/13/18	x	2/13/18 9:17 AM
x	2-13-18	x	2/13/18 1842

www.fremontanalytical.com

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

GeoEngineers
Ian Young
600 Stewart Street, Suite 1700
Seattle, WA 98101

RE: UCC Bucklin / Silverdale
Work Order Number: 1803029

March 09, 2018

Attention Ian Young:

Fremont Analytical, Inc. received 3 sample(s) on 3/2/2018 for the analyses presented in the following report.

Sample Moisture (Percent Moisture)
Volatile Organic Compounds by EPA Method 8260C

This report consists of the following:

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

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

Thank you for using Fremont Analytical.

Sincerely,

Mike Ridgeway
Laboratory Director

Date: *03/09/2018*

CLIENT: GeoEngineers
Project: UCC Bucklin / Silverdale
Work Order: 1803029

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1803029-001	GEI-MW1-180301	03/01/2018 4:05 PM	03/02/2018 3:20 PM
1803029-002	GEI-MW1-10-10.5	03/01/2018 2:55 PM	03/02/2018 3:20 PM
1803029-003	GEI-MW1-14.5-15	03/01/2018 2:57 PM	03/02/2018 3:20 PM

Case Narrative

WO#: **1803029**
Date: **3/9/2018**

CLIENT: GeoEngineers
Project: UCC Bucklin / Silverdale

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

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

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

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

Revision1: Corrected Project Name

Qualifiers:

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

Acronyms:

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

Client: GeoEngineers
Project: UCC Bucklin / Silverdale
Lab ID: 1803029-001
Client Sample ID: **GEI-MW1-180301**

Collection Date: 3/1/2018 4:05:00 PM
Matrix: Groundwater

Volatile Organic Compounds by EPA Method 8260C Batch ID: 19975 Analyst: NG

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Dichlorodifluoromethane (CFC-12)	ND	1.00		µg/L	1	3/6/2018 9:34:17 AM
Chloromethane	ND	2.00	Q	µg/L	1	3/6/2018 9:34:17 AM
Vinyl chloride	ND	0.200		µg/L	1	3/6/2018 9:34:17 AM
Bromomethane	ND	1.00		µg/L	1	3/6/2018 9:34:17 AM
Trichlorofluoromethane (CFC-11)	ND	1.00		µg/L	1	3/6/2018 9:34:17 AM
Chloroethane	ND	1.00		µg/L	1	3/6/2018 9:34:17 AM
1,1-Dichloroethene	ND	1.00		µg/L	1	3/6/2018 9:34:17 AM
Methylene chloride	ND	1.00		µg/L	1	3/6/2018 9:34:17 AM
trans-1,2-Dichloroethene	ND	1.00		µg/L	1	3/6/2018 9:34:17 AM
Methyl tert-butyl ether (MTBE)	ND	1.00		µg/L	1	3/6/2018 9:34:17 AM
1,1-Dichloroethane	ND	1.00		µg/L	1	3/6/2018 9:34:17 AM
2,2-Dichloropropane	ND	2.00		µg/L	1	3/6/2018 9:34:17 AM
cis-1,2-Dichloroethene	ND	1.00		µg/L	1	3/6/2018 9:34:17 AM
Chloroform	ND	1.00		µg/L	1	3/6/2018 9:34:17 AM
1,1,1-Trichloroethane (TCA)	ND	1.00		µg/L	1	3/6/2018 9:34:17 AM
1,1-Dichloropropene	ND	1.00		µg/L	1	3/6/2018 9:34:17 AM
Carbon tetrachloride	ND	1.00		µg/L	1	3/6/2018 9:34:17 AM
1,2-Dichloroethane (EDC)	ND	1.00		µg/L	1	3/6/2018 9:34:17 AM
Benzene	ND	1.00		µg/L	1	3/6/2018 9:34:17 AM
Trichloroethene (TCE)	ND	0.500		µg/L	1	3/6/2018 9:34:17 AM
1,2-Dichloropropane	ND	1.00		µg/L	1	3/6/2018 9:34:17 AM
Bromodichloromethane	ND	1.00		µg/L	1	3/6/2018 9:34:17 AM
Dibromomethane	ND	1.00		µg/L	1	3/6/2018 9:34:17 AM
cis-1,3-Dichloropropene	ND	1.00		µg/L	1	3/6/2018 9:34:17 AM
Toluene	ND	1.00		µg/L	1	3/6/2018 9:34:17 AM
trans-1,3-Dichloropropylene	ND	1.00		µg/L	1	3/6/2018 9:34:17 AM
1,1,2-Trichloroethane	ND	1.00		µg/L	1	3/6/2018 9:34:17 AM
1,3-Dichloropropane	ND	1.00	Q	µg/L	1	3/6/2018 9:34:17 AM
Tetrachloroethene (PCE)	ND	1.00		µg/L	1	3/6/2018 9:34:17 AM
Dibromochloromethane	ND	1.00		µg/L	1	3/6/2018 9:34:17 AM
1,2-Dibromoethane (EDB)	ND	0.250		µg/L	1	3/6/2018 9:34:17 AM
Chlorobenzene	ND	1.00		µg/L	1	3/6/2018 9:34:17 AM
1,1,1,2-Tetrachloroethane	ND	1.00		µg/L	1	3/6/2018 9:34:17 AM
Ethylbenzene	ND	1.00		µg/L	1	3/6/2018 9:34:17 AM
m,p-Xylene	ND	1.00		µg/L	1	3/6/2018 9:34:17 AM
o-Xylene	ND	1.00		µg/L	1	3/6/2018 9:34:17 AM
Styrene	ND	1.00		µg/L	1	3/6/2018 9:34:17 AM
Isopropylbenzene	ND	1.00		µg/L	1	3/6/2018 9:34:17 AM
Bromoform	ND	2.00		µg/L	1	3/6/2018 9:34:17 AM

Analytical Report

Work Order: **1803029**
Date Reported: **3/9/2018**

Client: GeoEngineers
Collection Date: 3/1/2018 4:05:00 PM
Project: UCC Bucklin / Silverdale
Lab ID: 1803029-001
Matrix: Groundwater
Client Sample ID: **GEI-MW1-180301**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260C				Batch ID: 19975		Analyst: NG
1,1,2,2-Tetrachloroethane	ND	1.00		µg/L	1	3/6/2018 9:34:17 AM
n-Propylbenzene	ND	1.00		µg/L	1	3/6/2018 9:34:17 AM
Bromobenzene	ND	1.00		µg/L	1	3/6/2018 9:34:17 AM
1,3,5-Trimethylbenzene	ND	1.00		µg/L	1	3/6/2018 9:34:17 AM
2-Chlorotoluene	ND	1.00		µg/L	1	3/6/2018 9:34:17 AM
4-Chlorotoluene	ND	1.00		µg/L	1	3/6/2018 9:34:17 AM
tert-Butylbenzene	ND	1.00		µg/L	1	3/6/2018 9:34:17 AM
1,2,3-Trichloropropane	ND	1.00		µg/L	1	3/6/2018 9:34:17 AM
1,2,4-Trichlorobenzene	ND	2.00		µg/L	1	3/6/2018 9:34:17 AM
sec-Butylbenzene	ND	1.00		µg/L	1	3/6/2018 9:34:17 AM
4-Isopropyltoluene	ND	1.00		µg/L	1	3/6/2018 9:34:17 AM
1,3-Dichlorobenzene	ND	1.00		µg/L	1	3/6/2018 9:34:17 AM
1,4-Dichlorobenzene	ND	1.00		µg/L	1	3/6/2018 9:34:17 AM
n-Butylbenzene	ND	1.00		µg/L	1	3/6/2018 9:34:17 AM
1,2-Dichlorobenzene	ND	1.00		µg/L	1	3/6/2018 9:34:17 AM
1,2-Dibromo-3-chloropropane	ND	1.00		µg/L	1	3/6/2018 9:34:17 AM
1,2,4-Trimethylbenzene	ND	1.00		µg/L	1	3/6/2018 9:34:17 AM
Hexachloro-1,3-butadiene	ND	4.00		µg/L	1	3/6/2018 9:34:17 AM
Naphthalene	ND	1.00		µg/L	1	3/6/2018 9:34:17 AM
1,2,3-Trichlorobenzene	ND	4.00		µg/L	1	3/6/2018 9:34:17 AM
Surr: Dibromofluoromethane	88.1	45.4 - 152		%Rec	1	3/6/2018 9:34:17 AM
Surr: Toluene-d8	96.4	40.1 - 139		%Rec	1	3/6/2018 9:34:17 AM
Surr: 1-Bromo-4-fluorobenzene	98.9	64.2 - 128		%Rec	1	3/6/2018 9:34:17 AM

NOTES:
Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

Client: GeoEngineers
Collection Date: 3/1/2018 2:57:00 PM
Project: UCC Bucklin / Silverdale
Lab ID: 1803029-003
Matrix: Soil
Client Sample ID: **GEI-MW1-14.5-15**

Volatile Organic Compounds by EPA Method 8260C

Batch ID: 19999 Analyst: MW

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Dichlorodifluoromethane (CFC-12)	ND	0.0219		mg/Kg-dry	1	3/8/2018 11:01:56 AM
Chloromethane	ND	0.0549		mg/Kg-dry	1	3/8/2018 11:01:56 AM
Vinyl chloride	ND	0.0274		mg/Kg-dry	1	3/8/2018 11:01:56 AM
Bromomethane	ND	0.0549		mg/Kg-dry	1	3/8/2018 11:01:56 AM
Trichlorofluoromethane (CFC-11)	ND	0.0219		mg/Kg-dry	1	3/8/2018 11:01:56 AM
Chloroethane	ND	0.0549		mg/Kg-dry	1	3/8/2018 11:01:56 AM
1,1-Dichloroethene	ND	0.0219		mg/Kg-dry	1	3/8/2018 11:01:56 AM
Methylene chloride	ND	0.0219		mg/Kg-dry	1	3/8/2018 11:01:56 AM
trans-1,2-Dichloroethene	ND	0.0219		mg/Kg-dry	1	3/8/2018 11:01:56 AM
Methyl tert-butyl ether (MTBE)	ND	0.0549		mg/Kg-dry	1	3/8/2018 11:01:56 AM
1,1-Dichloroethane	ND	0.0219		mg/Kg-dry	1	3/8/2018 11:01:56 AM
2,2-Dichloropropane	ND	0.110		mg/Kg-dry	1	3/8/2018 11:01:56 AM
cis-1,2-Dichloroethene	ND	0.0219		mg/Kg-dry	1	3/8/2018 11:01:56 AM
Chloroform	ND	0.0219		mg/Kg-dry	1	3/8/2018 11:01:56 AM
1,1,1-Trichloroethane (TCA)	ND	0.0274		mg/Kg-dry	1	3/8/2018 11:01:56 AM
1,1-Dichloropropene	ND	0.0219		mg/Kg-dry	1	3/8/2018 11:01:56 AM
Carbon tetrachloride	ND	0.0274		mg/Kg-dry	1	3/8/2018 11:01:56 AM
1,2-Dichloroethane (EDC)	ND	0.0219		mg/Kg-dry	1	3/8/2018 11:01:56 AM
Benzene	ND	0.0219		mg/Kg-dry	1	3/8/2018 11:01:56 AM
Trichloroethene (TCE)	ND	0.0219		mg/Kg-dry	1	3/8/2018 11:01:56 AM
1,2-Dichloropropane	ND	0.0219		mg/Kg-dry	1	3/8/2018 11:01:56 AM
Bromodichloromethane	ND	0.0219		mg/Kg-dry	1	3/8/2018 11:01:56 AM
Dibromomethane	ND	0.0219		mg/Kg-dry	1	3/8/2018 11:01:56 AM
cis-1,3-Dichloropropene	ND	0.0219		mg/Kg-dry	1	3/8/2018 11:01:56 AM
Toluene	ND	0.0219		mg/Kg-dry	1	3/8/2018 11:01:56 AM
trans-1,3-Dichloropropylene	ND	0.0219		mg/Kg-dry	1	3/8/2018 11:01:56 AM
1,1,2-Trichloroethane	ND	0.0219		mg/Kg-dry	1	3/8/2018 11:01:56 AM
1,3-Dichloropropane	ND	0.0274		mg/Kg-dry	1	3/8/2018 11:01:56 AM
Tetrachloroethene (PCE)	ND	0.0274		mg/Kg-dry	1	3/8/2018 11:01:56 AM
Dibromochloromethane	ND	0.0274		mg/Kg-dry	1	3/8/2018 11:01:56 AM
1,2-Dibromoethane (EDB)	ND	0.00549		mg/Kg-dry	1	3/8/2018 11:01:56 AM
Chlorobenzene	ND	0.0274		mg/Kg-dry	1	3/8/2018 11:01:56 AM
1,1,1,2-Tetrachloroethane	ND	0.0274		mg/Kg-dry	1	3/8/2018 11:01:56 AM
Ethylbenzene	ND	0.0274		mg/Kg-dry	1	3/8/2018 11:01:56 AM
m,p-Xylene	ND	0.0549		mg/Kg-dry	1	3/8/2018 11:01:56 AM
o-Xylene	ND	0.0274		mg/Kg-dry	1	3/8/2018 11:01:56 AM
Styrene	ND	0.0274		mg/Kg-dry	1	3/8/2018 11:01:56 AM
Isopropylbenzene	ND	0.0274		mg/Kg-dry	1	3/8/2018 11:01:56 AM
Bromoform	ND	0.0549		mg/Kg-dry	1	3/8/2018 11:01:56 AM

Analytical Report

Work Order: **1803029**
Date Reported: **3/9/2018**

Client: GeoEngineers
Collection Date: 3/1/2018 2:57:00 PM
Project: UCC Bucklin / Silverdale
Lab ID: 1803029-003
Matrix: Soil
Client Sample ID: **GEI-MW1-14.5-15**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260C				Batch ID: 19999		Analyst: MW
1,1,2,2-Tetrachloroethane	ND	0.0219		mg/Kg-dry	1	3/8/2018 11:01:56 AM
n-Propylbenzene	ND	0.0274		mg/Kg-dry	1	3/8/2018 11:01:56 AM
Bromobenzene	ND	0.0219		mg/Kg-dry	1	3/8/2018 11:01:56 AM
1,3,5-Trimethylbenzene	ND	0.0274		mg/Kg-dry	1	3/8/2018 11:01:56 AM
2-Chlorotoluene	ND	0.0274		mg/Kg-dry	1	3/8/2018 11:01:56 AM
4-Chlorotoluene	ND	0.0274		mg/Kg-dry	1	3/8/2018 11:01:56 AM
tert-Butylbenzene	ND	0.0274		mg/Kg-dry	1	3/8/2018 11:01:56 AM
1,2,3-Trichloropropane	ND	0.0274		mg/Kg-dry	1	3/8/2018 11:01:56 AM
1,2,4-Trichlorobenzene	ND	0.0274		mg/Kg-dry	1	3/8/2018 11:01:56 AM
sec-Butylbenzene	ND	0.0549		mg/Kg-dry	1	3/8/2018 11:01:56 AM
4-Isopropyltoluene	ND	0.0549		mg/Kg-dry	1	3/8/2018 11:01:56 AM
1,3-Dichlorobenzene	ND	0.0219		mg/Kg-dry	1	3/8/2018 11:01:56 AM
1,4-Dichlorobenzene	ND	0.0219		mg/Kg-dry	1	3/8/2018 11:01:56 AM
n-Butylbenzene	ND	0.0274		mg/Kg-dry	1	3/8/2018 11:01:56 AM
1,2-Dichlorobenzene	ND	0.0219		mg/Kg-dry	1	3/8/2018 11:01:56 AM
1,2-Dibromo-3-chloropropane	ND	0.549		mg/Kg-dry	1	3/8/2018 11:01:56 AM
1,2,4-Trimethylbenzene	ND	0.0219		mg/Kg-dry	1	3/8/2018 11:01:56 AM
Hexachlorobutadiene	ND	0.0549		mg/Kg-dry	1	3/8/2018 11:01:56 AM
Naphthalene	ND	0.0549		mg/Kg-dry	1	3/8/2018 11:01:56 AM
1,2,3-Trichlorobenzene	ND	0.0219		mg/Kg-dry	1	3/8/2018 11:01:56 AM
Surr: Dibromofluoromethane	94.2	56.5 - 129		%Rec	1	3/8/2018 11:01:56 AM
Surr: Toluene-d8	102	64.5 - 151		%Rec	1	3/8/2018 11:01:56 AM
Surr: 1-Bromo-4-fluorobenzene	98.8	43.2 - 143		%Rec	1	3/8/2018 11:01:56 AM
Sample Moisture (Percent Moisture)				Batch ID: R42102		Analyst: EAS
Percent Moisture	14.5	0.500		wt%	1	3/7/2018 11:02:30 AM

Work Order: 1803029
CLIENT: GeoEngineers
Project: UCC Bucklin / Silverdale

QC SUMMARY REPORT

Sample Moisture (Percent Moisture)

Sample ID **1803029-003ADUP** SampType: **DUP** Units: **wt%** Prep Date: **3/7/2018** RunNo: **42102**
Client ID: **GEI-MW1-14.5-15** Batch ID: **R42102** Analysis Date: **3/7/2018** SeqNo: **812114**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	14.9	0.500						14.47	3.03	20	

Work Order: 1803029
CLIENT: GeoEngineers
Project: UCC Bucklin / Silverdale

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID **LCS-19999** SampType: **LCS** Units: **mg/Kg** Prep Date: **3/7/2018** RunNo: **42135**
Client ID: **LCSS** Batch ID: **19999** Analysis Date: **3/8/2018** SeqNo: **812686**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	0.672	0.0200	1.000	0	67.2	14.3	167				
Chloromethane	0.941	0.0500	1.000	0	94.1	32	156				
Vinyl chloride	0.873	0.0250	1.000	0	87.3	43.4	151				
Bromomethane	1.44	0.0500	1.000	0	144	35	155				
Trichlorofluoromethane (CFC-11)	1.06	0.0200	1.000	0	106	33.8	156				
Chloroethane	1.03	0.0500	1.000	0	103	33.1	147				
1,1-Dichloroethene	0.872	0.0200	1.000	0	87.2	39	144				
Methylene chloride	0.973	0.0200	1.000	0	97.3	46.3	140				
trans-1,2-Dichloroethene	0.959	0.0200	1.000	0	95.9	68	130				
Methyl tert-butyl ether (MTBE)	0.996	0.0500	1.000	0	99.6	66.3	145				
1,1-Dichloroethane	0.979	0.0200	1.000	0	97.9	61.9	137				
2,2-Dichloropropane	0.691	0.100	1.000	0	69.1	35.5	186				
cis-1,2-Dichloroethene	0.986	0.0200	1.000	0	98.6	71.3	135				
Chloroform	1.00	0.0200	1.000	0	100	69	145				
1,1,1-Trichloroethane (TCA)	0.963	0.0250	1.000	0	96.3	69	132				
1,1-Dichloropropene	0.980	0.0200	1.000	0	98.0	72.7	131				
Carbon tetrachloride	0.947	0.0250	1.000	0	94.7	63.4	137				
1,2-Dichloroethane (EDC)	1.03	0.0200	1.000	0	103	50.9	162				
Benzene	1.01	0.0200	1.000	0	101	64.3	133				
Trichloroethene (TCE)	0.997	0.0200	1.000	0	99.7	65.5	137				
1,2-Dichloropropane	1.03	0.0200	1.000	0	103	63.2	142				
Bromodichloromethane	0.971	0.0200	1.000	0	97.1	53.4	131				
Dibromomethane	1.02	0.0200	1.000	0	102	60.1	146				
cis-1,3-Dichloropropene	0.922	0.0200	1.000	0	92.2	59.1	143				
Toluene	1.01	0.0200	1.000	0	101	67.3	138				
trans-1,3-Dichloropropylene	1.04	0.0200	1.000	0	104	49.2	149				
1,1,2-Trichloroethane	1.01	0.0200	1.000	0	101	56.9	147				
1,3-Dichloropropane	1.04	0.0250	1.000	0	104	56.1	153				
Tetrachloroethene (PCE)	0.961	0.0250	1.000	0	96.1	52.7	150				
Dibromochloromethane	1.06	0.0250	1.000	0	106	70.6	144				
1,2-Dibromoethane (EDB)	1.02	0.00500	1.000	0	102	50.5	154				

Work Order: 1803029
CLIENT: GeoEngineers
Project: UCC Bucklin / Silverdale

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID **LCS-19999** SampType: **LCS** Units: **mg/Kg** Prep Date: **3/7/2018** RunNo: **42135**
Client ID: **LCSS** Batch ID: **19999** Analysis Date: **3/8/2018** SeqNo: **812686**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chlorobenzene	0.991	0.0250	1.000	0	99.1	84.9	125				
1,1,1,2-Tetrachloroethane	1.04	0.0250	1.000	0	104	65.9	141				
Ethylbenzene	1.01	0.0250	1.000	0	101	74	129				
m,p-Xylene	1.98	0.0500	2.000	0	98.8	70	124				
o-Xylene	0.988	0.0250	1.000	0	98.8	68.1	139				
Styrene	0.993	0.0250	1.000	0	99.3	73.3	146				
Isopropylbenzene	0.989	0.0250	1.000	0	98.9	70	130				
Bromoform	1.03	0.0500	1.000	0	103	44.3	130				
1,1,2,2-Tetrachloroethane	1.02	0.0200	1.000	0	102	44.8	165				
n-Propylbenzene	1.00	0.0250	1.000	0	100	75.8	139				
Bromobenzene	0.937	0.0200	1.000	0	93.7	49.2	144				
1,3,5-Trimethylbenzene	0.968	0.0250	1.000	0	96.8	76.5	135				
2-Chlorotoluene	0.984	0.0250	1.000	0	98.4	76.7	129				
4-Chlorotoluene	0.991	0.0250	1.000	0	99.1	77.5	125				
tert-Butylbenzene	0.952	0.0250	1.000	0	95.2	66.2	130				
1,2,3-Trichloropropane	0.905	0.0250	1.000	0	90.5	67.9	136				
1,2,4-Trichlorobenzene	0.954	0.0250	1.000	0	95.4	65.5	150				
sec-Butylbenzene	0.981	0.0500	1.000	0	98.1	75.6	133				
4-Isopropyltoluene	0.981	0.0500	1.000	0	98.1	76.8	131				
1,3-Dichlorobenzene	1.02	0.0200	1.000	0	102	72.8	128				
1,4-Dichlorobenzene	1.00	0.0200	1.000	0	100	72.6	126				
n-Butylbenzene	1.03	0.0250	1.000	0	103	78.4	140				
1,2-Dichlorobenzene	1.02	0.0200	1.000	0	102	72.8	126				
1,2-Dibromo-3-chloropropane	1.02	0.500	1.000	0	102	40.2	155				
1,2,4-Trimethylbenzene	0.975	0.0200	1.000	0	97.5	77.5	129				
Hexachlorobutadiene	0.975	0.0500	1.000	0	97.5	42	151				
Naphthalene	0.952	0.0500	1.000	0	95.2	46.5	167				
1,2,3-Trichlorobenzene	0.946	0.0200	1.000	0	94.6	64.5	149				
Surr: Dibromofluoromethane	1.37		1.250		109	56.5	129				
Surr: Toluene-d8	1.29		1.250		104	64.5	151				
Surr: 1-Bromo-4-fluorobenzene	1.29		1.250		104	43.2	143				

Work Order: 1803029
CLIENT: GeoEngineers
Project: UCC Bucklin / Silverdale

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID	**LCS-19999**	SampType: **LCS**		Units: **mg/Kg**		Prep Date: **3/7/2018**		RunNo: **42135**	
Client ID:	**LCSS**	Batch ID: **19999**				Analysis Date: **3/8/2018**		SeqNo: **812686**	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sample ID	**MB-19999**	SampType: **MBLK**		Units: **mg/Kg**		Prep Date: **3/7/2018**		RunNo: **42135**	
Client ID:	**MBLKS**	Batch ID: **19999**				Analysis Date: **3/8/2018**		SeqNo: **812688**	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	ND	0.0200									
Chloromethane	ND	0.0500									
Vinyl chloride	ND	0.0250									
Bromomethane	ND	0.0500									
Trichlorofluoromethane (CFC-11)	ND	0.0200									
Chloroethane	ND	0.0500									
1,1-Dichloroethene	ND	0.0200									
Methylene chloride	ND	0.0200									
trans-1,2-Dichloroethene	ND	0.0200									
Methyl tert-butyl ether (MTBE)	ND	0.0500									
1,1-Dichloroethane	ND	0.0200									
2,2-Dichloropropane	ND	0.100									
cis-1,2-Dichloroethene	ND	0.0200									
Chloroform	ND	0.0200									
1,1,1-Trichloroethane (TCA)	ND	0.0250									
1,1-Dichloropropene	ND	0.0200									
Carbon tetrachloride	ND	0.0250									
1,2-Dichloroethane (EDC)	ND	0.0200									
Benzene	ND	0.0200									
Trichloroethene (TCE)	ND	0.0200									
1,2-Dichloropropane	ND	0.0200									
Bromodichloromethane	ND	0.0200									
Dibromomethane	ND	0.0200									
cis-1,3-Dichloropropene	ND	0.0200									
Toluene	ND	0.0200									

Work Order: 1803029
CLIENT: GeoEngineers
Project: UCC Bucklin / Silverdale

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID **MB-19999** SampType: **MBLK** Units: **mg/Kg** Prep Date: **3/7/2018** RunNo: **42135**
Client ID: **MBLKS** Batch ID: **19999** Analysis Date: **3/8/2018** SeqNo: **812688**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
trans-1,3-Dichloropropylene	ND	0.0200									
1,1,2-Trichloroethane	ND	0.0200									
1,3-Dichloropropane	ND	0.0250									
Tetrachloroethene (PCE)	ND	0.0250									
Dibromochloromethane	ND	0.0250									
1,2-Dibromoethane (EDB)	ND	0.00500									
Chlorobenzene	ND	0.0250									
1,1,1,2-Tetrachloroethane	ND	0.0250									
Ethylbenzene	ND	0.0250									
m,p-Xylene	ND	0.0500									
o-Xylene	ND	0.0250									
Styrene	ND	0.0250									
Isopropylbenzene	ND	0.0250									
Bromoform	ND	0.0500									
1,1,2,2-Tetrachloroethane	ND	0.0200									
n-Propylbenzene	ND	0.0250									
Bromobenzene	ND	0.0200									
1,3,5-Trimethylbenzene	ND	0.0250									
2-Chlorotoluene	ND	0.0250									
4-Chlorotoluene	ND	0.0250									
tert-Butylbenzene	ND	0.0250									
1,2,3-Trichloropropane	ND	0.0250									
1,2,4-Trichlorobenzene	ND	0.0250									
sec-Butylbenzene	ND	0.0500									
4-Isopropyltoluene	ND	0.0500									
1,3-Dichlorobenzene	ND	0.0200									
1,4-Dichlorobenzene	ND	0.0200									
n-Butylbenzene	ND	0.0250									
1,2-Dichlorobenzene	ND	0.0200									
1,2-Dibromo-3-chloropropane	ND	0.500									
1,2,4-Trimethylbenzene	ND	0.0200									

Work Order: 1803029
CLIENT: GeoEngineers
Project: UCC Bucklin / Silverdale

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID **MB-19999** SampType: **MBLK** Units: **mg/Kg** Prep Date: **3/7/2018** RunNo: **42135**
Client ID: **MBLKS** Batch ID: **19999** Analysis Date: **3/8/2018** SeqNo: **812688**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexachlorobutadiene	ND	0.0500									
Naphthalene	ND	0.0500									
1,2,3-Trichlorobenzene	ND	0.0200									
Surr: Dibromofluoromethane	1.19		1.250		95.2	56.5	129				
Surr: Toluene-d8	1.27		1.250		102	64.5	151				
Surr: 1-Bromo-4-fluorobenzene	1.24		1.250		99.6	43.2	143				

Sample ID **1803056-001BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **3/7/2018** RunNo: **42135**
Client ID: **BATCH** Batch ID: **19999** Analysis Date: **3/8/2018** SeqNo: **812672**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	ND	0.0195						0		30	
Chloromethane	ND	0.0489						0		30	
Vinyl chloride	ND	0.0244						0		30	
Bromomethane	ND	0.0489						0		30	
Trichlorofluoromethane (CFC-11)	ND	0.0195						0		30	
Chloroethane	ND	0.0489						0		30	
1,1-Dichloroethene	ND	0.0195						0		30	
Methylene chloride	ND	0.0195						0		30	
trans-1,2-Dichloroethene	ND	0.0195						0		30	
Methyl tert-butyl ether (MTBE)	ND	0.0489						0		30	
1,1-Dichloroethane	ND	0.0195						0		30	
2,2-Dichloropropane	ND	0.0977						0		30	
cis-1,2-Dichloroethene	ND	0.0195						0		30	
Chloroform	ND	0.0195						0		30	
1,1,1-Trichloroethane (TCA)	ND	0.0244						0		30	
1,1-Dichloropropene	ND	0.0195						0		30	
Carbon tetrachloride	ND	0.0244						0		30	
1,2-Dichloroethane (EDC)	ND	0.0195						0		30	
Benzene	ND	0.0195						0		30	

Work Order: 1803029
CLIENT: GeoEngineers
Project: UCC Bucklin / Silverdale

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID **1803056-001BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **3/7/2018** RunNo: **42135**
Client ID: **BATCH** Batch ID: **19999** Analysis Date: **3/8/2018** SeqNo: **812672**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichloroethene (TCE)	ND	0.0195						0		30	
1,2-Dichloropropane	ND	0.0195						0		30	
Bromodichloromethane	ND	0.0195						0		30	
Dibromomethane	ND	0.0195						0		30	
cis-1,3-Dichloropropene	ND	0.0195						0		30	
Toluene	ND	0.0195						0		30	
trans-1,3-Dichloropropylene	ND	0.0195						0		30	
1,1,2-Trichloroethane	ND	0.0195						0		30	
1,3-Dichloropropane	ND	0.0244						0		30	
Tetrachloroethene (PCE)	ND	0.0244						0		30	
Dibromochloromethane	ND	0.0244						0		30	
1,2-Dibromoethane (EDB)	ND	0.00489						0		30	
Chlorobenzene	ND	0.0244						0		30	
1,1,1,2-Tetrachloroethane	ND	0.0244						0		30	
Ethylbenzene	ND	0.0244						0		30	
m,p-Xylene	ND	0.0489						0		30	
o-Xylene	ND	0.0244						0		30	
Styrene	ND	0.0244						0		30	
Isopropylbenzene	ND	0.0244						0		30	
Bromoform	ND	0.0489						0		30	
1,1,2,2-Tetrachloroethane	ND	0.0195						0		30	
n-Propylbenzene	ND	0.0244						0		30	
Bromobenzene	ND	0.0195						0		30	
1,3,5-Trimethylbenzene	ND	0.0244						0		30	
2-Chlorotoluene	ND	0.0244						0		30	
4-Chlorotoluene	ND	0.0244						0		30	
tert-Butylbenzene	ND	0.0244						0		30	
1,2,3-Trichloropropane	ND	0.0244						0		30	
1,2,4-Trichlorobenzene	ND	0.0244						0		30	
sec-Butylbenzene	ND	0.0489						0		30	
4-Isopropyltoluene	ND	0.0489						0		30	

Work Order: 1803029
CLIENT: GeoEngineers
Project: UCC Bucklin / Silverdale

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID **1803056-001BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **3/7/2018** RunNo: **42135**
Client ID: **BATCH** Batch ID: **19999** Analysis Date: **3/8/2018** SeqNo: **812672**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,3-Dichlorobenzene	ND	0.0195						0		30	
1,4-Dichlorobenzene	ND	0.0195						0		30	
n-Butylbenzene	ND	0.0244						0		30	
1,2-Dichlorobenzene	ND	0.0195						0		30	
1,2-Dibromo-3-chloropropane	ND	0.489						0		30	
1,2,4-Trimethylbenzene	ND	0.0195						0		30	
Hexachlorobutadiene	ND	0.0489						0		30	
Naphthalene	ND	0.0489						0		30	
1,2,3-Trichlorobenzene	ND	0.0195						0		30	
Surr: Dibromofluoromethane	1.17		1.221		95.9	56.5	129		0		
Surr: Toluene-d8	1.24		1.221		102	64.5	151		0		
Surr: 1-Bromo-4-fluorobenzene	1.22		1.221		99.5	43.2	143		0		

Sample ID **1803056-003BMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **3/7/2018** RunNo: **42135**
Client ID: **BATCH** Batch ID: **19999** Analysis Date: **3/8/2018** SeqNo: **812675**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	0.345	0.0136	0.6802	0	50.7	43.5	121				
Chloromethane	0.537	0.0340	0.6802	0	79.0	45	130				
Vinyl chloride	0.528	0.0170	0.6802	0	77.6	43.6	150				
Bromomethane	1.18	0.0340	0.6802	0	174	21.3	120				S
Trichlorofluoromethane (CFC-11)	1.21	0.0136	0.6802	0	178	35	131				S
Chloroethane	0.757	0.0340	0.6802	0	111	31.9	123				
1,1-Dichloroethene	0.558	0.0136	0.6802	0	82.1	47.3	147				
Methylene chloride	0.625	0.0136	0.6802	0	91.9	54.7	142				
trans-1,2-Dichloroethene	0.609	0.0136	0.6802	0	89.5	52	136				
Methyl tert-butyl ether (MTBE)	0.646	0.0340	0.6802	0	95.0	58.5	167				
1,1-Dichloroethane	0.633	0.0136	0.6802	0	93.0	51.8	141				
2,2-Dichloropropane	0.360	0.0680	0.6802	0	53.0	36	123				
cis-1,2-Dichloroethene	0.631	0.0136	0.6802	0	92.8	58.6	136				

Work Order: 1803029
CLIENT: GeoEngineers
Project: UCC Bucklin / Silverdale

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID **1803056-003BMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **3/7/2018** RunNo: **42135**
Client ID: **BATCH** Batch ID: **19999** Analysis Date: **3/8/2018** SeqNo: **812675**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloroform	0.646	0.0136	0.6802	0	94.9	53.2	129				
1,1,1-Trichloroethane (TCA)	0.619	0.0170	0.6802	0	90.9	58.3	145				
1,1-Dichloropropene	0.631	0.0136	0.6802	0	92.8	55.1	138				
Carbon tetrachloride	0.595	0.0170	0.6802	0	87.5	53.3	144				
1,2-Dichloroethane (EDC)	0.677	0.0136	0.6802	0	99.5	51.3	139				
Benzene	0.657	0.0136	0.6802	0	96.6	63.5	133				
Trichloroethene (TCE)	0.635	0.0136	0.6802	0	93.4	61.6	147				
1,2-Dichloropropane	0.671	0.0136	0.6802	0	98.7	59	136				
Bromodichloromethane	0.606	0.0136	0.6802	0	89.0	50.7	141				
Dibromomethane	0.655	0.0136	0.6802	0	96.2	50.6	137				
cis-1,3-Dichloropropene	0.568	0.0136	0.6802	0	83.5	50.4	138				
Toluene	0.655	0.0136	0.6802	0	96.2	63.4	132				
trans-1,3-Dichloropropylene	0.642	0.0136	0.6802	0	94.4	44.1	147				
1,1,2-Trichloroethane	0.658	0.0136	0.6802	0	96.8	51.6	137				
1,3-Dichloropropane	0.670	0.0170	0.6802	0	98.5	53.1	134				
Tetrachloroethene (PCE)	0.607	0.0170	0.6802	0	89.2	35.6	158				
Dibromochloromethane	0.657	0.0170	0.6802	0	96.6	55.3	140				
1,2-Dibromoethane (EDB)	0.663	0.00340	0.6802	0	97.4	50.4	136				
Chlorobenzene	0.644	0.0170	0.6802	0	94.7	60	133				
1,1,1,2-Tetrachloroethane	0.681	0.0170	0.6802	0	100	53.1	142				
Ethylbenzene	0.651	0.0170	0.6802	0	95.7	54.5	134				
m,p-Xylene	1.29	0.0340	1.360	0	94.7	53.1	132				
o-Xylene	0.640	0.0170	0.6802	0	94.1	53.3	139				
Styrene	0.650	0.0170	0.6802	0	95.6	51.1	132				
Isopropylbenzene	0.641	0.0170	0.6802	0	94.2	58.9	138				
Bromoform	0.669	0.0340	0.6802	0	98.3	57.9	130				
1,1,2,2-Tetrachloroethane	0.672	0.0136	0.6802	0	98.8	51.9	131				
n-Propylbenzene	0.642	0.0170	0.6802	0	94.4	53.6	140				
Bromobenzene	0.624	0.0136	0.6802	0	91.7	54.2	140				
1,3,5-Trimethylbenzene	0.631	0.0170	0.6802	0	92.8	51.8	136				
2-Chlorotoluene	0.635	0.0170	0.6802	0	93.4	51.6	136				

Work Order: 1803029
CLIENT: GeoEngineers
Project: UCC Bucklin / Silverdale

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID **1803056-003BMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **3/7/2018** RunNo: **42135**
Client ID: **BATCH** Batch ID: **19999** Analysis Date: **3/8/2018** SeqNo: **812675**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
4-Chlorotoluene	0.632	0.0170	0.6802	0	92.9	50.1	139				
tert-Butylbenzene	0.621	0.0170	0.6802	0	91.3	50.5	135				
1,2,3-Trichloropropane	0.585	0.0170	0.6802	0	85.9	50.5	131				
1,2,4-Trichlorobenzene	0.589	0.0170	0.6802	0	86.6	50.8	130				
sec-Butylbenzene	0.635	0.0340	0.6802	0	93.3	52.6	141				
4-Isopropyltoluene	0.612	0.0340	0.6802	0	89.9	52.9	134				
1,3-Dichlorobenzene	0.662	0.0136	0.6802	0	97.3	52.6	131				
1,4-Dichlorobenzene	0.642	0.0136	0.6802	0	94.3	52.9	129				
n-Butylbenzene	0.629	0.0170	0.6802	0	92.4	52.6	130				
1,2-Dichlorobenzene	0.653	0.0136	0.6802	0	96.0	55.8	129				
1,2-Dibromo-3-chloropropane	0.677	0.340	0.6802	0	99.5	40.5	131				
1,2,4-Trimethylbenzene	0.632	0.0136	0.6802	0	92.9	50.6	137				
Hexachlorobutadiene	0.566	0.0340	0.6802	0	83.2	40.6	158				
Naphthalene	0.586	0.0340	0.6802	0	86.2	52.3	124				
1,2,3-Trichlorobenzene	0.587	0.0136	0.6802	0	86.3	54.4	124				
Surr: Dibromofluoromethane	0.911		0.8502		107	56.5	129				
Surr: Toluene-d8	0.877		0.8502		103	64.5	151				
Surr: 1-Bromo-4-fluorobenzene	0.878		0.8502		103	43.2	143				

NOTES:
S - Outlying spike recovery(ies) observed.

Sample ID **1803056-003BMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **3/7/2018** RunNo: **42135**
Client ID: **BATCH** Batch ID: **19999** Analysis Date: **3/8/2018** SeqNo: **812676**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	0.341	0.0136	0.6802	0	50.1	43.5	121	0.3448	1.12	30	
Chloromethane	0.577	0.0340	0.6802	0	84.9	45	130	0.5371	7.23	30	
Vinyl chloride	0.525	0.0170	0.6802	0	77.2	43.6	150	0.5276	0.427	30	
Bromomethane	1.77	0.0340	0.6802	0	260	21.3	120	1.184	39.5	30	RS
Trichlorofluoromethane (CFC-11)	1.51	0.0136	0.6802	0	222	35	131	1.213	21.8	30	S
Chloroethane	1.19	0.0340	0.6802	0	174	31.9	123	0.7567	44.1	30	RS

Work Order: 1803029
CLIENT: GeoEngineers
Project: UCC Bucklin / Silverdale

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID **1803056-003BMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **3/7/2018** RunNo: **42135**
Client ID: **BATCH** Batch ID: **19999** Analysis Date: **3/8/2018** SeqNo: **812676**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	0.540	0.0136	0.6802	0	79.4	47.3	147	0.5585	3.34	30	
Methylene chloride	0.627	0.0136	0.6802	0	92.1	54.7	142	0.6249	0.263	30	
trans-1,2-Dichloroethene	0.624	0.0136	0.6802	0	91.7	52	136	0.6090	2.36	30	
Methyl tert-butyl ether (MTBE)	0.659	0.0340	0.6802	0	96.8	58.5	167	0.6460	1.94	30	
1,1-Dichloroethane	0.655	0.0136	0.6802	0	96.3	51.8	141	0.6328	3.47	30	
2,2-Dichloropropane	0.382	0.0680	0.6802	0	56.2	36	123	0.3602	5.94	30	
cis-1,2-Dichloroethene	0.637	0.0136	0.6802	0	93.6	58.6	136	0.6313	0.869	30	
Chloroform	0.650	0.0136	0.6802	0	95.6	53.2	129	0.6458	0.662	30	
1,1,1-Trichloroethane (TCA)	0.629	0.0170	0.6802	0	92.5	58.3	145	0.6186	1.72	30	
1,1-Dichloropropene	0.627	0.0136	0.6802	0	92.2	55.1	138	0.6312	0.689	30	
Carbon tetrachloride	0.613	0.0170	0.6802	0	90.1	53.3	144	0.5953	2.92	30	
1,2-Dichloroethane (EDC)	0.667	0.0136	0.6802	0	98.1	51.3	139	0.6767	1.41	30	
Benzene	0.656	0.0136	0.6802	0	96.5	63.5	133	0.6571	0.135	30	
Trichloroethene (TCE)	0.625	0.0136	0.6802	0	92.0	61.6	147	0.6354	1.58	30	
1,2-Dichloropropane	0.668	0.0136	0.6802	0	98.2	59	136	0.6712	0.530	30	
Bromodichloromethane	0.621	0.0136	0.6802	0	91.3	50.7	141	0.6056	2.49	30	
Dibromomethane	0.648	0.0136	0.6802	0	95.3	50.6	137	0.6546	0.950	30	
cis-1,3-Dichloropropene	0.577	0.0136	0.6802	0	84.9	50.4	138	0.5682	1.62	30	
Toluene	0.653	0.0136	0.6802	0	96.0	63.4	132	0.6546	0.233	30	
trans-1,3-Dichloropropylene	0.658	0.0136	0.6802	0	96.7	44.1	147	0.6421	2.42	30	
1,1,2-Trichloroethane	0.644	0.0136	0.6802	0	94.7	51.6	137	0.6581	2.16	30	
1,3-Dichloropropane	0.669	0.0170	0.6802	0	98.4	53.1	134	0.6702	0.113	30	
Tetrachloroethene (PCE)	0.619	0.0170	0.6802	0	91.0	35.6	158	0.6068	1.98	30	
Dibromochloromethane	0.690	0.0170	0.6802	0	101	55.3	140	0.6573	4.79	30	
1,2-Dibromoethane (EDB)	0.682	0.00340	0.6802	0	100	50.4	136	0.6625	2.83	30	
Chlorobenzene	0.663	0.0170	0.6802	0	97.4	60	133	0.6442	2.81	30	
1,1,1,2-Tetrachloroethane	0.713	0.0170	0.6802	0	105	53.1	142	0.6812	4.60	30	
Ethylbenzene	0.659	0.0170	0.6802	0	96.9	54.5	134	0.6510	1.27	30	
m,p-Xylene	1.30	0.0340	1.360	0	95.7	53.1	132	1.288	1.14	30	
o-Xylene	0.652	0.0170	0.6802	0	95.9	53.3	139	0.6399	1.94	30	
Styrene	0.665	0.0170	0.6802	0	97.7	51.1	132	0.6500	2.25	30	

Work Order: 1803029
CLIENT: GeoEngineers
Project: UCC Bucklin / Silverdale

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID **1803056-003BMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **3/7/2018** RunNo: **42135**
Client ID: **BATCH** Batch ID: **19999** Analysis Date: **3/8/2018** SeqNo: **812676**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Isopropylbenzene	0.651	0.0170	0.6802	0	95.7	58.9	138	0.6407	1.58	30	
Bromoform	0.694	0.0340	0.6802	0	102	57.9	130	0.6686	3.68	30	
1,1,2,2-Tetrachloroethane	0.674	0.0136	0.6802	0	99.2	51.9	131	0.6720	0.368	30	
n-Propylbenzene	0.651	0.0170	0.6802	0	95.7	53.6	140	0.6418	1.40	30	
Bromobenzene	0.637	0.0136	0.6802	0	93.7	54.2	140	0.6238	2.14	30	
1,3,5-Trimethylbenzene	0.641	0.0170	0.6802	0	94.2	51.8	136	0.6310	1.52	30	
2-Chlorotoluene	0.652	0.0170	0.6802	0	95.9	51.6	136	0.6351	2.62	30	
4-Chlorotoluene	0.651	0.0170	0.6802	0	95.7	50.1	139	0.6320	2.99	30	
tert-Butylbenzene	0.635	0.0170	0.6802	0	93.3	50.5	135	0.6211	2.18	30	
1,2,3-Trichloropropane	0.573	0.0170	0.6802	0	84.3	50.5	131	0.5845	1.91	30	
1,2,4-Trichlorobenzene	0.598	0.0170	0.6802	0	87.9	50.8	130	0.5888	1.55	30	
sec-Butylbenzene	0.642	0.0340	0.6802	0	94.4	52.6	141	0.6347	1.17	30	
4-Isopropyltoluene	0.621	0.0340	0.6802	0	91.3	52.9	134	0.6118	1.51	30	
1,3-Dichlorobenzene	0.683	0.0136	0.6802	0	100	52.6	131	0.6619	3.11	30	
1,4-Dichlorobenzene	0.662	0.0136	0.6802	0	97.3	52.9	129	0.6417	3.05	30	
n-Butylbenzene	0.636	0.0170	0.6802	0	93.6	52.6	130	0.6286	1.23	30	
1,2-Dichlorobenzene	0.667	0.0136	0.6802	0	98.1	55.8	129	0.6531	2.17	30	
1,2-Dibromo-3-chloropropane	0.667	0.340	0.6802	0	98.1	40.5	131	0.6769	1.45	30	
1,2,4-Trimethylbenzene	0.647	0.0136	0.6802	0	95.2	50.6	137	0.6321	2.37	30	
Hexachlorobutadiene	0.570	0.0340	0.6802	0	83.8	40.6	158	0.5661	0.642	30	
Naphthalene	0.574	0.0340	0.6802	0	84.4	52.3	124	0.5862	2.12	30	
1,2,3-Trichlorobenzene	0.588	0.0136	0.6802	0	86.5	54.4	124	0.5868	0.257	30	
Surr: Dibromofluoromethane	0.907		0.8502		107	56.5	129		0		
Surr: Toluene-d8	0.860		0.8502		101	64.5	151		0		
Surr: 1-Bromo-4-fluorobenzene	0.872		0.8502		103	43.2	143		0		

NOTES:
S - Outlying spike recovery(ies) observed.
R - High RPD observed.

Work Order: 1803029
CLIENT: GeoEngineers
Project: UCC Bucklin / Silverdale

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID **LCS-19975** SampType: **LCS** Units: **µg/L** Prep Date: **3/5/2018** RunNo: **42081**
Client ID: **LCSW** Batch ID: **19975** Analysis Date: **3/5/2018** SeqNo: **811695**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	19.5	1.00	20.00	0	97.4	18.7	171				
Chloromethane	17.5	2.00	20.00	0	87.3	38.5	171				
Vinyl chloride	19.1	0.200	20.00	0	95.4	48	145				
Bromomethane	26.9	1.00	20.00	0	134	32.5	184				
Trichlorofluoromethane (CFC-11)	21.3	1.00	20.00	0	106	43.5	149				
Chloroethane	19.0	1.00	20.00	0	95.1	43.8	168				
1,1-Dichloroethene	20.8	1.00	20.00	0	104	57.5	150				
Methylene chloride	18.9	1.00	20.00	0	94.7	67.1	131				
trans-1,2-Dichloroethene	20.5	1.00	20.00	0	102	71.7	129				
Methyl tert-butyl ether (MTBE)	19.1	1.00	20.00	0	95.7	58	138				
1,1-Dichloroethane	20.1	1.00	20.00	0	100	67.9	134				
2,2-Dichloropropane	37.2	2.00	20.00	0	186	26.5	185				S
cis-1,2-Dichloroethene	20.1	1.00	20.00	0	100	70.2	139				
Chloroform	19.6	1.00	20.00	0	98.2	66.3	131				
1,1,1-Trichloroethane (TCA)	21.9	1.00	20.00	0	109	63	140				
1,1-Dichloropropene	20.8	1.00	20.00	0	104	69.9	124				
Carbon tetrachloride	22.2	1.00	20.00	0	111	66.2	134				
1,2-Dichloroethane (EDC)	18.2	1.00	20.00	0	91.0	67	126				
Benzene	19.7	1.00	20.00	0	98.6	69.3	132				
Trichloroethene (TCE)	20.6	0.500	20.00	0	103	65.2	136				
1,2-Dichloropropane	19.0	1.00	20.00	0	94.8	70.5	130				
Bromodichloromethane	20.8	1.00	20.00	0	104	67.2	137				
Dibromomethane	18.7	1.00	20.00	0	93.5	69.3	143				
cis-1,3-Dichloropropene	20.1	1.00	20.00	0	100	62.6	137				
Toluene	20.7	1.00	20.00	0	103	61.3	145				
trans-1,3-Dichloropropylene	20.1	1.00	20.00	0	100	56.5	163				
1,1,2-Trichloroethane	18.0	1.00	20.00	0	89.9	71.7	131				
1,3-Dichloropropane	19.3	1.00	20.00	0	96.7	73.5	127				
Tetrachloroethene (PCE)	22.9	1.00	20.00	0	114	47.5	147				
Dibromochloromethane	19.0	1.00	20.00	0	95.1	67.2	134				
1,2-Dibromoethane (EDB)	18.0	0.250	20.00	0	89.8	73.6	125				

Work Order: 1803029
CLIENT: GeoEngineers
Project: UCC Bucklin / Silverdale

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID **LCS-19975** SampType: **LCS** Units: **µg/L** Prep Date: **3/5/2018** RunNo: **42081**
Client ID: **LCSW** Batch ID: **19975** Analysis Date: **3/5/2018** SeqNo: **811695**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chlorobenzene	20.2	1.00	20.00	0	101	73.9	126				
1,1,1,2-Tetrachloroethane	21.1	1.00	20.00	0	106	76.8	124				
Ethylbenzene	20.5	1.00	20.00	0	103	72	130				
m,p-Xylene	41.1	1.00	40.00	0	103	70.3	134				
o-Xylene	19.8	1.00	20.00	0	99.2	72.1	131				
Styrene	19.6	1.00	20.00	0	98.1	64.3	140				
Isopropylbenzene	20.4	1.00	20.00	0	102	73.9	128				
Bromoform	20.6	2.00	20.00	0	103	55.3	141				
1,1,2,2-Tetrachloroethane	15.4	1.00	20.00	0	77.2	62.9	132				
n-Propylbenzene	18.8	1.00	20.00	0	93.9	74.5	127				
Bromobenzene	19.6	1.00	20.00	0	97.8	71	131				
1,3,5-Trimethylbenzene	20.5	1.00	20.00	0	102	73.1	128				
2-Chlorotoluene	20.4	1.00	20.00	0	102	70.8	130				
4-Chlorotoluene	18.6	1.00	20.00	0	93.1	70.1	131				
tert-Butylbenzene	19.8	1.00	20.00	0	99.1	68.2	131				
1,2,3-Trichloropropane	16.4	1.00	20.00	0	82.0	67.7	131				
1,2,4-Trichlorobenzene	22.8	2.00	20.00	0	114	41	139				
sec-Butylbenzene	20.1	1.00	20.00	0	101	72	129				
4-Isopropyltoluene	21.0	1.00	20.00	0	105	69.2	130				
1,3-Dichlorobenzene	21.3	1.00	20.00	0	106	80.4	124				
1,4-Dichlorobenzene	21.6	1.00	20.00	0	108	66.8	119				
n-Butylbenzene	22.4	1.00	20.00	0	112	73.8	127				
1,2-Dichlorobenzene	20.6	1.00	20.00	0	103	69.7	119				
1,2-Dibromo-3-chloropropane	18.6	1.00	20.00	0	93.2	63.1	136				
1,2,4-Trimethylbenzene	20.1	1.00	20.00	0	100	73.4	127				
Hexachloro-1,3-butadiene	25.5	4.00	20.00	0	127	58.6	138				
Naphthalene	19.0	1.00	20.00	0	94.8	41.8	165				
1,2,3-Trichlorobenzene	21.5	4.00	20.00	0	108	35.8	155				
Surr: Dibromofluoromethane	26.2		25.00		105	45.4	152				
Surr: Toluene-d8	25.3		25.00		101	40.1	139				
Surr: 1-Bromo-4-fluorobenzene	24.2		25.00		96.9	64.2	128				

Work Order: 1803029
CLIENT: GeoEngineers
Project: UCC Bucklin / Silverdale

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID **LCS-19975** SampType: **LCS** Units: **µg/L** Prep Date: **3/5/2018** RunNo: **42081**
Client ID: **LCSW** Batch ID: **19975** Analysis Date: **3/5/2018** SeqNo: **811695**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

NOTES:
S - Outlying spike recovery observed (high bias). Samples are non-detect for this analyte; no further action required.

Sample ID **LCSD-19975** SampType: **LCSD** Units: **µg/L** Prep Date: **3/5/2018** RunNo: **42081**
Client ID: **LCSW02** Batch ID: **19975** Analysis Date: **3/5/2018** SeqNo: **811694**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	19.0	1.00	20.00	0	95.0	18.7	171	19.48	2.43	20	
Chloromethane	18.4	2.00	20.00	0	91.8	38.5	171	17.45	5.10	20	
Vinyl chloride	19.1	0.200	20.00	0	95.5	48	145	19.07	0.167	20	
Bromomethane	24.3	1.00	20.00	0	121	32.5	184	26.88	10.1	20	
Trichlorofluoromethane (CFC-11)	21.2	1.00	20.00	0	106	43.5	149	21.28	0.220	20	
Chloroethane	19.3	1.00	20.00	0	96.4	43.8	168	19.03	1.35	20	
1,1-Dichloroethene	21.0	1.00	20.00	0	105	57.5	150	20.85	0.795	20	
Methylene chloride	18.9	1.00	20.00	0	94.7	67.1	131	18.94	0.0168	20	
trans-1,2-Dichloroethene	20.1	1.00	20.00	0	100	71.7	129	20.47	1.95	20	
Methyl tert-butyl ether (MTBE)	19.7	1.00	20.00	0	98.4	58	138	19.14	2.77	20	
1,1-Dichloroethane	19.9	1.00	20.00	0	99.7	67.9	134	20.07	0.643	20	
2,2-Dichloropropane	33.3	2.00	20.00	0	167	26.5	185	37.17	10.9	20	
cis-1,2-Dichloroethene	19.8	1.00	20.00	0	99.1	70.2	139	20.07	1.24	20	
Chloroform	19.4	1.00	20.00	0	97.2	66.3	131	19.64	1.06	20	
1,1,1-Trichloroethane (TCA)	21.7	1.00	20.00	0	109	63	140	21.87	0.683	20	
1,1-Dichloropropene	20.3	1.00	20.00	0	101	69.9	124	20.81	2.50	20	
Carbon tetrachloride	21.2	1.00	20.00	0	106	66.2	134	22.20	4.64	20	
1,2-Dichloroethane (EDC)	18.4	1.00	20.00	0	92.1	68.8	123	18.20	1.22	20	
Benzene	19.5	1.00	20.00	0	97.6	69.3	132	19.71	0.998	20	
Trichloroethene (TCE)	20.1	0.500	20.00	0	101	65.2	136	20.60	2.44	20	
1,2-Dichloropropane	18.8	1.00	20.00	0	94.2	70.5	130	18.96	0.685	20	
Bromodichloromethane	20.7	1.00	20.00	0	103	74.6	127	20.75	0.321	20	
Dibromomethane	19.3	1.00	20.00	0	96.5	69.3	143	18.70	3.15	20	
cis-1,3-Dichloropropene	17.8	1.00	20.00	0	89.1	62.6	137	20.08	12.0	20	

Work Order: 1803029
CLIENT: GeoEngineers
Project: UCC Bucklin / Silverdale

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID **LCSD-19975** SampType: **LCSD** Units: **µg/L** Prep Date: **3/5/2018** RunNo: **42081**
Client ID: **LCSW02** Batch ID: **19975** Analysis Date: **3/5/2018** SeqNo: **811694**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Toluene	20.0	1.00	20.00	0	99.9	61.3	145	20.68	3.47	20	
trans-1,3-Dichloropropylene	17.8	1.00	20.00	0	89.1	56.5	163	20.08	11.9	20	
1,1,2-Trichloroethane	18.2	1.00	20.00	0	91.2	71.7	131	17.99	1.37	20	
1,3-Dichloropropane	16.7	1.00	20.00	0	83.5	73.5	127	19.34	14.7	20	
Tetrachloroethene (PCE)	21.8	1.00	20.00	0	109	47.5	147	22.87	4.87	20	
Dibromochloromethane	19.5	1.00	20.00	0	97.3	67.2	134	19.02	2.23	20	
1,2-Dibromoethane (EDB)	17.9	0.250	20.00	0	89.5	73.6	125	17.96	0.265	20	
Chlorobenzene	20.0	1.00	20.00	0	99.9	73.9	126	20.19	1.04	20	
1,1,1,2-Tetrachloroethane	21.0	1.00	20.00	0	105	76.8	124	21.12	0.643	20	
Ethylbenzene	20.4	1.00	20.00	0	102	72	130	20.52	0.400	20	
m,p-Xylene	41.0	1.00	40.00	0	102	70.3	134	41.12	0.325	20	
o-Xylene	19.2	1.00	20.00	0	95.8	72.1	131	19.84	3.48	20	
Styrene	18.6	1.00	20.00	0	93.2	64.3	140	19.61	5.13	20	
Isopropylbenzene	19.3	1.00	20.00	0	96.5	73.9	128	20.43	5.65	20	
Bromoform	22.7	2.00	20.00	0	113	55.3	141	20.64	9.37	20	
1,1,2,2-Tetrachloroethane	18.1	1.00	20.00	0	90.6	62.9	132	15.45	16.0	20	
n-Propylbenzene	18.6	1.00	20.00	0	92.9	74.5	127	18.78	1.09	20	
Bromobenzene	19.9	1.00	20.00	0	99.6	71	131	19.56	1.82	20	
1,3,5-Trimethylbenzene	20.8	1.00	20.00	0	104	73.1	128	20.49	1.70	20	
2-Chlorotoluene	21.0	1.00	20.00	0	105	70.8	130	20.38	3.05	20	
4-Chlorotoluene	22.5	1.00	20.00	0	113	70.1	131	18.62	18.9	20	
tert-Butylbenzene	20.5	1.00	20.00	0	103	68.2	131	19.83	3.39	20	
1,2,3-Trichloropropane	18.0	1.00	20.00	0	89.9	67.7	131	16.41	9.15	20	
1,2,4-Trichlorobenzene	20.6	2.00	20.00	0	103	41	139	22.85	10.5	20	
sec-Butylbenzene	20.7	1.00	20.00	0	103	72	129	20.13	2.66	20	
4-Isopropyltoluene	21.7	1.00	20.00	0	108	69.2	130	21.04	3.03	20	
1,3-Dichlorobenzene	20.8	1.00	20.00	0	104	80.4	124	21.27	2.04	20	
1,4-Dichlorobenzene	21.1	1.00	20.00	0	106	66.8	119	21.64	2.42	20	
n-Butylbenzene	21.0	1.00	20.00	0	105	73.8	127	22.43	6.78	20	
1,2-Dichlorobenzene	20.9	1.00	20.00	0	104	69.7	119	20.61	1.37	20	
1,2-Dibromo-3-chloropropane	21.2	1.00	20.00	0	106	63.1	136	18.63	12.8	20	

Work Order: 1803029
CLIENT: GeoEngineers
Project: UCC Bucklin / Silverdale

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID **LCSD-19975** SampType: **LCSD** Units: **µg/L** Prep Date: **3/5/2018** RunNo: **42081**
Client ID: **LCSW02** Batch ID: **19975** Analysis Date: **3/5/2018** SeqNo: **811694**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2,4-Trimethylbenzene	20.7	1.00	20.00	0	103	73.4	127	20.08	2.82	20	
Hexachloro-1,3-butadiene	23.8	4.00	20.00	0	119	58.6	138	25.48	6.94	20	
Naphthalene	18.1	1.00	20.00	0	90.7	41.8	165	18.96	4.47	20	
1,2,3-Trichlorobenzene	19.6	4.00	20.00	0	98.1	35.8	155	21.51	9.21	20	
Surr: Dibromofluoromethane	24.9		25.00		99.4	45.4	152		0		
Surr: Toluene-d8	24.7		25.00		98.9	40.1	139		0		
Surr: 1-Bromo-4-fluorobenzene	25.7		25.00		103	64.2	128		0		

Sample ID **MB-19975** SampType: **MBLK** Units: **µg/L** Prep Date: **3/5/2018** RunNo: **42081**
Client ID: **MBLKW** Batch ID: **19975** Analysis Date: **3/5/2018** SeqNo: **811696**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	ND	1.00									
Chloromethane	ND	2.00									Q
Vinyl chloride	ND	0.200									
Bromomethane	ND	1.00									
Trichlorofluoromethane (CFC-11)	ND	1.00									
Chloroethane	ND	1.00									
1,1-Dichloroethene	ND	1.00									
Methylene chloride	ND	1.00									
trans-1,2-Dichloroethene	ND	1.00									
Methyl tert-butyl ether (MTBE)	ND	1.00									
1,1-Dichloroethane	ND	1.00									
2,2-Dichloropropane	ND	2.00									
cis-1,2-Dichloroethene	ND	1.00									
Chloroform	ND	1.00									
1,1,1-Trichloroethane (TCA)	ND	1.00									
1,1-Dichloropropene	ND	1.00									
Carbon tetrachloride	ND	1.00									
1,2-Dichloroethane (EDC)	ND	1.00									

Work Order: 1803029
CLIENT: GeoEngineers
Project: UCC Bucklin / Silverdale

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID **MB-19975** SampType: **MBLK** Units: **µg/L** Prep Date: **3/5/2018** RunNo: **42081**
Client ID: **MBLKW** Batch ID: **19975** Analysis Date: **3/5/2018** SeqNo: **811696**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	1.00									
Trichloroethene (TCE)	ND	0.500									
1,2-Dichloropropane	ND	1.00									
Bromodichloromethane	ND	1.00									
Dibromomethane	ND	1.00									
cis-1,3-Dichloropropene	ND	1.00									
Toluene	ND	1.00									
trans-1,3-Dichloropropylene	ND	1.00									
1,1,2-Trichloroethane	ND	1.00									
1,3-Dichloropropane	ND	1.00									
Tetrachloroethene (PCE)	ND	1.00									
Dibromochloromethane	ND	1.00									
1,2-Dibromoethane (EDB)	ND	0.250									
Chlorobenzene	ND	1.00									
1,1,1,2-Tetrachloroethane	ND	1.00									
Ethylbenzene	ND	1.00									
m,p-Xylene	ND	1.00									
o-Xylene	ND	1.00									
Styrene	ND	1.00									
Isopropylbenzene	ND	1.00									
Bromoform	ND	2.00									
1,1,2,2-Tetrachloroethane	ND	1.00									
n-Propylbenzene	ND	1.00									
Bromobenzene	ND	1.00									
1,3,5-Trimethylbenzene	ND	1.00									
2-Chlorotoluene	ND	1.00									
4-Chlorotoluene	ND	1.00									
tert-Butylbenzene	ND	1.00									
1,2,3-Trichloropropane	ND	1.00									
1,2,4-Trichlorobenzene	ND	2.00									
sec-Butylbenzene	ND	1.00									

Work Order: 1803029
CLIENT: GeoEngineers
Project: UCC Bucklin / Silverdale

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID **MB-19975** SampType: **MBLK** Units: **µg/L** Prep Date: **3/5/2018** RunNo: **42081**
Client ID: **MBLKW** Batch ID: **19975** Analysis Date: **3/5/2018** SeqNo: **811696**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
4-Isopropyltoluene	ND	1.00									
1,3-Dichlorobenzene	ND	1.00									
1,4-Dichlorobenzene	ND	1.00									
n-Butylbenzene	ND	1.00									
1,2-Dichlorobenzene	ND	1.00									
1,2-Dibromo-3-chloropropane	ND	1.00									
1,2,4-Trimethylbenzene	ND	1.00									
Hexachloro-1,3-butadiene	ND	4.00									
Naphthalene	ND	1.00									
1,2,3-Trichlorobenzene	ND	4.00									
Surr: Dibromofluoromethane	25.0		25.00		100	45.4	152				
Surr: Toluene-d8	25.1		25.00		100	40.1	139				
Surr: 1-Bromo-4-fluorobenzene	24.7		25.00		98.9	64.2	128				

NOTES:
Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

Sample ID **1803021-022ADUP** SampType: **DUP** Units: **µg/L** Prep Date: **3/5/2018** RunNo: **42081**
Client ID: **BATCH** Batch ID: **19975** Analysis Date: **3/6/2018** SeqNo: **811680**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	ND	1.00						0		30	
Chloromethane	ND	2.00						0		30	Q
Vinyl chloride	ND	0.200						0		30	
Bromomethane	ND	1.00						0		30	
Trichlorofluoromethane (CFC-11)	ND	1.00						0		30	
Chloroethane	ND	1.00						0		30	
1,1-Dichloroethene	ND	1.00						0		30	
Methylene chloride	ND	1.00						0		30	
trans-1,2-Dichloroethene	ND	1.00						0		30	
Methyl tert-butyl ether (MTBE)	ND	1.00						0		30	
1,1-Dichloroethane	ND	1.00						0		30	

Work Order: 1803029
CLIENT: GeoEngineers
Project: UCC Bucklin / Silverdale

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID **1803021-022ADUP** SampType: **DUP** Units: **µg/L** Prep Date: **3/5/2018** RunNo: **42081**
Client ID: **BATCH** Batch ID: **19975** Analysis Date: **3/6/2018** SeqNo: **811680**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
2,2-Dichloropropane	ND	2.00						0		30	
cis-1,2-Dichloroethene	ND	1.00						0		30	
Chloroform	ND	1.00						0		30	
1,1,1-Trichloroethane (TCA)	ND	1.00						0		30	
1,1-Dichloropropene	ND	1.00						0		30	
Carbon tetrachloride	ND	1.00						0		30	
1,2-Dichloroethane (EDC)	ND	1.00						0		30	
Benzene	ND	1.00						0		30	
Trichloroethene (TCE)	ND	0.500						0		30	
1,2-Dichloropropane	ND	1.00						0		30	
Bromodichloromethane	ND	1.00						0		30	
Dibromomethane	ND	1.00						0		30	
cis-1,3-Dichloropropene	ND	1.00						0		30	
Toluene	5.32	1.00						4.700	12.4	30	
trans-1,3-Dichloropropylene	ND	1.00						0		30	
1,1,2-Trichloroethane	ND	1.00						0		30	
1,3-Dichloropropane	ND	1.00						0		30	Q
Tetrachloroethene (PCE)	ND	1.00						0		30	
Dibromochloromethane	ND	1.00						0		30	
1,2-Dibromoethane (EDB)	ND	0.250						0		30	
Chlorobenzene	ND	1.00						0		30	
1,1,1,2-Tetrachloroethane	ND	1.00						0		30	
Ethylbenzene	ND	1.00						0		30	
m,p-Xylene	4.27	1.00						3.899	9.17	30	
o-Xylene	1.68	1.00						1.523	9.69	30	
Styrene	ND	1.00						0		30	
Isopropylbenzene	ND	1.00						0		30	
Bromoform	ND	2.00						0		30	
1,1,2,2-Tetrachloroethane	ND	1.00						0		30	
n-Propylbenzene	ND	1.00						0		30	
Bromobenzene	ND	1.00						0		30	

Work Order: 1803029
CLIENT: GeoEngineers
Project: UCC Bucklin / Silverdale

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID **1803021-022ADUP** SampType: **DUP** Units: **µg/L** Prep Date: **3/5/2018** RunNo: **42081**
Client ID: **BATCH** Batch ID: **19975** Analysis Date: **3/6/2018** SeqNo: **811680**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,3,5-Trimethylbenzene	ND	1.00						0		30	
2-Chlorotoluene	ND	1.00						0		30	
4-Chlorotoluene	ND	1.00						0		30	
tert-Butylbenzene	ND	1.00						0		30	
1,2,3-Trichloropropane	ND	1.00						0		30	
1,2,4-Trichlorobenzene	ND	2.00						0		30	
sec-Butylbenzene	ND	1.00						0		30	
4-Isopropyltoluene	ND	1.00						0		30	
1,3-Dichlorobenzene	ND	1.00						0		30	
1,4-Dichlorobenzene	ND	1.00						0		30	
n-Butylbenzene	ND	1.00						0		30	
1,2-Dichlorobenzene	ND	1.00						0		30	
1,2-Dibromo-3-chloropropane	ND	1.00						0		30	
1,2,4-Trimethylbenzene	ND	1.00						0		30	
Hexachloro-1,3-butadiene	ND	4.00						0		30	
Naphthalene	ND	1.00						0		30	
1,2,3-Trichlorobenzene	ND	4.00						0		30	
Surr: Dibromofluoromethane	24.2		25.00		96.7	45.4	152		0		
Surr: Toluene-d8	24.6		25.00		98.3	40.1	139		0		
Surr: 1-Bromo-4-fluorobenzene	24.6		25.00		98.5	64.2	128		0		

NOTES:
Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

Sample ID **1803021-026ADUP** SampType: **DUP** Units: **µg/L** Prep Date: **3/5/2018** RunNo: **42081**
Client ID: **BATCH** Batch ID: **19975** Analysis Date: **3/6/2018** SeqNo: **811685**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	ND	1.00						0		30	
Chloromethane	ND	2.00						0		30	Q
Vinyl chloride	ND	0.200						0		30	
Bromomethane	ND	1.00						0		30	

Work Order: 1803029
CLIENT: GeoEngineers
Project: UCC Bucklin / Silverdale

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID **1803021-026ADUP** SampType: **DUP** Units: **µg/L** Prep Date: **3/5/2018** RunNo: **42081**
Client ID: **BATCH** Batch ID: **19975** Analysis Date: **3/6/2018** SeqNo: **811685**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichlorofluoromethane (CFC-11)	ND	1.00						0		30	
Chloroethane	ND	1.00						0		30	
1,1-Dichloroethene	ND	1.00						0		30	
Methylene chloride	ND	1.00						0		30	
trans-1,2-Dichloroethene	ND	1.00						0		30	
Methyl tert-butyl ether (MTBE)	ND	1.00						0		30	
1,1-Dichloroethane	ND	1.00						0		30	
2,2-Dichloropropane	ND	2.00						0		30	
cis-1,2-Dichloroethene	ND	1.00						0		30	
Chloroform	ND	1.00						0		30	
1,1,1-Trichloroethane (TCA)	ND	1.00						0		30	
1,1-Dichloropropene	ND	1.00						0		30	
Carbon tetrachloride	ND	1.00						0		30	
1,2-Dichloroethane (EDC)	ND	1.00						0		30	
Benzene	ND	1.00						0		30	
Trichloroethene (TCE)	ND	0.500						0		30	
1,2-Dichloropropane	ND	1.00						0		30	
Bromodichloromethane	ND	1.00						0		30	
Dibromomethane	ND	1.00						0		30	
cis-1,3-Dichloropropene	ND	1.00						0		30	
Toluene	4.19	1.00						4.209	0.574	30	
trans-1,3-Dichloropropylene	ND	1.00						0		30	
1,1,2-Trichloroethane	ND	1.00						0		30	
1,3-Dichloropropane	ND	1.00						0		30	Q
Tetrachloroethene (PCE)	ND	1.00						0		30	
Dibromochloromethane	ND	1.00						0		30	
1,2-Dibromoethane (EDB)	ND	0.250						0		30	
Chlorobenzene	ND	1.00						0		30	
1,1,1,2-Tetrachloroethane	ND	1.00						0		30	
Ethylbenzene	ND	1.00						0		30	
m,p-Xylene	2.70	1.00						2.824	4.48	30	

Work Order: 1803029
CLIENT: GeoEngineers
Project: UCC Bucklin / Silverdale

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID **1803021-026ADUP** SampType: **DUP** Units: **µg/L** Prep Date: **3/5/2018** RunNo: **42081**
Client ID: **BATCH** Batch ID: **19975** Analysis Date: **3/6/2018** SeqNo: **811685**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
o-Xylene	1.15	1.00						1.169	1.42	30	
Styrene	ND	1.00						0		30	
Isopropylbenzene	ND	1.00						0		30	
Bromoform	ND	2.00						0		30	
1,1,2,2-Tetrachloroethane	ND	1.00						0		30	
n-Propylbenzene	ND	1.00						0		30	
Bromobenzene	ND	1.00						0		30	
1,3,5-Trimethylbenzene	ND	1.00						0		30	
2-Chlorotoluene	ND	1.00						0		30	
4-Chlorotoluene	ND	1.00						0		30	
tert-Butylbenzene	ND	1.00						0		30	
1,2,3-Trichloropropane	ND	1.00						0		30	
1,2,4-Trichlorobenzene	ND	2.00						0		30	
sec-Butylbenzene	ND	1.00						0		30	
4-Isopropyltoluene	ND	1.00						0		30	
1,3-Dichlorobenzene	ND	1.00						0		30	
1,4-Dichlorobenzene	ND	1.00						0		30	
n-Butylbenzene	ND	1.00						0		30	
1,2-Dichlorobenzene	ND	1.00						0		30	
1,2-Dibromo-3-chloropropane	ND	1.00						0		30	
1,2,4-Trimethylbenzene	ND	1.00						0		30	
Hexachloro-1,3-butadiene	ND	4.00						0		30	
Naphthalene	ND	1.00						0		30	
1,2,3-Trichlorobenzene	ND	4.00						0		30	
Surr: Dibromofluoromethane	23.6		25.00		94.4	45.4	152		0		
Surr: Toluene-d8	24.5		25.00		98.1	40.1	139		0		
Surr: 1-Bromo-4-fluorobenzene	24.9		25.00		99.5	64.2	128		0		

NOTES:
Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

Sample Log-In Check List

Client Name:	**GEI**	Work Order Number:	**1803029**
Logged by:	**Brianna Barnes**	Date Received:	**3/2/2018 3:20:00 PM**

Chain of Custody

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

Log In

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

Special Handling (if applicable)

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

Person Notified: _____ Date _____

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

Regarding: _____

Client Instructions: _____

19. Additional remarks:

Item Information

Item #	Temp ºC
Cooler	7.2
Sample	11.1

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

CHAIN OF CUSTODY RECORD

1803029

GEOENGINEERS, INC.
8410 154TH AVENUE N.E.
REDMOND, WASHINGTON 98052
(425) 861-6000

GeoEngineers

DATE 3/1/18
PAGE 1 OF
LAB FREEMONT ANALYT.
LAB NO.

PROJECT NAME/LOCATION UCC BOCKLIN/SILVERDALE
PROJECT NUMBER 22828-001-01
PROJECT MANAGER IAN YOUNG
SAMPLED BY PAUL ROBINETTE

SAMPLE IDENTIFICATION		SAMPLE COLLECTION			# OF	ANALYSIS REQUIRED			NOTES/COMMENTS
LAB	GEOENGINEERS	DATE	TIME	MATRIX	JARS	VOCs 8260	HOLD		(Preserved, filtered, etc.)
	GEI-MW1-180301	3/1/18	1605	GW	3	X			
	GEI-MW1-10-10.5	3/1/18	1455	S	3		X		
	GEI-MW1-14.5-15	3/1/18	1457	S	3		X		

RELINQUISHED BY SIGNATURE PRINTED NAME PAUL ROBINETTE FIRM GEI
DATE 3/2/18 TIME 1240

RECEIVED BY SIGNATURE PRINTED NAME ERIC KNOEDLER FIRM
DATE 3/2/18 TIME 1040

RELINQUISHED BY SIGNATURE PRINTED NAME ERIC KNOEDLER FIRM
DATE 3/2/18 TIME 1:15pm

RECEIVED BY SIGNATURE Shane Hsu PRINTED NAME FIRM
DATE 3/2/18 TIME 1:15pm

RELINQUISHED BY SIGNATURE PRINTED NAME Shane Hsu FIRM
DATE 3/2/18 TIME 3:20pm

RECEIVED BY SIGNATURE PRINTED NAME DM Ridgeway FIRM EA
DATE 3/2/18 TIME 15:20

ADDITIONAL COMMENTS:

CHAIN OF CUSTODY RECORD

1803029

GEOENGINEERS, INC.
8410 154TH AVENUE N.E.
REDMOND, WASHINGTON 98052
(425) 861-6000

GeoEngineers

DATE 3/1/18
PAGE 1 OF
LAB FREEMONT ANALYT.
LAB NO.

PROJECT NAME/LOCATION UCC BUCKLIN/SILVERDALE
PROJECT NUMBER 22828-001-01
PROJECT MANAGER IAN HOWARD
SAMPLED BY PAUL ROBINETTE

SAMPLE IDENTIFICATION		SAMPLE COLLECTION			# OF	ANALYSIS REQUIRED			NOTES/COMMENTS
LAB	GEOENGINEERS	DATE	TIME	MATRIX	JARS	VOCs 8260	HOLD		(Preserved, filtered, etc.)
	GEI-MW1-180501	3/1/18	1605	GW	3	X			ⓧ add analysis per I.Y. 3/5/18 PBB
	GEI-MW1-10-10.5	3/1/18	1455	S	3		X		
	GEI-MW1-14.5-15	3/1/18	1457	S	3	(X)	X		

RELINQUISHED BY	FIRM	RELINQUISHED BY	FIRM	RELINQUISHED BY	FIRM
SIGNATURE	GEI	SIGNATURE		SIGNATURE	
PRINTED NAME	PAUL ROBINETTE	PRINTED NAME	ERIC KNOEDLER	PRINTED NAME	Shane HSU
DATE	3/2/18 TIME 1840	DATE	3/2/18 TIME 1:15pm	DATE	3/2/18 TIME 3:20PM
RECEIVED BY	FIRM	RECEIVED BY	FIRM	RECEIVED BY	FIRM
SIGNATURE		SIGNATURE		SIGNATURE	
PRINTED NAME	ERIC KNOEDLER	PRINTED NAME		PRINTED NAME	
DATE	3/2/18 TIME 1040	DATE	3/2/18 TIME 1:15pm	DATE	3/2/18 TIME 15:20

RECEIVED BY Shane HSU

ADDITIONAL COMMENTS:

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

GeoEngineers
Ian Young
600 Stewart Street, Suite 1700
Seattle, WA 98101

RE: Bucklin UCC
Work Order Number: 1803073

March 14, 2018

Attention Ian Young:

Fremont Analytical, Inc. received 2 sample(s) on 3/8/2018 for the analyses presented in the following report.

Mercury by EPA Method 7471
Sample Moisture (Percent Moisture)
Total Metals by EPA Method 6020
Volatile Organic Compounds by EPA Method 8260C

This report consists of the following:

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

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

Thank you for using Fremont Analytical.

Sincerely,

Mike Ridgeway
Laboratory Director

Date: *03/14/2018*

CLIENT: GeoEngineers
Project: Bucklin UCC
Work Order: 1803073

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1803073-001	DRUMCOMP-180307	03/07/2018 12:00 PM	03/08/2018 12:34 PM
1803073-002	GEI-MW1-180307	03/07/2018 11:50 AM	03/08/2018 12:34 PM

Case Narrative

WO#: **1803073**
Date: **3/14/2018**

CLIENT: GeoEngineers
Project: Bucklin UCC

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

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

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

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

Qualifiers:

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

Acronyms:

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

Analytical Report

Work Order: **1803073**
Date Reported: **3/14/2018**

Client: GeoEngineers
Collection Date: 3/7/2018 12:00:00 PM
Project: Bucklin UCC
Lab ID: 1803073-001
Matrix: Soil
Client Sample ID: **DRUMCOMP-180307**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Mercury by EPA Method 7471				Batch ID: 20055		Analyst: WF
Mercury	ND	0.276		mg/Kg-dry	1	3/14/2018 3:07:17 PM
Total Metals by EPA Method 6020				Batch ID: 20012		Analyst: WC
Arsenic	2.44	0.204		mg/Kg-dry	1	3/9/2018 1:59:27 PM
Barium	28.5	0.408		mg/Kg-dry	1	3/9/2018 1:59:27 PM
Cadmium	ND	0.163		mg/Kg-dry	1	3/9/2018 1:59:27 PM
Chromium	22.7	0.0817		mg/Kg-dry	1	3/9/2018 1:59:27 PM
Lead	1.28	0.163		mg/Kg-dry	1	3/9/2018 1:59:27 PM
Selenium	0.889	0.408		mg/Kg-dry	1	3/9/2018 1:59:27 PM
Silver	ND	0.0817		mg/Kg-dry	1	3/9/2018 1:59:27 PM
Sample Moisture (Percent Moisture)				Batch ID: R42151		Analyst: CG
Percent Moisture	11.3			wt%	1	3/9/2018 11:54:06 AM

Analytical Report

Work Order: **1803073**
Date Reported: **3/14/2018**

Client: GeoEngineers
Collection Date: 3/7/2018 11:50:00 AM
Project: Bucklin UCC
Lab ID: 1803073-002
Matrix: Groundwater
Client Sample ID: **GEI-MW1-180307**

Volatile Organic Compounds by EPA Method 8260C

Batch ID: 20017 Analyst: NG

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Dichlorodifluoromethane (CFC-12)	ND	1.00		µg/L	1	3/9/2018 8:46:34 PM
Chloromethane	ND	2.00		µg/L	1	3/9/2018 8:46:34 PM
Vinyl chloride	ND	0.200		µg/L	1	3/9/2018 8:46:34 PM
Bromomethane	ND	1.00		µg/L	1	3/9/2018 8:46:34 PM
Trichlorofluoromethane (CFC-11)	ND	1.00		µg/L	1	3/9/2018 8:46:34 PM
Chloroethane	ND	1.00		µg/L	1	3/9/2018 8:46:34 PM
1,1-Dichloroethene	ND	1.00		µg/L	1	3/9/2018 8:46:34 PM
Methylene chloride	ND	1.00		µg/L	1	3/9/2018 8:46:34 PM
trans-1,2-Dichloroethene	ND	1.00		µg/L	1	3/9/2018 8:46:34 PM
Methyl tert-butyl ether (MTBE)	ND	1.00		µg/L	1	3/9/2018 8:46:34 PM
1,1-Dichloroethane	ND	1.00		µg/L	1	3/9/2018 8:46:34 PM
2,2-Dichloropropane	ND	2.00		µg/L	1	3/9/2018 8:46:34 PM
cis-1,2-Dichloroethene	ND	1.00		µg/L	1	3/9/2018 8:46:34 PM
Chloroform	ND	1.00		µg/L	1	3/9/2018 8:46:34 PM
1,1,1-Trichloroethane (TCA)	ND	1.00		µg/L	1	3/9/2018 8:46:34 PM
1,1-Dichloropropene	ND	1.00		µg/L	1	3/9/2018 8:46:34 PM
Carbon tetrachloride	ND	1.00		µg/L	1	3/9/2018 8:46:34 PM
1,2-Dichloroethane (EDC)	ND	1.00		µg/L	1	3/9/2018 8:46:34 PM
Benzene	ND	1.00		µg/L	1	3/9/2018 8:46:34 PM
Trichloroethene (TCE)	ND	0.500		µg/L	1	3/9/2018 8:46:34 PM
1,2-Dichloropropane	ND	1.00		µg/L	1	3/9/2018 8:46:34 PM
Bromodichloromethane	ND	1.00		µg/L	1	3/9/2018 8:46:34 PM
Dibromomethane	ND	1.00		µg/L	1	3/9/2018 8:46:34 PM
cis-1,3-Dichloropropene	ND	1.00		µg/L	1	3/9/2018 8:46:34 PM
Toluene	ND	1.00		µg/L	1	3/9/2018 8:46:34 PM
trans-1,3-Dichloropropylene	ND	1.00		µg/L	1	3/9/2018 8:46:34 PM
1,1,2-Trichloroethane	ND	1.00		µg/L	1	3/9/2018 8:46:34 PM
1,3-Dichloropropane	ND	1.00		µg/L	1	3/9/2018 8:46:34 PM
Tetrachloroethene (PCE)	ND	1.00		µg/L	1	3/9/2018 8:46:34 PM
Dibromochloromethane	ND	1.00		µg/L	1	3/9/2018 8:46:34 PM
1,2-Dibromoethane (EDB)	ND	0.250		µg/L	1	3/9/2018 8:46:34 PM
Chlorobenzene	ND	1.00		µg/L	1	3/9/2018 8:46:34 PM
1,1,1,2-Tetrachloroethane	ND	1.00		µg/L	1	3/9/2018 8:46:34 PM
Ethylbenzene	ND	1.00		µg/L	1	3/9/2018 8:46:34 PM
m,p-Xylene	ND	1.00		µg/L	1	3/9/2018 8:46:34 PM
o-Xylene	ND	1.00		µg/L	1	3/9/2018 8:46:34 PM
Styrene	ND	1.00		µg/L	1	3/9/2018 8:46:34 PM
Isopropylbenzene	ND	1.00		µg/L	1	3/9/2018 8:46:34 PM
Bromoform	ND	2.00		µg/L	1	3/9/2018 8:46:34 PM

Analytical Report

Work Order: **1803073**
Date Reported: **3/14/2018**

Client: GeoEngineers
Collection Date: 3/7/2018 11:50:00 AM
Project: Bucklin UCC
Lab ID: 1803073-002
Matrix: Groundwater
Client Sample ID: **GEI-MW1-180307**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260C				Batch ID: 20017		Analyst: NG
1,1,2,2-Tetrachloroethane	ND	1.00		µg/L	1	3/9/2018 8:46:34 PM
n-Propylbenzene	ND	1.00		µg/L	1	3/9/2018 8:46:34 PM
Bromobenzene	ND	1.00		µg/L	1	3/9/2018 8:46:34 PM
1,3,5-Trimethylbenzene	ND	1.00		µg/L	1	3/9/2018 8:46:34 PM
2-Chlorotoluene	ND	1.00		µg/L	1	3/9/2018 8:46:34 PM
4-Chlorotoluene	ND	1.00		µg/L	1	3/9/2018 8:46:34 PM
tert-Butylbenzene	ND	1.00		µg/L	1	3/9/2018 8:46:34 PM
1,2,3-Trichloropropane	ND	1.00		µg/L	1	3/9/2018 8:46:34 PM
1,2,4-Trichlorobenzene	ND	2.00		µg/L	1	3/9/2018 8:46:34 PM
sec-Butylbenzene	ND	1.00		µg/L	1	3/9/2018 8:46:34 PM
4-Isopropyltoluene	ND	1.00		µg/L	1	3/9/2018 8:46:34 PM
1,3-Dichlorobenzene	ND	1.00		µg/L	1	3/9/2018 8:46:34 PM
1,4-Dichlorobenzene	ND	1.00		µg/L	1	3/9/2018 8:46:34 PM
n-Butylbenzene	ND	1.00		µg/L	1	3/9/2018 8:46:34 PM
1,2-Dichlorobenzene	ND	1.00		µg/L	1	3/9/2018 8:46:34 PM
1,2-Dibromo-3-chloropropane	ND	1.00		µg/L	1	3/9/2018 8:46:34 PM
1,2,4-Trimethylbenzene	ND	1.00		µg/L	1	3/9/2018 8:46:34 PM
Hexachloro-1,3-butadiene	ND	4.00		µg/L	1	3/9/2018 8:46:34 PM
Naphthalene	ND	1.00		µg/L	1	3/9/2018 8:46:34 PM
1,2,3-Trichlorobenzene	ND	4.00		µg/L	1	3/9/2018 8:46:34 PM
Surr: Dibromofluoromethane	103	45.4 - 152		%Rec	1	3/9/2018 8:46:34 PM
Surr: Toluene-d8	99.4	40.1 - 139		%Rec	1	3/9/2018 8:46:34 PM
Surr: 1-Bromo-4-fluorobenzene	100	64.2 - 128		%Rec	1	3/9/2018 8:46:34 PM

Work Order: 1803073
CLIENT: GeoEngineers
Project: Bucklin UCC

QC SUMMARY REPORT

Mercury by EPA Method 7471

Sample ID: **MB-20055**	SampType: **MBLK**			Units: **mg/Kg**		Prep Date: **3/14/2018**		RunNo: **42215**		
Client ID: **MBLKS**	Batch ID: **20055**					Analysis Date: **3/14/2018**		SeqNo: **814261**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.250									

Sample ID: **LCS-20055**	SampType: **LCS**			Units: **mg/Kg**		Prep Date: **3/14/2018**		RunNo: **42215**		
Client ID: **LCSS**	Batch ID: **20055**					Analysis Date: **3/14/2018**		SeqNo: **814262**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.516	0.250	0.5000	0	103	80	120				

Sample ID: **1803147-001ADUP**	SampType: **DUP**			Units: **mg/Kg-dry**		Prep Date: **3/14/2018**		RunNo: **42215**		
Client ID: **BATCH**	Batch ID: **20055**					Analysis Date: **3/14/2018**		SeqNo: **814266**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.274						0		20	

Sample ID: **1803147-001AMS**	SampType: **MS**			Units: **mg/Kg-dry**		Prep Date: **3/14/2018**		RunNo: **42215**		
Client ID: **BATCH**	Batch ID: **20055**					Analysis Date: **3/14/2018**		SeqNo: **814267**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.598	0.274	0.5473	0.01379	107	70	130				

Sample ID: **1803147-001AMSD**	SampType: **MSD**			Units: **mg/Kg-dry**		Prep Date: **3/14/2018**		RunNo: **42215**		
Client ID: **BATCH**	Batch ID: **20055**					Analysis Date: **3/14/2018**		SeqNo: **814268**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.591	0.274	0.5473	0.01379	105	70	130	0.5976	1.10	20	

Work Order: 1803073
CLIENT: GeoEngineers
Project: Bucklin UCC

QC SUMMARY REPORT

Sample Moisture (Percent Moisture)

Sample ID: **1803091-001ADUP** SampType: **DUP** Units: **wt%** Prep Date: **3/9/2018** RunNo: **42151**
Client ID: **BATCH** Batch ID: **R42151** Analysis Date: **3/9/2018** SeqNo: **812873**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	10.4	0.500						10.40	0	20	

Sample ID: **1803091-011ADUP** SampType: **DUP** Units: **wt%** Prep Date: **3/9/2018** RunNo: **42151**
Client ID: **BATCH** Batch ID: **R42151** Analysis Date: **3/9/2018** SeqNo: **812884**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	9.54	0.500						10.92	13.5	20	

Work Order: 1803073
CLIENT: GeoEngineers
Project: Bucklin UCC

QC SUMMARY REPORT

Total Metals by EPA Method 6020

Sample ID: **MB-20012** SampType: **MBLK** Units: **mg/Kg** Prep Date: **3/9/2018** RunNo: **42165**
Client ID: **MBLKS** Batch ID: **20012** Analysis Date: **3/9/2018** SeqNo: **813103**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.185									
Barium	ND	0.370									
Cadmium	ND	0.148									
Chromium	ND	0.0741									
Lead	ND	0.148									
Selenium	ND	0.370									
Silver	ND	0.0741									

Sample ID: **LCS-20012** SampType: **LCS** Units: **mg/Kg** Prep Date: **3/9/2018** RunNo: **42165**
Client ID: **LCSS** Batch ID: **20012** Analysis Date: **3/9/2018** SeqNo: **813104**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	40.1	0.187	37.31	0	107	80	120				
Barium	40.0	0.373	37.31	0	107	80	120				
Cadmium	1.99	0.149	1.866	0	107	80	120				
Chromium	41.6	0.0746	37.31	0	111	80	120				
Lead	20.3	0.149	18.66	0	109	80	120				
Selenium	3.75	0.373	3.731	0	100	80	120				
Silver	7.90	0.0746	9.328	0	84.7	80	120				

Sample ID: **1803073-001ADUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **3/9/2018** RunNo: **42165**
Client ID: **DRUMCOMP-180307** Batch ID: **20012** Analysis Date: **3/9/2018** SeqNo: **813106**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	1.37	0.203						2.435	56.3	20	R
Barium	24.4	0.406						28.55	15.7	20	
Cadmium	ND	0.162						0		20	
Chromium	22.6	0.0811						22.70	0.620	20	
Lead	1.13	0.162						1.281	12.9	20	
Selenium	0.786	0.406						0.8891	12.3	20	

Work Order: 1803073
CLIENT: GeoEngineers
Project: Bucklin UCC

QC SUMMARY REPORT

Total Metals by EPA Method 6020

Sample ID: **1803073-001ADUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **3/9/2018** RunNo: **42165**
Client ID: **DRUMCOMP-180307** Batch ID: **20012** Analysis Date: **3/9/2018** SeqNo: **813106**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Silver	ND	0.0811						0		20	

NOTES:
R - High RPD observed. The method is in control as indicated by the LCS.

Sample ID: **1803073-001AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **3/9/2018** RunNo: **42165**
Client ID: **DRUMCOMP-180307** Batch ID: **20012** Analysis Date: **3/9/2018** SeqNo: **813108**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	46.3	0.203	40.55	2.435	108	75	125				
Barium	86.8	0.406	40.55	28.55	144	75	125				S
Cadmium	2.51	0.162	2.028	0.09750	119	75	125				
Chromium	71.1	0.0811	40.55	22.70	119	75	125				
Lead	22.2	0.162	20.28	1.281	103	75	125				
Selenium	4.89	0.406	4.055	0.8891	98.5	75	125				
Silver	7.75	0.0811	10.14	0.04444	76.0	75	125				

NOTES:
S - Outlying spike recovery(ies) observed. A duplicate analysis was performed with similar results indicating a possible matrix effect.

Sample ID: **1803073-001AMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **3/9/2018** RunNo: **42165**
Client ID: **DRUMCOMP-180307** Batch ID: **20012** Analysis Date: **3/9/2018** SeqNo: **813109**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	47.7	0.204	40.85	2.435	111	75	125	46.25	3.10	20	
Barium	88.1	0.408	40.85	28.55	146	75	125	86.82	1.45	20	S
Cadmium	2.60	0.163	2.042	0.09750	123	75	125	2.506	3.87	20	
Chromium	74.0	0.0817	40.85	22.70	126	75	125	71.09	4.03	20	S
Lead	22.7	0.163	20.42	1.281	105	75	125	22.16	2.61	20	
Selenium	4.86	0.408	4.085	0.8891	97.3	75	125	4.885	0.418	20	
Silver	8.57	0.0817	10.21	0.04444	83.5	75	125	7.747	10.1	20	

NOTES:
S - Outlying spike recovery(ies) observed. A duplicate analysis was performed with similar results indicating a possible matrix effect.
S - Outlying spike recovery observed for Cr.. A duplicate analysis was performed and recovered within range.

Work Order: 1803073
CLIENT: GeoEngineers
Project: Bucklin UCC

QC SUMMARY REPORT

Total Metals by EPA Method 6020

Sample ID: **1803073-001APDS** SampType: **PDS** Units: **mg/Kg-dry** Prep Date: **3/9/2018** RunNo: **42165**
Client ID: **DRUMCOMP-180307** Batch ID: **20012** Analysis Date: **3/9/2018** SeqNo: **813110**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	178	0.408	50.0	69.9	108	75	125				

Work Order: 1803073
CLIENT: GeoEngineers
Project: Bucklin UCC

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID: **LCS-20017** SampType: **LCS** Units: **µg/L** Prep Date: **3/9/2018** RunNo: **42174**
Client ID: **LCSW** Batch ID: **20017** Analysis Date: **3/9/2018** SeqNo: **813231**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	15.5	1.00	20.00	0	77.4	18.7	171				
Chloromethane	18.2	2.00	20.00	0	91.2	38.5	171				
Vinyl chloride	18.6	0.200	20.00	0	92.9	48	145				
Bromomethane	22.4	1.00	20.00	0	112	32.5	184				
Trichlorofluoromethane (CFC-11)	19.3	1.00	20.00	0	96.4	43.5	149				
Chloroethane	19.7	1.00	20.00	0	98.7	43.8	168				
1,1-Dichloroethene	19.8	1.00	20.00	0	99.1	57.5	150				
Methylene chloride	19.9	1.00	20.00	0	99.6	67.1	131				
trans-1,2-Dichloroethene	20.0	1.00	20.00	0	100	71.7	129				
Methyl tert-butyl ether (MTBE)	20.3	1.00	20.00	0	101	58	138				
1,1-Dichloroethane	20.1	1.00	20.00	0	101	67.9	134				
2,2-Dichloropropane	25.0	2.00	20.00	0	125	26.5	185				
cis-1,2-Dichloroethene	20.0	1.00	20.00	0	99.9	70.2	139				
Chloroform	20.2	1.00	20.00	0	101	66.3	131				
1,1,1-Trichloroethane (TCA)	19.9	1.00	20.00	0	99.7	63	140				
1,1-Dichloropropene	20.0	1.00	20.00	0	99.8	69.9	124				
Carbon tetrachloride	19.3	1.00	20.00	0	96.6	66.2	134				
1,2-Dichloroethane (EDC)	19.8	1.00	20.00	0	99.1	67	126				
Benzene	19.9	1.00	20.00	0	99.7	69.3	132				
Trichloroethene (TCE)	19.6	0.500	20.00	0	98.2	65.2	136				
1,2-Dichloropropane	20.2	1.00	20.00	0	101	70.5	130				
Bromodichloromethane	20.2	1.00	20.00	0	101	67.2	137				
Dibromomethane	20.2	1.00	20.00	0	101	69.3	143				
cis-1,3-Dichloropropene	19.8	1.00	20.00	0	98.9	62.6	137				
Toluene	20.1	1.00	20.00	0	101	61.3	145				
trans-1,3-Dichloropropylene	19.8	1.00	20.00	0	98.9	56.5	163				
1,1,2-Trichloroethane	19.9	1.00	20.00	0	99.5	71.7	131				
1,3-Dichloropropane	20.6	1.00	20.00	0	103	73.5	127				
Tetrachloroethene (PCE)	20.1	1.00	20.00	0	100	47.5	147				
Dibromochloromethane	19.5	1.00	20.00	0	97.4	67.2	134				
1,2-Dibromoethane (EDB)	19.8	0.250	20.00	0	98.8	73.6	125				

Work Order: 1803073
CLIENT: GeoEngineers
Project: Bucklin UCC

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID: **LCS-20017** SampType: **LCS** Units: **µg/L** Prep Date: **3/9/2018** RunNo: **42174**
Client ID: **LCSW** Batch ID: **20017** Analysis Date: **3/9/2018** SeqNo: **813231**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chlorobenzene	20.3	1.00	20.00	0	101	73.9	126				
1,1,1,2-Tetrachloroethane	20.4	1.00	20.00	0	102	76.8	124				
Ethylbenzene	20.3	1.00	20.00	0	101	72	130				
m,p-Xylene	39.8	1.00	40.00	0	99.5	70.3	134				
o-Xylene	20.1	1.00	20.00	0	100	72.1	131				
Styrene	20.6	1.00	20.00	0	103	64.3	140				
Isopropylbenzene	20.6	1.00	20.00	0	103	73.9	128				
Bromoform	21.5	2.00	20.00	0	108	55.3	141				
1,1,2,2-Tetrachloroethane	19.8	1.00	20.00	0	99.1	62.9	132				
n-Propylbenzene	20.0	1.00	20.00	0	100	74.5	127				
Bromobenzene	20.7	1.00	20.00	0	103	71	131				
1,3,5-Trimethylbenzene	20.9	1.00	20.00	0	104	73.1	128				
2-Chlorotoluene	21.2	1.00	20.00	0	106	70.8	130				
4-Chlorotoluene	18.9	1.00	20.00	0	94.4	70.1	131				
tert-Butylbenzene	20.8	1.00	20.00	0	104	68.2	131				
1,2,3-Trichloropropane	21.2	1.00	20.00	0	106	67.7	131				
1,2,4-Trichlorobenzene	21.9	2.00	20.00	0	110	41	139				
sec-Butylbenzene	20.7	1.00	20.00	0	103	72	129				
4-Isopropyltoluene	21.3	1.00	20.00	0	106	69.2	130				
1,3-Dichlorobenzene	20.9	1.00	20.00	0	104	80.4	124				
1,4-Dichlorobenzene	21.1	1.00	20.00	0	106	66.8	119				
n-Butylbenzene	21.4	1.00	20.00	0	107	73.8	127				
1,2-Dichlorobenzene	20.9	1.00	20.00	0	104	69.7	119				
1,2-Dibromo-3-chloropropane	19.6	1.00	20.00	0	97.8	63.1	136				
1,2,4-Trimethylbenzene	21.1	1.00	20.00	0	105	73.4	127				
Hexachloro-1,3-butadiene	21.7	4.00	20.00	0	108	58.6	138				
Naphthalene	22.1	1.00	20.00	0	110	41.8	165				
1,2,3-Trichlorobenzene	21.3	4.00	20.00	0	107	35.8	155				
Surr: Dibromofluoromethane	26.8		25.00		107	45.4	152				
Surr: Toluene-d8	25.0		25.00		100	40.1	139				
Surr: 1-Bromo-4-fluorobenzene	25.4		25.00		101	64.2	128				

Work Order: 1803073
CLIENT: GeoEngineers
Project: Bucklin UCC

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID: **LCS-20017** SampType: **LCS** Units: **µg/L** Prep Date: **3/9/2018** RunNo: **42174**
Client ID: **LCSW** Batch ID: **20017** Analysis Date: **3/9/2018** SeqNo: **813231**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sample ID: **LCSD-20017** SampType: **LCSD** Units: **µg/L** Prep Date: **3/9/2018** RunNo: **42174**
Client ID: **LCSW02** Batch ID: **20017** Analysis Date: **3/9/2018** SeqNo: **813230**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	14.7	1.00	20.00	0	73.4	18.7	171	15.48	5.30	20	
Chloromethane	17.6	2.00	20.00	0	88.1	38.5	171	18.25	3.54	20	
Vinyl chloride	18.2	0.200	20.00	0	90.9	48	145	18.57	2.20	20	
Bromomethane	20.7	1.00	20.00	0	104	32.5	184	22.42	7.87	20	
Trichlorofluoromethane (CFC-11)	19.1	1.00	20.00	0	95.5	43.5	149	19.28	0.954	20	
Chloroethane	19.0	1.00	20.00	0	94.9	43.8	168	19.74	3.95	20	
1,1-Dichloroethene	19.6	1.00	20.00	0	97.8	57.5	150	19.83	1.32	20	
Methylene chloride	19.3	1.00	20.00	0	96.3	67.1	131	19.91	3.33	20	
trans-1,2-Dichloroethene	19.6	1.00	20.00	0	98.2	71.7	129	20.04	1.96	20	
Methyl tert-butyl ether (MTBE)	19.7	1.00	20.00	0	98.6	58	138	20.29	2.84	20	
1,1-Dichloroethane	19.8	1.00	20.00	0	99.1	67.9	134	20.12	1.49	20	
2,2-Dichloropropane	23.8	2.00	20.00	0	119	26.5	185	24.96	4.92	20	
cis-1,2-Dichloroethene	19.9	1.00	20.00	0	99.5	70.2	139	19.98	0.415	20	
Chloroform	19.7	1.00	20.00	0	98.6	66.3	131	20.17	2.24	20	
1,1,1-Trichloroethane (TCA)	19.7	1.00	20.00	0	98.4	63	140	19.93	1.23	20	
1,1-Dichloropropene	19.8	1.00	20.00	0	98.9	69.9	124	19.96	0.909	20	
Carbon tetrachloride	19.3	1.00	20.00	0	96.3	66.2	134	19.31	0.269	20	
1,2-Dichloroethane (EDC)	19.3	1.00	20.00	0	96.7	68.8	123	19.82	2.49	20	
Benzene	19.6	1.00	20.00	0	98.0	69.3	132	19.95	1.76	20	
Trichloroethene (TCE)	19.5	0.500	20.00	0	97.7	65.2	136	19.65	0.594	20	
1,2-Dichloropropane	19.9	1.00	20.00	0	99.3	70.5	130	20.18	1.57	20	
Bromodichloromethane	19.4	1.00	20.00	0	97.0	74.6	127	20.21	4.11	20	
Dibromomethane	19.1	1.00	20.00	0	95.5	69.3	143	20.25	5.88	20	
cis-1,3-Dichloropropene	19.2	1.00	20.00	0	96.1	62.6	137	19.78	2.87	20	
Toluene	19.9	1.00	20.00	0	99.3	61.3	145	20.11	1.22	20	

Work Order: 1803073
CLIENT: GeoEngineers
Project: Bucklin UCC

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID: **LCSD-20017** SampType: **LCSD** Units: **µg/L** Prep Date: **3/9/2018** RunNo: **42174**
Client ID: **LCSW02** Batch ID: **20017** Analysis Date: **3/9/2018** SeqNo: **813230**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
trans-1,3-Dichloropropylene	19.2	1.00	20.00	0	96.1	56.5	163	19.78	2.88	20	
1,1,2-Trichloroethane	19.2	1.00	20.00	0	96.0	71.7	131	19.89	3.57	20	
1,3-Dichloropropane	19.1	1.00	20.00	0	95.6	73.5	127	20.64	7.69	20	
Tetrachloroethene (PCE)	20.1	1.00	20.00	0	100	47.5	147	20.10	0.0942	20	
Dibromochloromethane	18.6	1.00	20.00	0	93.0	67.2	134	19.49	4.66	20	
1,2-Dibromoethane (EDB)	19.1	0.250	20.00	0	95.4	73.6	125	19.76	3.53	20	
Chlorobenzene	19.9	1.00	20.00	0	99.4	73.9	126	20.25	1.90	20	
1,1,1,2-Tetrachloroethane	20.0	1.00	20.00	0	100	76.8	124	20.40	1.84	20	
Ethylbenzene	20.2	1.00	20.00	0	101	72	130	20.27	0.202	20	
m,p-Xylene	40.5	1.00	40.00	0	101	70.3	134	39.79	1.66	20	
o-Xylene	20.0	1.00	20.00	0	99.8	72.1	131	20.10	0.654	20	
Styrene	19.7	1.00	20.00	0	98.6	64.3	140	20.58	4.28	20	
Isopropylbenzene	20.2	1.00	20.00	0	101	73.9	128	20.55	1.95	20	
Bromoform	20.4	2.00	20.00	0	102	55.3	141	21.51	5.06	20	
1,1,2,2-Tetrachloroethane	19.6	1.00	20.00	0	97.9	62.9	132	19.83	1.24	20	
n-Propylbenzene	19.6	1.00	20.00	0	97.9	74.5	127	20.02	2.17	20	
Bromobenzene	19.7	1.00	20.00	0	98.7	71	131	20.67	4.55	20	
1,3,5-Trimethylbenzene	20.7	1.00	20.00	0	103	73.1	128	20.88	1.06	20	
2-Chlorotoluene	20.7	1.00	20.00	0	103	70.8	130	21.17	2.38	20	
4-Chlorotoluene	18.4	1.00	20.00	0	92.2	70.1	131	18.88	2.32	20	
tert-Butylbenzene	20.2	1.00	20.00	0	101	68.2	131	20.78	3.05	20	
1,2,3-Trichloropropane	20.1	1.00	20.00	0	100	67.7	131	21.20	5.48	20	
1,2,4-Trichlorobenzene	21.5	2.00	20.00	0	107	41	139	21.91	2.02	20	
sec-Butylbenzene	20.4	1.00	20.00	0	102	72	129	20.66	1.18	20	
4-Isopropyltoluene	21.1	1.00	20.00	0	106	69.2	130	21.25	0.631	20	
1,3-Dichlorobenzene	20.3	1.00	20.00	0	102	80.4	124	20.90	2.80	20	
1,4-Dichlorobenzene	20.7	1.00	20.00	0	103	66.8	119	21.14	2.21	20	
n-Butylbenzene	21.3	1.00	20.00	0	107	73.8	127	21.40	0.320	20	
1,2-Dichlorobenzene	20.6	1.00	20.00	0	103	69.7	119	20.90	1.47	20	
1,2-Dibromo-3-chloropropane	18.5	1.00	20.00	0	92.4	63.1	136	19.57	5.71	20	
1,2,4-Trimethylbenzene	20.8	1.00	20.00	0	104	73.4	127	21.07	1.15	20	

Work Order: 1803073
CLIENT: GeoEngineers
Project: Bucklin UCC

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID: **LCSD-20017** SampType: **LCSD** Units: **µg/L** Prep Date: **3/9/2018** RunNo: **42174**
Client ID: **LCSW02** Batch ID: **20017** Analysis Date: **3/9/2018** SeqNo: **813230**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexachloro-1,3-butadiene	21.7	4.00	20.00	0	109	58.6	138	21.67	0.349	20	
Naphthalene	20.2	1.00	20.00	0	101	41.8	165	22.10	9.02	20	
1,2,3-Trichlorobenzene	20.8	4.00	20.00	0	104	35.8	155	21.30	2.56	20	
Surr: Dibromofluoromethane	26.4		25.00		106	45.4	152		0		
Surr: Toluene-d8	24.7		25.00		99.0	40.1	139		0		
Surr: 1-Bromo-4-fluorobenzene	24.9		25.00		99.6	64.2	128		0		

Sample ID: **MB-20017** SampType: **MBLK** Units: **µg/L** Prep Date: **3/9/2018** RunNo: **42174**
Client ID: **MBLKW** Batch ID: **20017** Analysis Date: **3/9/2018** SeqNo: **813232**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	ND	1.00									
Chloromethane	ND	2.00									
Vinyl chloride	ND	0.200									
Bromomethane	ND	1.00									
Trichlorofluoromethane (CFC-11)	ND	1.00									
Chloroethane	ND	1.00									
1,1-Dichloroethene	ND	1.00									
Methylene chloride	ND	1.00									
trans-1,2-Dichloroethene	ND	1.00									
Methyl tert-butyl ether (MTBE)	ND	1.00									
1,1-Dichloroethane	ND	1.00									
2,2-Dichloropropane	ND	2.00									
cis-1,2-Dichloroethene	ND	1.00									
Chloroform	ND	1.00									
1,1,1-Trichloroethane (TCA)	ND	1.00									
1,1-Dichloropropene	ND	1.00									
Carbon tetrachloride	ND	1.00									
1,2-Dichloroethane (EDC)	ND	1.00									
Benzene	ND	1.00									

Work Order: 1803073
CLIENT: GeoEngineers
Project: Bucklin UCC

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID: **MB-20017** SampType: **MBLK** Units: **µg/L** Prep Date: **3/9/2018** RunNo: **42174**
Client ID: **MBLKW** Batch ID: **20017** Analysis Date: **3/9/2018** SeqNo: **813232**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichloroethene (TCE)	ND	0.500									
1,2-Dichloropropane	ND	1.00									
Bromodichloromethane	ND	1.00									
Dibromomethane	ND	1.00									
cis-1,3-Dichloropropene	ND	1.00									
Toluene	ND	1.00									
trans-1,3-Dichloropropylene	ND	1.00									
1,1,2-Trichloroethane	ND	1.00									
1,3-Dichloropropane	ND	1.00									
Tetrachloroethene (PCE)	ND	1.00									
Dibromochloromethane	ND	1.00									
1,2-Dibromoethane (EDB)	ND	0.250									
Chlorobenzene	ND	1.00									
1,1,1,2-Tetrachloroethane	ND	1.00									
Ethylbenzene	ND	1.00									
m,p-Xylene	ND	1.00									
o-Xylene	ND	1.00									
Styrene	ND	1.00									
Isopropylbenzene	ND	1.00									
Bromoform	ND	2.00									
1,1,2,2-Tetrachloroethane	ND	1.00									
n-Propylbenzene	ND	1.00									
Bromobenzene	ND	1.00									
1,3,5-Trimethylbenzene	ND	1.00									
2-Chlorotoluene	ND	1.00									
4-Chlorotoluene	ND	1.00									
tert-Butylbenzene	ND	1.00									
1,2,3-Trichloropropane	ND	1.00									
1,2,4-Trichlorobenzene	ND	2.00									
sec-Butylbenzene	ND	1.00									
4-Isopropyltoluene	ND	1.00									

Work Order: 1803073
CLIENT: GeoEngineers
Project: Bucklin UCC

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID: **MB-20017** SampType: **MBLK** Units: **µg/L** Prep Date: **3/9/2018** RunNo: **42174**
Client ID: **MBLKW** Batch ID: **20017** Analysis Date: **3/9/2018** SeqNo: **813232**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,3-Dichlorobenzene	ND	1.00									
1,4-Dichlorobenzene	ND	1.00									
n-Butylbenzene	ND	1.00									
1,2-Dichlorobenzene	ND	1.00									
1,2-Dibromo-3-chloropropane	ND	1.00									
1,2,4-Trimethylbenzene	ND	1.00									
Hexachloro-1,3-butadiene	ND	4.00									
Naphthalene	ND	1.00									
1,2,3-Trichlorobenzene	ND	4.00									
Surr: Dibromofluoromethane	25.3		25.00		101	45.4	152				
Surr: Toluene-d8	25.1		25.00		100	40.1	139				
Surr: 1-Bromo-4-fluorobenzene	24.9		25.00		99.6	64.2	128				

Sample ID: **1803078-001ADUP** SampType: **DUP** Units: **µg/L** Prep Date: **3/9/2018** RunNo: **42174**
Client ID: **BATCH** Batch ID: **20017** Analysis Date: **3/9/2018** SeqNo: **813226**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	ND	1.00						0		30	
Chloromethane	ND	2.00						0		30	
Vinyl chloride	ND	0.200						0		30	
Bromomethane	ND	1.00						0		30	
Trichlorofluoromethane (CFC-11)	ND	1.00						0		30	
Chloroethane	ND	1.00						0		30	
1,1-Dichloroethene	ND	1.00						0		30	
Methylene chloride	ND	1.00						0		30	
trans-1,2-Dichloroethene	ND	1.00						0		30	
Methyl tert-butyl ether (MTBE)	ND	1.00						0		30	
1,1-Dichloroethane	ND	1.00						0		30	
2,2-Dichloropropane	ND	2.00						0		30	
cis-1,2-Dichloroethene	ND	1.00						0		30	

Work Order: 1803073
CLIENT: GeoEngineers
Project: Bucklin UCC

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID: **1803078-001ADUP** SampType: **DUP** Units: **µg/L** Prep Date: **3/9/2018** RunNo: **42174**
Client ID: **BATCH** Batch ID: **20017** Analysis Date: **3/9/2018** SeqNo: **813226**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloroform	ND	1.00						0		30	
1,1,1-Trichloroethane (TCA)	ND	1.00						0		30	
1,1-Dichloropropene	ND	1.00						0		30	
Carbon tetrachloride	ND	1.00						0		30	
1,2-Dichloroethane (EDC)	ND	1.00						0		30	
Benzene	ND	1.00						0		30	
Trichloroethene (TCE)	ND	0.500						0		30	
1,2-Dichloropropane	ND	1.00						0		30	
Bromodichloromethane	ND	1.00						0		30	
Dibromomethane	ND	1.00						0		30	
cis-1,3-Dichloropropene	ND	1.00						0		30	
Toluene	ND	1.00						0		30	
trans-1,3-Dichloropropylene	ND	1.00						0		30	
1,1,2-Trichloroethane	ND	1.00						0		30	
1,3-Dichloropropane	ND	1.00						0		30	
Tetrachloroethene (PCE)	ND	1.00						0		30	
Dibromochloromethane	ND	1.00						0		30	
1,2-Dibromoethane (EDB)	ND	0.250						0		30	
Chlorobenzene	ND	1.00						0		30	
1,1,1,2-Tetrachloroethane	ND	1.00						0		30	
Ethylbenzene	ND	1.00						0		30	
m,p-Xylene	ND	1.00						0		30	
o-Xylene	ND	1.00						0		30	
Styrene	ND	1.00						0		30	
Isopropylbenzene	ND	1.00						0		30	
Bromoform	ND	2.00						0		30	
1,1,2,2-Tetrachloroethane	ND	1.00						0		30	
n-Propylbenzene	ND	1.00						0		30	
Bromobenzene	ND	1.00						0		30	
1,3,5-Trimethylbenzene	ND	1.00						0		30	
2-Chlorotoluene	ND	1.00						0		30	

Work Order: 1803073
CLIENT: GeoEngineers
Project: Bucklin UCC

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID: **1803078-001ADUP** SampType: **DUP** Units: **µg/L** Prep Date: **3/9/2018** RunNo: **42174**
Client ID: **BATCH** Batch ID: **20017** Analysis Date: **3/9/2018** SeqNo: **813226**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
4-Chlorotoluene	ND	1.00						0		30	
tert-Butylbenzene	ND	1.00						0		30	
1,2,3-Trichloropropane	ND	1.00						0		30	
1,2,4-Trichlorobenzene	ND	2.00						0		30	
sec-Butylbenzene	ND	1.00						0		30	
4-Isopropyltoluene	ND	1.00						0		30	
1,3-Dichlorobenzene	ND	1.00						0		30	
1,4-Dichlorobenzene	ND	1.00						0		30	
n-Butylbenzene	ND	1.00						0		30	
1,2-Dichlorobenzene	ND	1.00						0		30	
1,2-Dibromo-3-chloropropane	ND	1.00						0		30	
1,2,4-Trimethylbenzene	ND	1.00						0		30	
Hexachloro-1,3-butadiene	ND	4.00						0		30	
Naphthalene	ND	1.00						0		30	
1,2,3-Trichlorobenzene	ND	4.00						0		30	
Surr: Dibromofluoromethane	21.9		25.00		87.5	45.4	152		0		
Surr: Toluene-d8	24.5		25.00		97.9	40.1	139		0		
Surr: 1-Bromo-4-fluorobenzene	24.9		25.00		99.4	64.2	128		0		

Sample Log-In Check List

Client Name:	**GEI**	Work Order Number:	**1803073**
Logged by:	**Clare Griggs**	Date Received:	**3/8/2018 12:34:00 PM**

Chain of Custody

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

Log In

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

Special Handling (if applicable)

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

Person Notified: _____ Date: _____

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

Regarding: _____

Client Instructions: _____

19. Additional remarks:

3/8/18 @ 12:16 - Client provided updated COC.

Item Information

Item #	Temp °C
Cooler	5.4
Sample	7.4

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

Chain of Custody Record & Laboratory Services Agreement

Fremont Analytical
3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Date: 03/07/18 | Page: 1 of: 1 | Laboratory Project No (internal): 1803073

Special Remarks:

Project Name: Bucklin UCC

Project No: 22828-001-01

Collected by: Paul Robinette

Location: Silverdale, WA

Report To (PM): Ian Young

PM Email: iyoung@geoengineers.com

Sample Disposal: ☐ Return to client ☒ Disposal by lab (after 30 days)

Client: GeoEngineers, Inc.

Address: 600 Stewart St., Suite 1700

City, State, Zip: Seattle, WA, 98101

Telephone: 206-728-2674

Fax: 206-728-2732

	Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	VOCs (EPA 8260 / 624)	GX/BTEX	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics (DX)	SVOCs (EPA 8270 / 625)	PAHs (EPA 8270 - SIM)	PCBs (EPA 8082 / 608)	Metals** (EPA 6020 / 200.8) Total (T) | Dissolved (D)	Anions (IC)***	EDB (8011)	Comments
1	DRUMCOMP-180307	03/07/18	12:00	S	X								X				
2	GEI-MW1-180307	03/07/08	11:50	GW	X								X				
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

*Matrix: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water

**Metals (Circle): ~~MTCA 5~~ RCRA 8 Individual: As, Cd, Cr, Pb

***Anions (Circle): ☐ Nitrate ☐ Nitrite ☐ Chloride ☐ Sulfate ☐ Bromide ☐ O-Phosphate ☐ Fluoride ☐ Nitrate+Nitrite

I represent that I am authorized to enter into this Agreement with Fremont Analytical on behalf of the Client named above and that I have verified Client's agreement to each of the terms on the front and backside of this Agreement.

Relinquished	Date/Time	Received	Date/Time
x [signature]	3/8/18 1040	x	
Relinquished	Date/Time	Received	Date/Time
x		x	

Turn-around Time:

- ■ Standard
- ☐ 3 Day
- ☐ 2 Day
- ☐ Next Day
- Same Day ☐ (specify)

Fremont Analytical
3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Chain of Custody Record & Laboratory Services Agreement

Date: 03/07/18 | Page: 1 of: 1 | Laboratory Project No (internal): 1803073

Special Remarks:

Project Name: Bucklin UCC
Project No: 22828-001-01
Collected by: Paul Robinette
Location: Silverdale, WA
Report To (PM): Ian Young
PM Email: iyoung@geoengineers.com

Sample Disposal: ☐ Return to client ☒ Disposal by lab (after 30 days)

Client: GeoEngineers, Inc.
Address: 600 Stewart St., Suite 1700
City, State, Zip: Seattle, WA, 98101
Telephone: 206-728-2674
Fax: 206-728-2732

	Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	VOCs (EPA 8260 / 624)	GX/BTEX	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics (DX)	SVOCs (EPA 8270 / 625)	PAHs (EPA 8270 - SIM)	PCBs (EPA 8082 / 608)	Metals** (EPA 6020 / 200.8)	Total (T)	Dissolved (D)	Anions (IC)***	EDB (8011)	Comments
1	DRUMCOMP-180307	03/07/18	12:00	S	✓														
2	GEI-MW1-180307	03/07/08	11:50	GW									✓						
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			

*Matrix: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water

**Metals (Circle): MTCA-5 Individual: As, Cd, Cr, Hg, Pb

***Anions (Circle): ☐ Nitrate ☐ Nitrite ☐ Chloride ☐ Sulfate ☐ Bromide ☐ O-Phosphate ☐ Fluoride ☐ Nitrate+Nitrite

I represent that I am authorized to enter into this Agreement with Fremont Analytical on behalf of the Client named above and that I have verified Client's agreement to each of the terms on the front and backside of this Agreement.

Relinquished	Date/Time	Received	Date/Time
x [signature]	3/8/18 1040	x [signature]	3/8/18 1234
Relinquished	Date/Time	Received	Date/Time
x		x	

Turn-around Time:
- ■ Standard
- ☐ 3 Day
- ☐ 2 Day
- ☐ Next Day
- Same Day ☐ (specify)