



**REPORT**

# Phase II Environmental Site Assessment

*Boyington #3 Pit, 4499 to 4589 Concession 7, Uxbridge, Ontario*

Submitted to:

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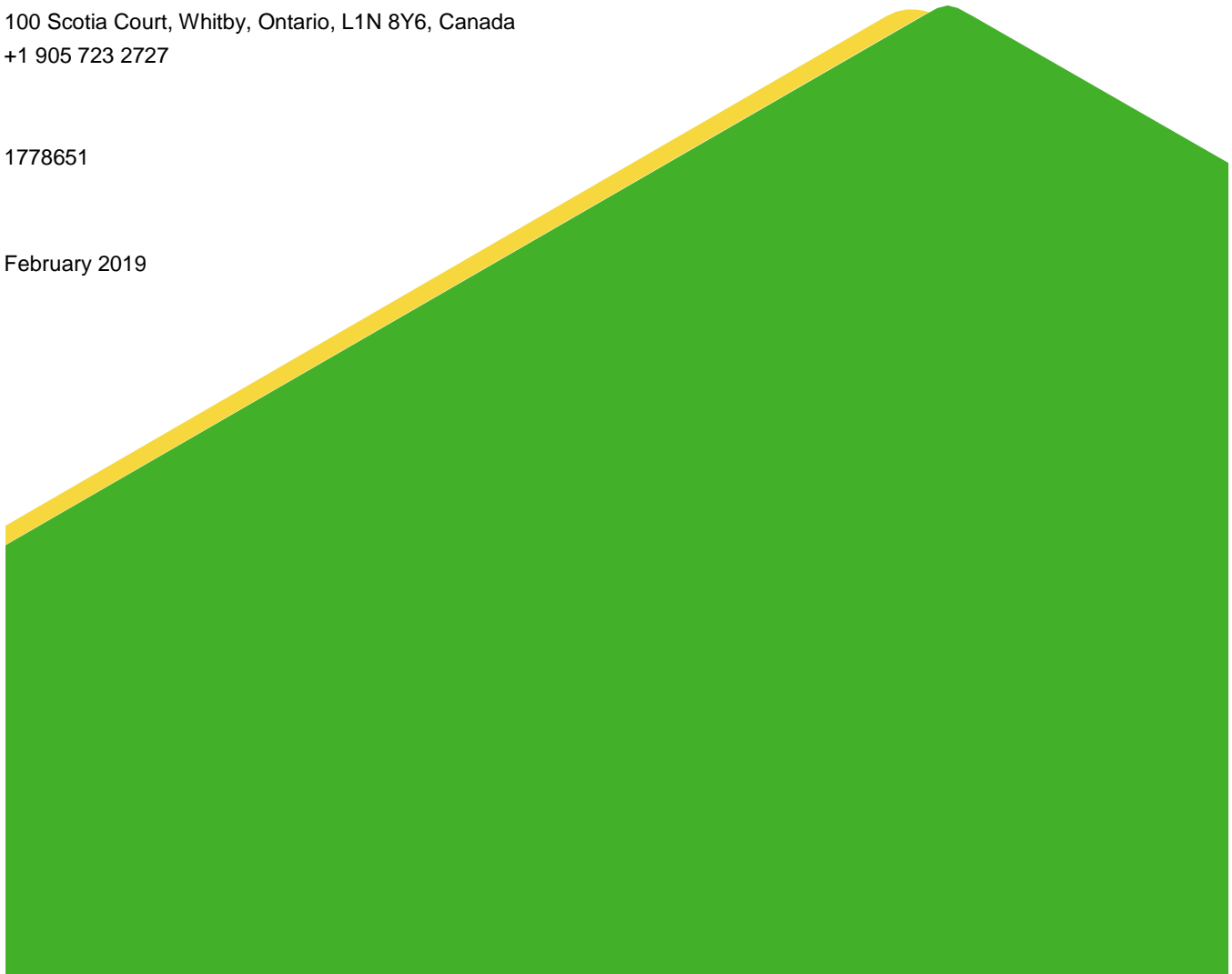
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## 1.0 INTRODUCTION

Golder Associates Ltd. (“Golder”) was retained by The Miller Group (“Miller”) to conduct a Phase II Environmental Site Assessment (“ESA”) of a portion of their Boyington #3 aggregate pit property located at 4499 to 4589 Concession Road 7, Uxbridge, Ontario (the “Site”). The location, surroundings, and layout of the Site is presented on Figure 1.

It is understood that this report is to support the proposed re-development of the Site, which is owned by Miller. Miller intends to remove the Site from the aggregate license and redevelop the property with a 44,000 square foot enclosed warehouse building and associated yard area for construction equipment storage. The Site is currently developed with three residential dwellings, a contractor yard, a storage warehouse, and an asphalt plant which includes a scale house, a control tower, and a boiler house.

The objective of the Phase II ESA was to investigate one or more specific issues of potential environmental concern to assess whether contaminants of potential concern are present in soil at concentrations that exceed the relevant regulatory criteria. It is Golder’s understanding that the Phase II ESA is required for the purpose of obtaining municipal planning approval and that a Record of Site Condition (“RSC”) will not be required.

The Phase II ESA was conducted in general accordance with Canadian Standards Association (“CSA”) Standard Z769-00, *Phase II Environmental Site Assessment* (reaffirmed 2013) for the purpose of identifying contaminants of potential concern that may be present at concentrations exceeding the relevant regulatory criteria.

Authorization to proceed with this investigation was provided by George Antoniuk of Miller on July 18, 2017. This Phase II ESA report has been prepared for the use of Miller and may not be relied upon by others without prior written consent from Golder.

## 1.1 Background

A Phase One ESA, completed in accordance with Ontario Regulation (“O. Reg.”) 153/04, was prepared by Golder for Miller dated January 2019. Based on the findings of the Phase One ESA, Miller requested that Golder further assess the areas of potential environmental concern (“APECs”) summarized in Table 1.

**Table 1: Areas of Potential Environmental Concern**

Area of Potential Environmental Concern	Location of Area of Potential Environmental Concern at the Site	Location of Potentially Contaminating Activity	Contaminants of Potential Concern	Media Potentially Impacted
APEC 1 – 910 L fuel oil AST	Northwest corner of the basement of the residential house at 4589 Concession Road 7, connected to fill and vent pipe on the north exterior wall, two metres from the northwest corner of the building.	On-Site	PHC, BTEX	Soil
APEC 2 – Former fuel oil AST (unknown capacity)	Yard area on the east side of the residential house at 4529 Concession Road 7. The footprint of the former AST can be seen on the east exterior wall, approximately five metres from the southeast corner of the building.	On-Site	PHC, BTEX	Soil

Area of Potential Environmental Concern	Location of Area of Potential Environmental Concern at the Site	Location of Potentially Contaminating Activity	Contaminants of Potential Concern	Media Potentially Impacted
APEC 3 – 910 L fuel oil AST	South portion of the basement of the residential house at 4499 Concession Road 7, connected to vent and fill pipes on the south exterior wall, approximately 5 metres from the southwest corner of the building.	On-Site	PHC, BTEX	Soil
APEC 4 – Asphalt plant	An asphalt plant is present in the central portion of the Site.	On-Site	PHC, BTEX, PAH, metals, hydride-forming metals, Cr(VI), VOC (groundwater only)	Soil, Groundwater
APEC 5 – 4,540 L diesel AST	South of the asphalt plant and approximately 14 metres east of the control tower installed in 2001 and used to fuel on-Site equipment.	On-Site	PHC, BTEX	Soil
APEC 6 – Truck wash station associated with observed staining	The station was south of the asphalt plant and approximately six metres east of the diesel AST.	On-Site	PHC, BTEX, VOC (groundwater only)	Soil, Groundwater
APEC 7 – 910 L fuel oil AST with observed staining	The fuel oil AST was located on the south side of the boiler house within the asphalt plant, approximately 10 metres north of the truck was station.	On-Site	PHC, BTEX	Soil
APEC 8 – Overhead transformer	A hydro line with an overhead transformer was located approximately 15 metres south of the asphalt plant.	On-Site	PCB	Soil

## Notes

PHC petroleum hydrocarbons

BTEX benzene, toluene, ethylbenzene, xylenes

VOC volatile organic compounds

PCB polychlorinated biphenyls

PAH polycyclic aromatic hydrocarbons

Cr(VI) hexavalent chromium

## 1.2 Scope of Work

The scope of work for the Phase II ESA included:

- The advancement of 10 boreholes to depths between 4.6 and 37.2 metres below ground surface (“mbgs”) and the collection of soil samples;
- The installation of one groundwater monitoring well (MW18-1) and the collection of groundwater samples from the new monitoring well, four existing monitoring wells, and one private water well;
- The excavation of five test pits and collection of soil samples;
- The submission of select soil and groundwater samples for laboratory analysis of specific contaminants of potential concern;

- The completion of an elevation survey; and,
- Preparing a report summarizing the work conducted at the Site and presenting the findings of the investigation.

The rationale for the investigation locations and the contaminants of potential concern are presented in Table 2. Borehole, test pits, and monitoring well locations are presented in Figure 2.

**Table 2: Investigation Rationale and Contaminants of Potential Concern**

Area of Potential Environmental Concern	Sample Location	Rationale	Summary of Analysis	
			Soil	Groundwater
APEC 1	BH17-6, BH17-7	Investigate soil quality adjacent to the location of the fuel oil AST in the basement of 4589 Concession Road 7	PHC, BTEX	None
APEC 2	BH17-10 Water Sample from 4589 Concession Road 7	Investigate soil and groundwater quality near the former location of a fuel oil AST on the east side of 4529 Concession Road 7	PHC, BTEX	General Chemistry, Metals, TKN, Hg, PCB, VOC, PHC
APEC 3	BH17-8, BH17-9	Investigate soil quality adjacent to the location of a fuel oil AST in the basement of 4499 Concession Road 7	PHC, BTEX	None
APEC 4	BH17-13, MW18-1, TP17-4, TP17-7A	Investigate soil and groundwater quality in the vicinity of an asphalt plant	PHC, BTEX, PAH, Metals, Cr(VI)	PHC, BTEX, VOC
APEC 5	BH17-11	Investigate shallow soil quality adjacent to a 4,540 L diesel AST	PHC, BTEX	None
APEC 6	BH17-12, MW18-1, TP17-2	Investigate shallow soil quality in the vicinity of a truck wash station	PHC, BTEX, VOC	PHC, BTEX, VOC
APEC 7	BH17-12, TP17-2	Investigate shallow soil quality in the vicinity of a fuel oil AST with observed staining	PHC, BTEX, VOC	None
APEC 8	TP17-5	Investigate shallow soil quality in the vicinity of the overhead transformer	PCB	None

Notes:

PHC petroleum hydrocarbons

BTEX benzene, toluene, ethylbenzene, xylenes

VOC volatile organic compounds

PCB polychlorinated biphenyls

PAH polycyclic aromatic hydrocarbons

TKN total Kjeldahl nitrogen

Hg mercury

Cr(VI) hexavalent chromium

## 2.0 INVESTIGATION METHODOLOGY

The initial investigation was carried between October 12 and November 2, 2017. A subsequent investigation was conducted between October 26 and December 5, 2018. Prior to drilling and test pitting, Golder arranged for the completion of public and private utility clearances. Golder retained Landshark Drilling (“Landshark”) of Brantford, Ontario, for borehole drilling and monitoring well installation. Landshark is licensed as a well contractor by the

Ministry of the Environment, Conservation and Parks (“MECP”). Miller and The Cannington Group were retained to provide backhoes that were used for test pitting. All field activities were carried out by or under the supervision of Golder. The locations of boreholes, monitoring wells, and test pits are presented in Figure 2.

The field activities were carried out in general accordance with the field investigation requirements of Part VIII and Schedule E of O. Reg. 153/04.

## 2.1 Health and Safety

Prior to initiating the field work, Golder developed and implemented Site-specific protocols to protect the health and safety of its employees and subcontractors through the preparation of a Site-specific Health and Safety Plan. An assessment of potential health and safety hazards at the Site and those associated with the proposed work was completed each day of the field program. A health and safety tailgate meeting was held with Golder’s subcontractors each day prior to completion of the field work. Additionally, prior to drilling, Golder completed utility clearances. A private utility location contractor (All Clear Locates or OnSite Locates) was retained to identify private and public utilities within the work area, to mark the locations of the utilities and clear the proposed drilling locations.

## 2.2 Borehole Drilling and Monitoring Well Installation

The initial borehole drilling program was carried out beginning on October 16, 2017 by Landshark using a Mobile B-57 track-mounted rig. Eight boreholes (BH17-6 to BH17-13) were advanced to depths ranging from 4.5 to 7.6 metres below ground surface (“mbgs”). The locations of the boreholes were determined based on the identified APEC locations and service locates. A supplemental drilling program was completed between October 29 and November 2, 2018 by Landshark using a truck mounted B-60 drill rig. One borehole (MW18-1) was advanced to a depth of 37.1 mbgs. The approximate locations of the boreholes are shown on Figure 2.

Continuous soil samples were collected from boreholes BH17-6 to BH17-13 using a dual tube sampling system with 1.5 metre (“m”) long, 5.1 centimetre (“cm”) diameter liners collected at 1.5 m long intervals. Dedicated liners were used for each sample location. Soil samples were collected at regular intervals at MW18-1 using a 0.61 m long stainless steel split spoon sampler. A portion of each soil sample was placed in a sealed plastic bag, as well as laboratory supplied sample jars for potential laboratory analysis. Bagged samples were subsequently screened using a dual-gas photoionization detector and combustible gas meter (RKI Eagle II instrument), calibrated with isobutylene gas and hexane gas, respectively. Headspace readings were taken in the plastic soil sample bags’ headspace shortly after sample collection. Details of the conditions encountered in the boreholes are presented on the Record of Borehole sheets included as Appendix A.

Soil samples collected from the boreholes were submitted to Maxxam Analytics Inc. in Mississauga (“Maxxam”) for laboratory analysis. Soil samples representative of the inferred “worst-case” were selected for analysis based on the results of the headspace screening and conditions encountered in the boreholes. Soil samples were stored on ice in a cooler until delivered to Maxxam under chain-of-custody.

A summary of soil samples from boreholes submitted for analysis is provided in Table 3.

**Table 3: Summary of Soil Samples Submitted for Laboratory Analysis**

Sample Location	Sample Identification	Headspace Concentration (ppm)		Sample Depth (mbgs)	Soil Type	Parameters Analyzed
		Combustible Vapours	Organic Vapours			
BH17-6	SA3A	0	0	1.5 – 2.3	(SM) SILTY SAND, trace gravel (NATIVE)	PHC, BTEX
BH17-7	SA3A	0	0	3.0 – 3.8	(SP) SAND, some gravel, trace silt (NATIVE)	PHC, BTEX
BH17-8	SA3A	0	0	3.0 – 3.8	(SP to SM) SAND to SILTY SAND, trace gravel (Native)	PHC, BTEX
BH17-9	SA2B	10	1	2.3 – 3.0	(SP) SAND, some silt, trace gravel (Native)	PHC, BTEX
BH17-10	SA3B	20	16	3.8 – 4.5	(SP) SAND, trace gravel and silt (NATIVE)	PHC, BTEX
	SA4B	0	1	5.3 – 6.0	(SP) SAND, trace to some gravel and silt (Native)	PHC, BTEX
BH17-11	SA1B	10	2	0.7 – 1.5	(SP) SAND, some silt, trace gravel (Fill)	PHC, BTEX
BH17-12	SA3A	0	0	3.0 – 3.8	(SM) SILTY SAND, trace gravel (Native)	PHC, BTEX, VOC
BH17-13	SA1B	0	0	0.8 – 1.5	(SP) SAND with gravel, trace silt (Fill)	PAH, metals, hydride-forming metals, Cr(VI)
	SA2B	10	1	2.3 – 3.0	(SM) SAND, some silt, trace gravel	PHC, BTEX

**Notes**

mbgs metres below ground surface

ppm parts per million

PHC petroleum hydrocarbons

VOC volatile organic compounds

BTEX benzene, toluene, ethylbenzene, xylenes

PAH polycyclic aromatic hydrocarbons

Cr(VI) hexavalent chromium

## 2.3 Test Pit Investigation

Test pitting was completed on October 16, 2017 using a Cat BLN 4230 backhoe operated by Miller. Four test pits (TP17-2, TP17-4, TP17-5, and TP17-7A) were excavated to depths of up to 3.2 mbgs. The test pit locations are provided in Figure 2.

At each test pit location, soil samples were collected from the backhoe bucket for field screening (including visual inspection and field measurement of headspace concentration), soil sample collection, and stratigraphic logging by a Golder field technician. A portion of each soil sample was placed in a sealed plastic bag, as well as a pre-cleaned laboratory-supplied sample container for potential laboratory analysis. Bagged samples were

subsequently screened using a dual-gas photoionization detector and combustible gas meter (RKI Eagle II instrument), calibrated with isobutylene gas and hexane gas, respectively. Headspace readings were taken in the plastic soil sample bags' headspace shortly after sample collection. Details of the conditions encountered in the boreholes are presented on the Record of Test Pit sheets included as Appendix A.

Soil samples collected from the test pits were submitted to Maxxam for laboratory analysis. Selection of samples for analysis was based on the results of the headspace screening and conditions encountered in the boreholes. Soil samples were stored on ice in a cooler until delivered to Maxxam under chain-of-custody. A summary of test pitting soil samples submitted for laboratory analysis is provided in Table 3.

**Table 4: Summary of Test Pit Soil Samples Submitted for Laboratory Analysis**

Sample Location	Sample Identification	Headspace (ppm)		Sample Depth (mbgs)	Soil Type	Parameters Analyzed
		Combustible Vapours	Organic Vapours			
TP17-2	SA2	0	2	1.0 – 1.3	(SM) SILTY SAND, some gravel, trace silt (Fill)	PHC, BTEX, VOC
TP17-4	SA3	0	0	1.8 – 2.0	(SM) SILTY SAND, trace gravel (Fill)	PHC, BTEX
TP17-5	SA1	0	0	0.1 – 0.2	(SM) SILTY SAND (Fill)	PCB
TP17-7A	SA2	5	2	0.3 – 0.5	(SP) gravelly SAND, trace silt (Fill)	PHC, BTEX, PAH, metals, Cr(VI)

**Notes**

mbgs metres below ground surface  
 ppm parts per million  
 PHC petroleum hydrocarbons  
 VOC volatile organic compounds  
 BTEX benzene, toluene, ethylbenzene, xylenes  
 PAH polycyclic aromatic hydrocarbons  
 Cr(VI) hexavalent chromium

An additional test pit was excavated on November 1, 2018 in the yard on the east side of the residential building located at 4529 Concession Road 7. The test pit was advanced in the footprint of the former AST to the underside of the building footing.

## 2.4 Monitoring Wells Installation and Groundwater Sampling

As part of the concurrent hydrogeologic investigation, boreholes MW17-1 to MW17-4 were drilled between October 12 and October 24, 2017 and completed as monitoring wells. Two additional boreholes, MW18-1 and MW18-2, were drilled between October 29 and November 2, 2018. A monitoring well was installed at each borehole location (i.e., MW17-1 to MW17-4, MW18-1, and MW18-2) and was constructed of two inch inside diameter ("ID") Schedule 40 polyvinyl chloride ("PVC") casing and two inch ID Schedule 40 PVC well screen (3.1 metres in length, #10 slot size). The sand pack surrounding the screen was constructed using #3 silica sand. A bentonite seal consisting of bentonite solids (e.g., Holeplug™) and bentonite grout was placed above the filter pack up to surface. The monitoring well was completed above grade with a monument protective casing set in concrete and the casing sealed with a PVC j-plug. The well construction details are provided in the Record of Borehole sheets provided in Appendix A. The monitoring well locations are presented on Figure 2.

Monitoring well development of MW17-1 and MW17-2 was completed on October 31, 2017, by purging ten well volumes using dedicated Waterra® inertial samplers. Groundwater generated from well development was temporarily placed in buckets. No evidence of petroleum hydrocarbon impact (e.g., odours or sheen) was noted during development. Monitoring wells MW18-1 and MW18-2 were developed by the drilling contractor upon completing the well installation and purged on November 6, 2018 prior to sampling.

Groundwater samples were collected from MW17-2, MW17-3 and MW17-4 using dedicated bailer samplers into pre-cleaned laboratory-supplied sample containers. Groundwater samples were collected from MW17-1 using a Waterra Hydrolift II pump. Samples collected from MW18-1 and MW18-2 were collected using Waterra® tubing and foot valve. Field parameters (pH, temperature, and electrical conductivity) for each groundwater sample were measured at the time of sample collection. Groundwater samples were stored on ice in a cooler until delivered, under chain-of-custody, to Maxxam for analysis. A summary of groundwater samples submitted for analysis is provided in Table 5.

A groundwater sample was collected from the private water well at 4529 Concession Road 7 on October 26, 2018. The sample was collected from a water line prior to the water passing through any water treatment.

**Table 5: Summary of Groundwater Samples Submitted for Analysis**

Sample Location	Screen Interval (mbgs)	Parameters Analyzed
MW17-1	52.4 – 55.5	General Chemistry, TKN, Hg, NH <sub>4</sub> , metals, VOC, PHC, BTEX
MW17-2	15.3 – 18.4	General Chemistry, TKN, Hg, NH <sub>4</sub> , metals, VOC, PHC, BTEX, PCB
MW17-3	17.5 – 20.6	General Chemistry, TKN, Hg, NH <sub>4</sub> , metals, VOC, PHC, BTEX, PCB
MW17-4	17.7 – 20.8	General Chemistry, TKN, Hg, NH <sub>4</sub> , metals, VOC, PHC, BTEX, PCB
MW18-1	33.6 – 36.6	PHC, BTEX, VOC
MW18-2	18.9 – 22.0	General Chemistry, TKN, Hg, NH <sub>4</sub> , metals, VOC, PHC, BTEX, PCB
4529 Concession Road 7	44.2 – 47.2	General Chemistry, TKN, Hg, NH <sub>4</sub> , metals, VOC, PHC, BTEX, PCB

**Notes**

mbgs metres below ground surface  
 PHC petroleum hydrocarbons  
 VOC volatile organic compounds  
 BTEX benzene, toluene, ethylbenzene, xylenes  
 PCB polychlorinated biphenyls  
 TKN total Kjeldahl nitrogen  
 NH<sub>4</sub> ammonia

## 2.5 Surveying

Miller retained a licensed surveyor (J.D. Barnes Limited) to complete a geodetic survey of each sampling location on November 6, 2017 and November 23, 2018. The survey included the location and elevation (both the top of the stickup mounted well cap and the top of the riser pipe) data for each monitoring well, borehole and test pit location. Elevations were determined relative to a permanent and recoverable benchmark (Geodetic Survey of Canada benchmark 00819778483, with a reported elevation of 331.572 metres above sea level). Well coordinates were reported in the NAD83 global coordinate system.



## 2.6 Investigation Derived Wastes

Soil cuttings generated from the borehole drilling were left at-grade at each drilling location.

## 2.7 Quality Assurance Program

Golder's quality assurance program for environmental investigations was implemented to ensure that analytical data obtained by the investigation were valid and representative. The quality assurance program included the following measures:

- The use of standard operating procedures for all field investigation activities;
- All monitoring wells were developed following installation to remove fine particles from the filter pack and any fluids introduced during drilling;
- Monitoring wells were appropriately purged prior to groundwater sample collection to remove stagnant water from the well bore and improve sample representativeness, minimizing sample agitation and aeration to the extent practicable;
- The collection of field duplicate samples;
- Initial calibration of field equipment was performed at the start of each field day, with a daily check of calibration using a standard of known concentration;
- Soil and groundwater samples were handled and stored in accordance with the sample collection and preservation requirement of the MECP *Protocol for Analytical Methods Used in the Assessment of Properties Under Part XV.1 of the Environmental Protection Act*, July 1, 2011. Samples were collected directly into pre-cleaned laboratory-supplied sample containers with the appropriate preservative for the analyte group. Upon collection, samples were placed in insulated coolers with ice for storage and transport to the analytical laboratory;
- Dedicated sampling equipment (tubing and footvalves) and clean disposable Nitrile™ gloves were used at each sampling location to prevent cross-contamination. All non-dedicated sampling equipment (e.g., water level meters, split spoons) was decontaminated between sampling locations. Sampling equipment in contact with soil or groundwater was: washed with a laboratory-grade detergent (e.g., phosphate-free LiquiNox or AlcoNox) and, thoroughly rinsed with analyte-free water;
- Detailed field records documenting the methods and circumstances of collection for each field sample were prepared at the time of sample collection. Each sample was assigned a unique sample identification number recorded in the field notes, along with the date and time of sample collection, the sample matrix, and the requested analyses; and,
- The submission of samples to the analytical laboratory in accordance with the standard chain of custody procedures.

Laboratory analyses were completed by an analytical laboratory accredited in accordance with the International Standard ISO/IEC 17025 *General Requirement for the Competence of Testing and Calibration Laboratories*, dated May 5, 2005 (as amended), and accredited in accordance with the applicable standards for proficiency testing developed by the Standards Council of Canada or the Canadian Association for Laboratory Accreditation.



## 3.0 SUBSURFACE CONDITIONS

### 3.1 Site Geology

Details of the subsurface conditions encountered during the drilling program are presented on the Record of Borehole and Test Pit sheets provided in Appendix A. It should be noted that the geologic contacts noted on the logs represent a transition from one soil type to another rather than an exact plane of geologic change. Further, it should be noted that subsurface conditions encountered will vary between and beyond borehole and test pit sampling locations.

In general, the subsurface soil conditions encountered consisted of fill underlain by native silty sand, and sand to gravelly sand to the maximum depth of investigation (37.2 mbgs). The fill material encountered in the boreholes generally consisted of sand and silty sand (reworked native soil).

Headspace readings ranged between 0 to 20 ppm for combustible gases and between 0 to 16 ppm for total organic vapours. A PHC-like odour was noted in a soil sample from BH17-10 at a depth of 3.8 to 5.3 mbgs. No other obvious visual or olfactory evidence of environmental impact was noted at any of the other test locations.

### 3.2 Site Hydrogeology

Details of the Site hydrogeology encountered during the drilling program are presented on the Record of Borehole sheets provided in Appendix A and summarized in Golder's report titled "*Hydrogeological Assessment, Boyington #3 Pit, 4499 to 4589 Concession 7, Uxbridge, Ontario*", dated January 2019.

Groundwater levels were measured at MW17-1 to MW17-4, and MW18-2 on November 8, 2018. The depth to the water table ranged between 15.7 (MW17-2) and 48.1 mbgs (MW17-1). The inferred groundwater flow direction is northwesterly. The groundwater elevations and inferred flow direction are presented on Figure 3.

### 3.3 Regulatory Criteria

The selection of the relevant site conditions standards was based upon the following considerations:

- The Site is not an environmentally sensitive site as defined by section 41, Part IX, O. Reg. 153/04;
- The nearest permanent water body is Uxbridge Brook (2 kilometres northeast). Based on The Regional Municipality of York's interactive mapping, the Site is not located in a wellhead protection area;
- The depth of overburden soil is greater than 2 mbgs;
- Based on the available historical reports, three water wells are present at the Site and a water well in the yard area west of the residential house at 4529 Concession Road 7 supplies the residential houses at 4589, 4529 and 4499 Concession Road 7 with potable water;
- The intended property use for the Site is industrial; and,
- The more stringent criteria for coarse soil texture were selected.

Accordingly, the soil and groundwater analytical results were compared to the site condition standards that are listed in Table 2 of the MECP document "*Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*", April 2011 (coarse texture, industrial property use, potable water condition).

Copies of the laboratory certificates of analysis are provided in Appendix B.

### 3.4 Soil Analytical Results

The reported concentrations in soil for the tested parameters were below the Table 2 site condition standards for all samples with the exception of the following:

- The reported concentration of PHC F2 in soil sample BH17-10-SA3B (980 µg/g), collected between 3.8 and 4.6 m, and its duplicate sample DUP-1 (770 µg/g) were above the Table 2 site condition standard (230 µg/g).

A PHC-like odour was noted between 3.8 and 5.3 m at borehole BH17-10 and the headspace reading from sample SA3B was 20 ppm for combustible gases and 16 ppm for total organic vapours. No odours or staining were noted below a depth of 5.3 m at borehole BH17-10. Headspace readings below 5.3 m were non-detect (i.e., 0 ppm) for combustible gases and 1 ppm for total organic vapours.

The reported PHC F2 concentration in soil sample BH17-10-SA3B may be related to the former fuel oil AST for the residential dwelling at 4529 Concession Road 7. The exceeding sample was encountered at a depth of 3.8 mbgs. A deeper (5.3 mbgs) soil sample was submitted from BH17-10 and analyzed for PHCs. The concentration of the deeper soil sample was below the Table 2 site condition standard.

To further investigate the soil exceedance, a test pit was advanced on November 1, 2018 in the vicinity of borehole BH17-10 in the footprint of the former AST. The test pit was excavated to below the footing of the residence and no further evidence of soil impacts were observed.

During the excavation of the exploratory test pit, an underground storage tank (“UST”) was uncovered that was previously unknown to have existed in that area. The top of the UST was 1.4 mbgs and the tank was steel. The top and half of the west side of the tank was exposed. There was no piping attached to the tank and it had been filled with sand or gravel. It appeared that the UST had been decommissioned. A soil sample was collected at a depth of 1.7 m adjacent to the tank and the headspace readings were non-detect for both combustible and total organic vapours. No other obvious evidence of PHC impact was noted in the vicinity of the UST.

### 3.5 Groundwater Analytical Results

The reported concentration of the groundwater samples submitted for analysis were below the Table 2 site condition standards for all tested parameters.

This includes the groundwater sample collected from monitoring well MW18-1 which was installed in the vicinity of the asphalt plant to investigate the potential use of halogenated solvents at the Site. Also, the groundwater sample collected from the private water well at 4529 Concession Road 7 was below the Table 2 site condition standards for all tested parameters suggesting that a significant PHC release from either the AST or UST at this location has not occurred.

### 3.6 Non-Numerical Standards

In addition to numerical standards, the MECP specifies out non-numerical groundwater standards for petroleum hydrocarbons. Specifically, a property does not meet the applicable site condition standards if there is evidence of free product, including, but not limited to: 1) any visible petroleum hydrocarbon film or sheen present in the groundwater or surface water; and, 2) an objectionable petroleum hydrocarbon taste or odour in groundwater.

At the time of groundwater sampling, no free product was measured in any of the sampling locations by the interface probe. No petroleum hydrocarbon odour nor trace sheen were noted during well development.

### 3.7 Data Quality Review

Golder's data quality review included the analytical results of the field and laboratory quality assurance samples. The assessment of the field duplicate sample results was conducted according to the document entitled "*Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act*", March 9, 2004 (as amended) ("Analytical Protocol").

To determine the precision of the analytical methods and field sampling procedures, blind duplicate soil and groundwater samples were collected during the investigation. Precision is determined by the relative percent difference ("RPD") between the duplicate and primary samples and was calculated as follows:

$$RPD = \left\{ \frac{[sample] - [duplicate\ sample]}{[sample] + [duplicate\ sample]} \times \frac{1}{2} \right\} \times 100$$

A total of four blind duplicate soil samples were collected during this investigation. The calculated RPD between the primary and duplicate soil samples were within the acceptable control limits of less than or equal to 30% for metal and PHC parameters and less than or equal to 40% for PAH parameters. One blind duplicate groundwater sample was collected and the calculated RPD for MW17-2 and its duplicate DUP1 were within the acceptable control limits for the parameters tested with the exception of dissolved copper where the calculated RPD was 40% and dissolved manganese where the calculated RPD was 21% both of which are outside the recommended control limit of less than or equal to 20%. The reported concentration of dissolved copper and manganese were below the Table 2 site condition standard. In general, there is good correlation between the primary and duplicate sample sets.

The analytical results for the laboratory quality assurance samples indicate that the results of the internal quality control program were within the laboratory's specified control limits.

The field quality control program was satisfactory and the analytical data that was generated during the investigation are considered valid and representative and may be used without further qualification other than as described in this report.

## 4.0 SUMMARY OF ENVIRONMENTAL CONDITIONS

A summary of the investigation findings is provided in Table 6.

**Table 6: Summary of Investigation Findings**

Area of Potential Environmental Concern <sup>1</sup>	Location of APEC	Samples Submitted for Analysis	Contaminants of Potential Concern	Samples Above Site Condition Standard
APEC 1 – 910 L fuel oil AST	Northwest corner of the basement of the residential house at 4589 Concession Road 7, connected to fill and vent pipe on the north exterior wall, 2 metres from the northwest corner of the building.	<b>Soil:</b> BH17-6 SA3A BH17-7 SA3A	PHC, BTEX	Soil - None

Area of Potential Environmental Concern <sup>1</sup>	Location of APEC	Samples Submitted for Analysis	Contaminants of Potential Concern	Samples Above Site Condition Standard
APEC 2 – Former fuel oil AST (unknown capacity)	Yard area on the east side of the residential house at 4529 Concession Road 7. The footprint of the former AST can be seen on the east exterior wall, approximately 5 m from the southeast corner of the building.	<b>Soil:</b> BH17-10 SA3B BH17-10 SA4B <b>Groundwater:</b> Private Water Well at 4529 Concession Road 7	PHC, BTEX	Soil – BH17-10 SA3B (PHC F2) Groundwater - None
APEC 3 – 910 L fuel oil AST	South portion of the basement of the residential house at 4499 Concession Road 7, connected to vent and fill pipes on the south exterior wall, approximately 5 m from the southwest corner of the building.	<b>Soil:</b> BH17-8 SA3A BH17-9 SA2B	PHC, BTEX	Soil - None
APEC 4 – Asphalt plant	An asphalt plant is present in the central portion of the Site.	<b>Soil:</b> TP17-4 SA3 BH17-13 SA1B TP17-7 SA2 BH17-13 SA2B <b>Groundwater:</b> MW18-1	PHC, BTEX, PAH, metals, hydride-forming metals, Cr(VI), VOC (groundwater only)	Soil – None Groundwater - None
APEC 5 – 4,540 L diesel AST	South of the asphalt plant and approximately 14 metres east of the control tower	<b>Soil:</b> BH17-11 SA1B	PHC, BTEX	Soil - None
APEC 6 – Truck wash station associated with observed staining	The station was south of the asphalt plant and approximately six metres east of the diesel AST.	<b>Soil:</b> BH17-12 SA3A TP17-2 SA2 <b>Groundwater:</b> MW18-1	PHC, BTEX, VOC (groundwater only)	Soil – None Groundwater – None
APEC 7 – 910 L fuel oil AST with observed staining	The fuel oil AST was located on the south side of the boiler house within the asphalt plant, approximately 10 metres north of the truck wash station.	<b>Soil:</b> BH17-12 SA3A, TP17-2 SA2	PHC, BTEX	Soil – None

Area of Potential Environmental Concern <sup>1</sup>	Location of APEC	Samples Submitted for Analysis	Contaminants of Potential Concern	Samples Above Site Condition Standard
APEC 8 – Overhead transformer	A hydro line was an overhead transformer was located approximately 15 metres south of the asphalt plant.	<b>Soil:</b> TP17-5 SA1	PCB	Soil – None

In addition, the reported concentrations for groundwater samples collected from monitoring wells located at the perimeter of the Site were below the Table 2 site condition standard for all parameters tested.

## 5.0 LIMITATIONS

The activities described and conclusions drawn within this report address only the geo-environmental (chemical) aspects of the subsurface conditions at the subject property. The geotechnical (physical) aspects, including, without limitation, the engineering recommendations for the design and construction of building foundations, pavements, underground servicing and the like are outside the terms of reference for this report and have not been investigated or addressed herein.

This report was prepared for the exclusive use of The Miller Group. No third parties may rely upon this report. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, is the sole responsibility of such third party. This report is based on data and information collected during this Phase II environmental site assessment conducted by Golder Associates Ltd. in accordance with our proposal and is based solely on Site conditions encountered at the time of the field investigation. In preparing this site assessment, Golder evaluated only conditions on the Site and did not evaluate the operations on adjacent properties. Only limited chemical analyses of soil and groundwater samples were carried out. Regulatory criteria are used for comparison purposes only and are not necessarily enforceable on the Site owner. It should be noted that the results of an investigation of this nature should, in no way, be construed as a warranty that the site is free from any and all contamination from past or current practices.

In evaluating the property, Golder Associates Ltd. has relied in good faith on information provided by others. We accept no responsibility for any deficiency, misstatements or inaccuracies contained in this report as a result of omission, errors, misinterpretations or fraudulent acts of the persons interviewed. Golder Associates Ltd. accepts no responsibility for any reduction in property value, either real or perceived, or for decisions made as a result of the reporting of factual information herein.

If additional information is obtained during future work at the Site, including excavations, borings, or other studies, and/or if conditions exposed during construction are different from those encountered in this assessment, Golder should be requested to re-evaluate the conclusions presented in this report and provide amendments as required.

It is our understanding that the work associated with this Phase II ESA was not intended to support the submission of an RSC. If an RSC is required, additional field work and reporting may be necessary.

## 6.0 CLOSING

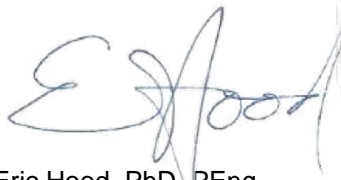
We trust that this report meets your immediate requirements. If you have any questions regarding this report, please do not hesitate to contact our office.

## Signature Page

### Golder Associates Ltd.



Chris Pons, BSc  
*Environmental Scientist*



Eric Hood, PhD, PEng  
*Associate, Senior Engineer*



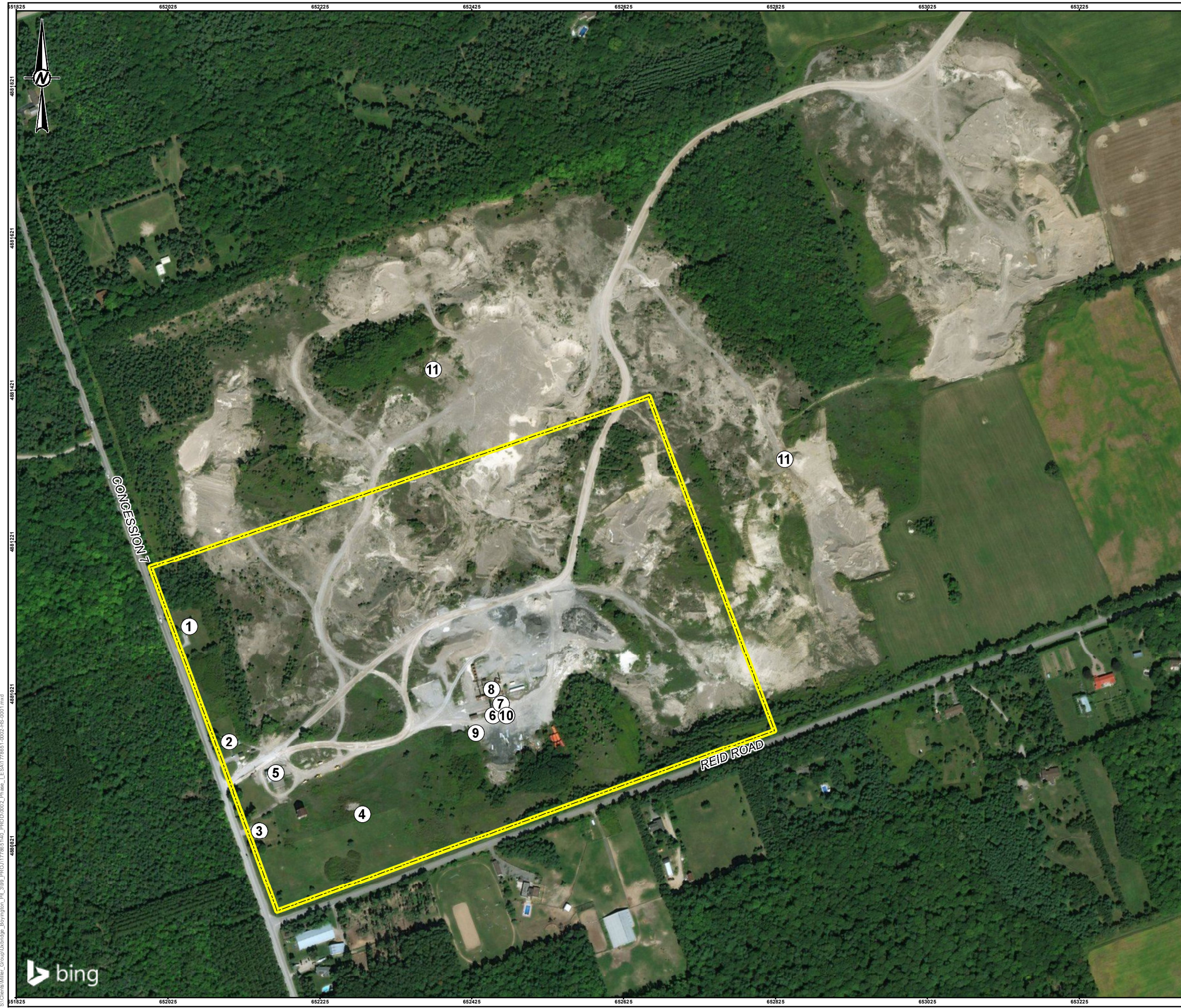
BMD/CP/EH/lb

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[https://golderassociates.sharepoint.com/sites/16359g/deliverables/phase ii esa/final/1778651 rpt 1mar2019 miller phase ii esa - final.docx](https://golderassociates.sharepoint.com/sites/16359g/deliverables/phase%20ii%20esa/final/1778651_rpt_1mar2019_miller_phase_ii_esa_-_final.docx)

## Figures





**LEGEND**

- ① On-Site/Off-Site Feature
- ▭ Site Boundary

**ON-SITE FEATURES**

1. RESIDENTIAL HOUSE (4589 CONCESSION ROADY 7)
2. RESIDENTIAL HOUSE (4529 CONCESSION ROAD 7)
3. RESIDENTIAL HOUSE (4499 CONCESSION ROAD 7)
4. CONTRACTOR YARD
5. STORAGE BUILDING
6. DIESEL AST
7. BOILER ROOM WITH FUEL OIL AST
8. ASPHALT PLANT
9. OVERHEAD HYDRO LINES WITH TRANSFORMER
10. TRUCK WASH STATION

**OFF-SITE FEATURES**

11. MILLER GRAVEL PIT

**KEY MAP**

SCALE 1:100,000

0 100 200 METRES

1:5,000

**NOTE(S)**

1. ALL LOCATIONS ARE APPROXIMATE

**REFERENCE(S)**

BASE DATA - MNR LIO, OBTAINED 2017  
 ONTARIO LAND COVER COMPILATION V.2.0, MINISTRY OF NATURAL RESOURCES AND FORESTRY, SCIENCE AND RESEARCH BRANCH, NATURAL RESOURCES INFORMATION UNIT, FOREST RESOURCES UNIT  
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 BASE IMAGERY SOURCES: ESRI, HERE, GARMIN, INTERMAP, INCREMENT P CORP., GEBCO, USGS, FAO, NPS, NRCAN, GEBCO, IGN, KADASTER NL, ORDANCE SURVEY, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), SWISSTOPO, © OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY © 2019 MICROSOFT CORPORATION © 2018 DIGITALGLOBE © CNES (2018) DISTRIBUTION AIRBUS DS PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83 COORDINATE SYSTEM: UTM ZONE 17N

**CLIENT**

THE MILLER GROUP

**PROJECT**

PHASE II ENVIRONMENTAL SITE ASSESSMENT  
 BOYINGTON #3 PIT, UXBRIDGE, ONTARIO

**TITLE**

**SITE LOCATION**

CONSULTANT	YYYY-MM-DD	2019-01-16
DESIGNED		JT
PREPARED		JT/SO
REVIEWED		CP
APPROVED		EH

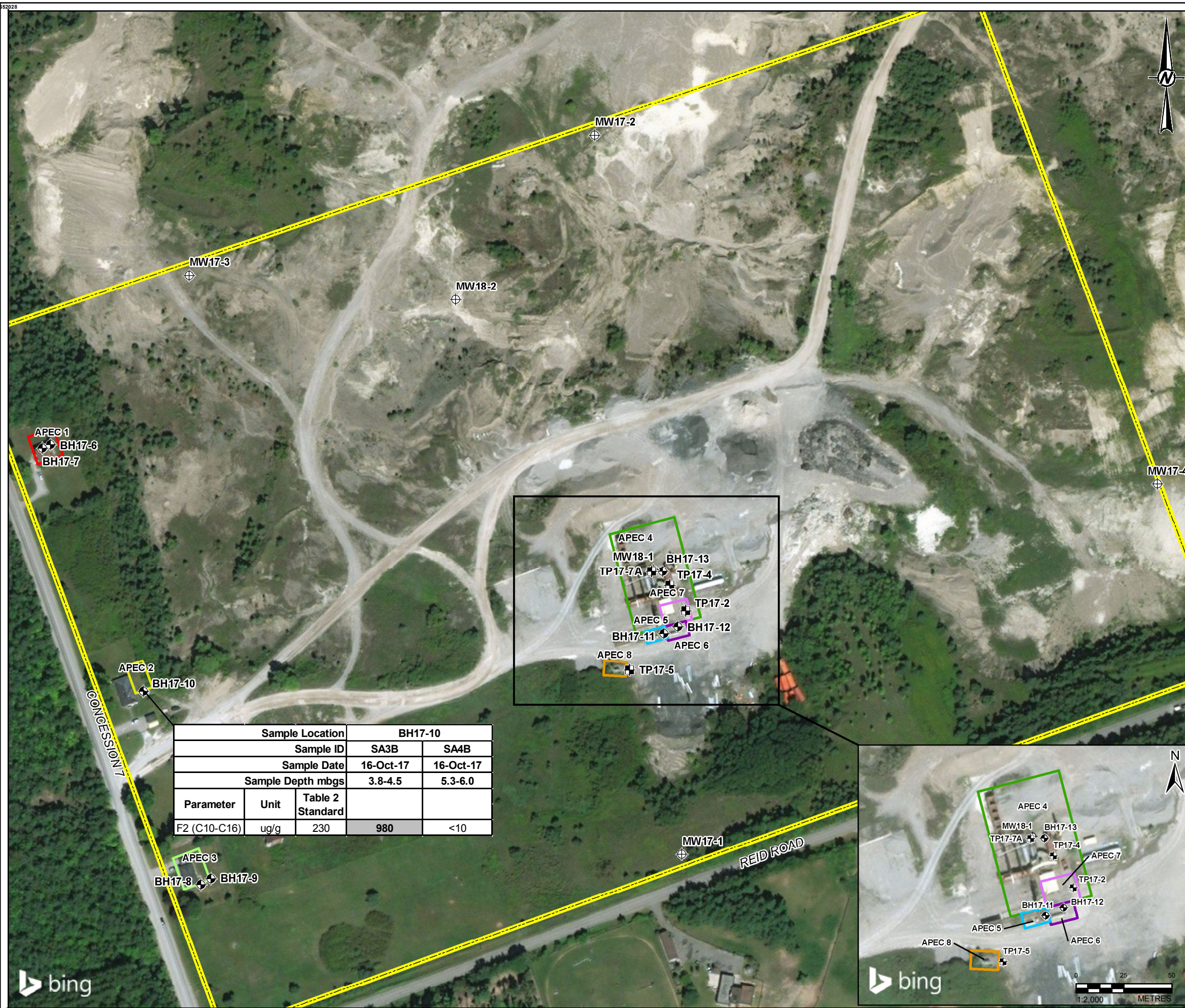
PROJECT NO. 1778651 CONTROL REV. FIGURE 1



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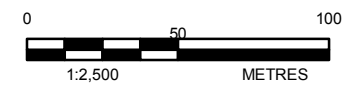




**LEGEND**

- BOREHOLE LOCATION
- MONITORING WELL LOCATION
- TEST PIT LOCATION
- SITE BOUNDARY

Location of Potentially Contaminating Activity (PCA)	APEC / PCA Description
A	<b>APEC 1</b> (#28 Gasoline and Associated Products Storage in Fixed Tanks) - A 910 L fuel oil AST was present in the northwest corner of the basement at 4589 Concession Road 7
B	<b>APEC 2</b> (#28 Gasoline and Associated Products Storage in Fixed Tanks) - A fuel oil AST was historically present in the yard on the east side of the house at 4529 Concession Road 7
C	<b>APEC 3</b> (#28 Gasoline and Associated Products Storage in Fixed Tanks) - A 910 L fuel oil AST was present in the south portion of the basement at 4499 Concession Road 7
D	<b>APEC 4</b> (#5 Asphalt and Bitumen Manufacturing) - An asphalt plant was present on site with two asphalt cement storage
E	<b>APEC 5</b> (#28 Gasoline and Associated Products Storage in Fixed Tanks) - A 4,540 L diesel AST was present within the Asphalt Plant.
F	<b>APEC 6</b> (#5 Asphalt and Bitumen Manufacturing) - A truck wash station was associated with the Asphalt Plant where truck beds were sprayed with a chemical release agent. Oily stains were observed on the ground surface.
G	<b>APEC 7</b> (#28 Gasoline and Associated Products Storage in Fixed Tanks) - A 910 L fuel oil AST was present was adjacent to the Boiler Room within the Asphalt Plant. Staining was observed on the ground surface beneath the tank.
H	<b>APEC 8</b> (#55 Transformer Manufacturing, Processing and Use) - A hydro line with an overhead transformer was present south of the Asphalt Plant.



**NOTE(S)**  
 1. SITE BOUNDARY AND TEST LOCATIONS OBTAINED FROM SURVEY BY J.D BARNES LTD.  
 2. GROUNDWATER ELEVATIONS TAKEN NOVEMBER 2, 2017

**REFERENCE(S)**  
 BASE DATA - MNR LIO, OBTAINED 2017  
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 DISTRIBUTION AIRBUS DS  
 PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83 COORDINATE SYSTEM: UTM ZONE 17N

**CLIENT**  
 THE MILLER GROUP

**PROJECT**  
 PHASE II ENVIRONMENTAL SITE ASSESSMENT  
 BOYINGTON #3 PIT, UXBRIDGE, ONTARIO

**TITLE**  
 BOREHOLE / MONITORING WELL LOCATION PLAN

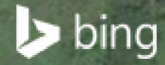
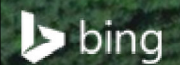
CONSULTANT	DATE	REVISION
	YYYY-MM-DD	2019-01-16
DESIGNED	JT	
PREPARED	JT/SO	
REVIEWED	CP	
APPROVED	EH	

Sample Location		BH17-10	
Sample ID	SA3B	SA4B	
Sample Date	16-Oct-17	16-Oct-17	
Sample Depth mbgs	3.8-4.5	5.3-6.0	
Parameter	Unit	Table 2 Standard	
F2 (C10-C16)	ug/g	230	980 <10

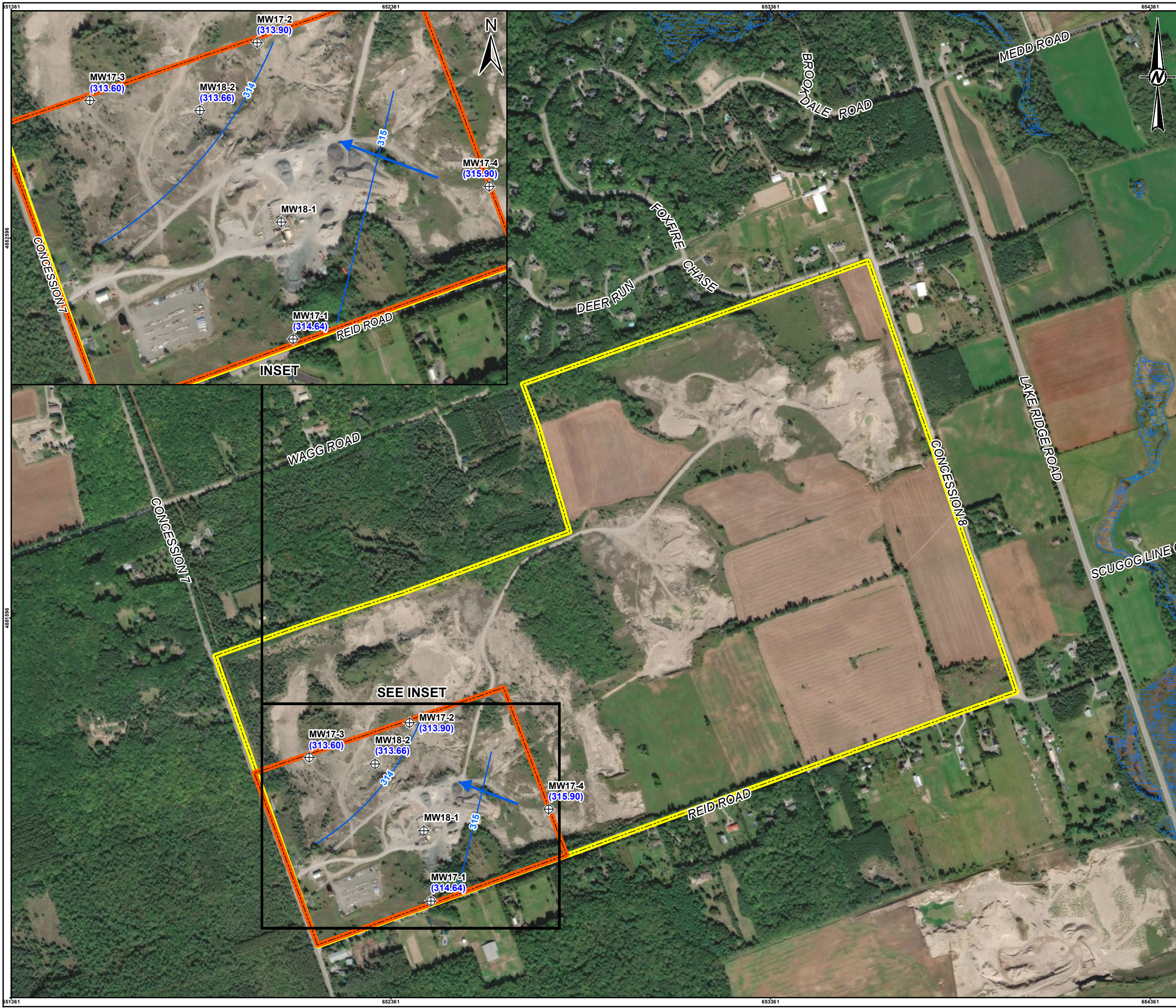


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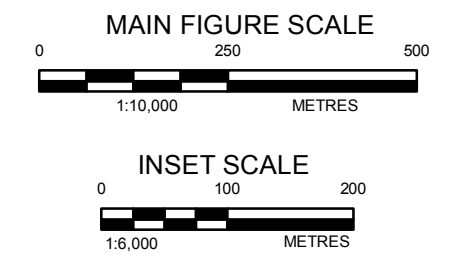
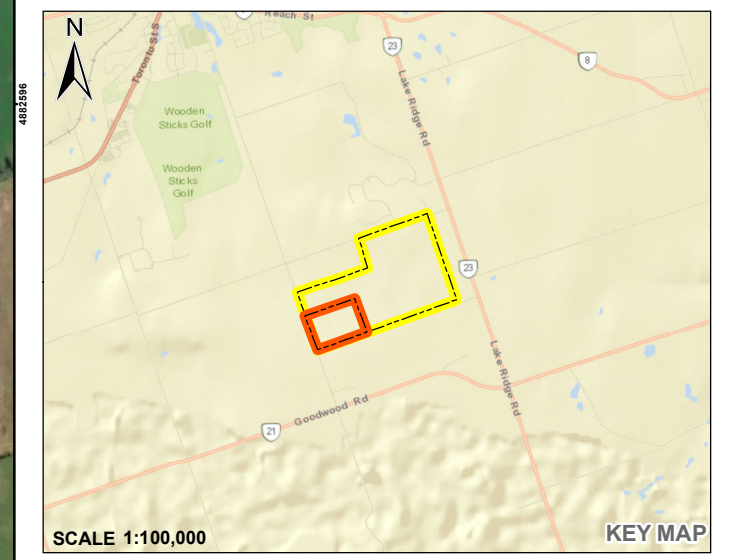




**LEGEND**

- MONITORING WELL LOCATION
- INFERRED GROUNDWATER FLOW DIRECTION
- GROUNDWATER CONTOURS (MASL)
- SITE BOUNDARY
- PROPERTY BOUNDARY
- WETLAND

314.54 GROUNDWATER ELEVATION (MASL)



**NOTE(S)**

1. SITE BOUNDARY AND TEST LOCATIONS OBTAINED FROM SURVEY BY J.D BARNES LTD.
2. WATER LEVELS MEASURED ON NOVEMBER 8, 2018.

**REFERENCE(S)**

BASE DATA - MNR LIO, OBTAINED 2017  
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 BASE IMAGERY SOURCES: ESRI, HERE, GARMIN, USGS, INTERMAP, INCREMENT P, NRCAN, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), ESRI KOREA, ESRI (THAILAND), NGCC, © OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY  
 SOURCE: ESRI, DIGITALGLOBE, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEROGRIID, IGN, AND THE GIS USER COMMUNITY  
 PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83 COORDINATE SYSTEM: UTM ZONE 17N

**CLIENT**  
THE MILLER GROUP

**PROJECT**  
PHASE II ENVIRONMENTAL SITE ASSESSMENT  
BOYINGTON #3 PIT, UXBRIDGE, ONTARIO

**TITLE**  
INFERRED GROUNDWATER FLOW DIRECTION

<b>CONSULTANT</b>	YYYY-MM-DD	2019-01-15
	DESIGNED	JT
	PREPARED	JT / RRD
	REVIEWED	CP
	APPROVED	

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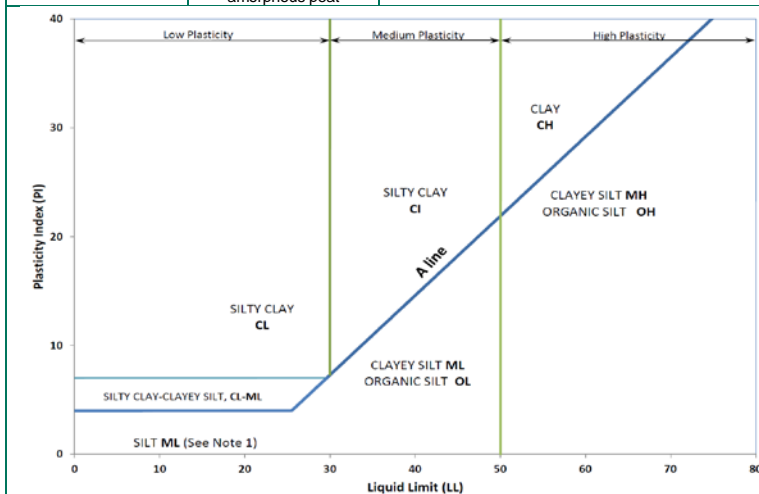


**APPENDIX A**

**Record of Borehole and Test Pit  
Sheets**

The Golder Associates Ltd. Soil Classification System is based on the Unified Soil Classification System (USCS)

Organic or Inorganic	Soil Group	Type of Soil	Gradation or Plasticity	$Cu = \frac{D_{60}}{D_{10}}$	$Cc = \frac{(D_{30})^2}{D_{10} \times D_{60}}$	Organic Content	USCS Group Symbol	Group Name					
INORGANIC (Organic Content $\leq 30\%$ by mass)	COARSE-GRAINED SOILS ( $>50\%$ by mass is larger than 0.075 mm)	GRAVELS ( $>50\%$ by mass of coarse fraction is larger than 4.75 mm)	Poorly Graded	$<4$	$\leq 1$ or $\geq 3$	$\leq 30\%$	GP	GRAVEL					
			Well Graded	$\geq 4$	1 to 3		GW	GRAVEL					
			Below A Line	n/a			GM	SILTY GRAVEL					
			Above A Line	n/a			GC	CLAYEY GRAVEL					
		SANDS ( $\geq 50\%$ by mass of coarse fraction is smaller than 4.75 mm)	Poorly Graded	$<6$	$\leq 1$ or $\geq 3$		SP	SAND					
			Well Graded	$\geq 6$	1 to 3		SW	SAND					
			Below A Line	n/a			SM	SILTY SAND					
			Above A Line	n/a			SC	CLAYEY SAND					
			Laboratory Tests		Field Indicators					Organic Content	USCS Group Symbol	Primary Name	
					Dilatancy		Dry Strength	Shine Test	Thread Diameter				Toughness (of 3 mm thread)
INORGANIC (Organic Content $\leq 30\%$ by mass)	FINE-GRAINED SOILS ( $\geq 50\%$ by mass is smaller than 0.075 mm)	SILTS (Non-Plastic or PL and LL plot below A-Line on Plasticity Chart below)	Liquid Limit	Rapid	None	None	$>6$ mm	N/A (can't roll 3 mm thread)	$<5\%$	ML	SILT		
			$<50$	Slow	None to Low	Dull	3mm to 6 mm	None to low	$<5\%$	ML	CLAYEY SILT		
				Slow to very slow	Low to medium	Dull to slight	3mm to 6 mm	Low	5% to 30%	OL	ORGANIC SILT		
			Liquid Limit $\geq 50$	Slow to very slow	Low to medium	Slight	3mm to 6 mm	Low to medium	$<5\%$	MH	CLAYEY SILT		
		None		Medium to high	Dull to slight	1 mm to 3 mm	Medium to high	5% to 30%	OH	ORGANIC SILT			
		CLAYS (PI and LL plot above A-Line on Plasticity Chart below)	Liquid Limit $<30$	None	Low to medium	Slight to shiny	$\sim 3$ mm	Low to medium	0% to 30%	CL	SILTY CLAY		
			Liquid Limit 30 to 50	None	Medium to high	Slight to shiny	1 mm to 3 mm	Medium	(see Note 2)	CI	SILTY CLAY		
			Liquid Limit $\geq 50$	None	High	Shiny	$<1$ mm	High		CH	CLAY		
		HIGHLY ORGANIC SOILS (Organic Content $>30\%$ by mass)	Peat and mineral soil mixtures						30% to 75%	PT	SILTY PEAT, SANDY PEAT		
			Predominantly peat, may contain some mineral soil, fibrous or amorphous peat						75% to 100%		PEAT		



Note 1 – Fine grained materials with PI and LL that plot in this area are named (ML) SILT with slight plasticity. Fine-grained materials which are non-plastic (i.e. a PL cannot be measured) are named SILT.

Note 2 – For soils with  $<5\%$  organic content, include the descriptor “trace organics” for soils with between 5% and 30% organic content include the prefix “organic” before the Primary name.

**Dual Symbol** — A dual symbol is two symbols separated by a hyphen, for example, GP-GM, SW-SC and CL-ML.

For non-cohesive soils, the dual symbols must be used when the soil has between 5% and 12% fines (i.e. to identify transitional material between “clean” and “dirty” sand or gravel.

For cohesive soils, the dual symbol must be used when the liquid limit and plasticity index values plot in the CL-ML area of the plasticity chart (see Plasticity Chart at left).

**Borderline Symbol** — A borderline symbol is two symbols separated by a slash, for example, CL/CI, GM/SM, CL/ML.

A borderline symbol should be used to indicate that the soil has been identified as having properties that are on the transition between similar materials. In addition, a borderline symbol may be used to indicate a range of similar soil types within a stratum.

**PARTICLE SIZES OF CONSTITUENTS**

Soil Constituent	Particle Size Description	Millimetres	Inches (US Std. Sieve Size)
BOULDERS	Not Applicable	>300	>12
COBBLES	Not Applicable	75 to 300	3 to 12
GRAVEL	Coarse Fine	19 to 75 4.75 to 19	0.75 to 3 (4) to 0.75
SAND	Coarse Medium Fine	2.00 to 4.75 0.425 to 2.00 0.075 to 0.425	(10) to (4) (40) to (10) (200) to (40)
SILT/CLAY	Classified by plasticity	<0.075	< (200)

**MODIFIERS FOR SECONDARY AND MINOR CONSTITUENTS**

Percentage by Mass	Modifier
>35	Use 'and' to combine major constituents (i.e., SAND and GRAVEL, SAND and CLAY)
> 12 to 35	Primary soil name prefixed with "gravelly, sandy, SILTY, CLAYEY" as applicable
> 5 to 12	some
≤ 5	trace

**PENETRATION RESISTANCE**
**Standard Penetration Resistance (SPT), N:**

The number of blows by a 63.5 kg (140 lb) hammer dropped 760 mm (30 in.) required to drive a 50 mm (2 in.) split-spoon sampler for a distance of 300 mm (12 in.).

**Cone Penetration Test (CPT)**

An electronic cone penetrometer with a 60° conical tip and a project end area of 10 cm<sup>2</sup> pushed through ground at a penetration rate of 2 cm/s. Measurements of tip resistance (q<sub>t</sub>), porewater pressure (u) and sleeve frictions are recorded electronically at 25 mm penetration intervals.

**Dynamic Cone Penetration Resistance (DCPT); N<sub>d</sub>:**

The number of blows by a 63.5 kg (140 lb) hammer dropped 760 mm (30 in.) to drive uncased a 50 mm (2 in.) diameter, 60° cone attached to "A" size drill rods for a distance of 300 mm (12 in.).

- PH:** Sampler advanced by hydraulic pressure  
**PM:** Sampler advanced by manual pressure  
**WH:** Sampler advanced by static weight of hammer  
**WR:** Sampler advanced by weight of sampler and rod

**SAMPLES**

AS	Auger sample
BS	Block sample
CS	Chunk sample
DO or DP	Seamless open ended, driven or pushed tube sampler – note size
DS	Denison type sample
FS	Foil sample
RC	Rock core
SC	Soil core
SS	Split spoon sampler – note size
ST	Slotted tube
TO	Thin-walled, open – note size
TP	Thin-walled, piston – note size
WS	Wash sample

**SOIL TESTS**

w	water content
PL, w <sub>p</sub>	plastic limit
LL, w <sub>L</sub>	liquid limit
C	consolidation (oedometer) test
CHEM	chemical analysis (refer to text)
CID	consolidated isotropically drained triaxial test <sup>1</sup>
CIU	consolidated isotropically undrained triaxial test with porewater pressure measurement <sup>1</sup>
D <sub>r</sub>	relative density (specific gravity, G <sub>s</sub> )
DS	direct shear test
GS	specific gravity
M	sieve analysis for particle size
MH	combined sieve and hydrometer (H) analysis
MPC	Modified Proctor compaction test
SPC	Standard Proctor compaction test
OC	organic content test
SO <sub>4</sub>	concentration of water-soluble sulphates
UC	unconfined compression test
UU	unconsolidated undrained triaxial test
V (FV)	field vane (LV-laboratory vane test)
γ	unit weight

1. Tests which are anisotropically consolidated prior to shear are shown as CAD, CAU.

**NON-COHESIVE (COHESIONLESS) SOILS**
**Compactness<sup>2</sup>**

Term	SPT 'N' (blows/0.3m) <sup>1</sup>
Very Loose	0 - 4
Loose	4 to 10
Compact	10 to 30
Dense	30 to 50
Very Dense	>50

1. SPT 'N' in accordance with ASTM D1586, uncorrected for overburden pressure effects.  
 2. Definition of compactness descriptions based on SPT 'N' ranges from Terzaghi and Peck (1967) and correspond to typical average N<sub>60</sub> values.

**Field Moisture Condition**

Term	Description
Dry	Soil flows freely through fingers.
Moist	Soils are darker than in the dry condition and may feel cool.
Wet	As moist, but with free water forming on hands when handled.

**COHESIVE SOILS**
**Consistency**

Term	Undrained Shear Strength (kPa)	SPT 'N' <sup>1</sup> (blows/0.3m)
Very Soft	<12	0 to 2
Soft	12 to 25	2 to 4
Firm	25 to 50	4 to 8
Stiff	50 to 100	8 to 15
Very Stiff	100 to 200	15 to 30
Hard	>200	>30

1. SPT 'N' in accordance with ASTM D1586, uncorrected for overburden pressure effects; approximate only.

**Water Content**

Term	Description
w < PL	Material is estimated to be drier than the Plastic Limit.
w ~ PL	Material is estimated to be close to the Plastic Limit.
w > PL	Material is estimated to be wetter than the Plastic Limit.

Unless otherwise stated, the symbols employed in the report are as follows:

**I. GENERAL**

$\pi$	3.1416
$\ln x$	natural logarithm of x
$\log_{10} x$	x or log x, logarithm of x to base 10
g	acceleration due to gravity
t	time

**II. STRESS AND STRAIN**

$\gamma$	shear strain
$\Delta$	change in, e.g. in stress: $\Delta \sigma$
$\varepsilon$	linear strain
$\varepsilon_v$	volumetric strain
$\eta$	coefficient of viscosity
$\nu$	Poisson's ratio
$\sigma$	total stress
$\sigma'$	effective stress ( $\sigma' = \sigma - u$ )
$\sigma'_{vo}$	initial effective overburden stress
$\sigma_1, \sigma_2, \sigma_3$	principal stress (major, intermediate, minor)
$\sigma_{oct}$	mean stress or octahedral stress = $(\sigma_1 + \sigma_2 + \sigma_3)/3$
$\tau$	shear stress
u	porewater pressure
E	modulus of deformation
G	shear modulus of deformation
K	bulk modulus of compressibility

**III. SOIL PROPERTIES**
**(a) Index Properties**

$\rho(\gamma)$	bulk density (bulk unit weight)*
$\rho_d(\gamma_d)$	dry density (dry unit weight)
$\rho_w(\gamma_w)$	density (unit weight) of water
$\rho_s(\gamma_s)$	density (unit weight) of solid particles
$\gamma'$	unit weight of submerged soil ( $\gamma' = \gamma - \gamma_w$ )
$D_R$	relative density (specific gravity) of solid particles ( $D_R = \rho_s / \rho_w$ ) (formerly $G_s$ )
e	void ratio
n	porosity
S	degree of saturation

**(a) Index Properties (continued)**

w	water content
$w_l$ or LL	liquid limit
$w_p$ or PL	plastic limit
$I_p$ or PI	plasticity index = $(w_l - w_p)$
$w_s$	shrinkage limit
$I_L$	liquidity index = $(w - w_p) / I_p$
$I_C$	consistency index = $(w_l - w) / I_p$
$e_{max}$	void ratio in loosest state
$e_{min}$	void ratio in densest state
$I_D$	density index = $(e_{max} - e) / (e_{max} - e_{min})$ (formerly relative density)

**(b) Hydraulic Properties**

h	hydraulic head or potential
q	rate of flow
v	velocity of flow
i	hydraulic gradient
k	hydraulic conductivity (coefficient of permeability)
j	seepage force per unit volume

**(c) Consolidation (one-dimensional)**

$C_c$	compression index (normally consolidated range)
$C_r$	recompression index (over-consolidated range)
$C_s$	swelling index
$C_\alpha$	secondary compression index
$m_v$	coefficient of volume change
$C_v$	coefficient of consolidation (vertical direction)
$C_h$	coefficient of consolidation (horizontal direction)
$T_v$	time factor (vertical direction)
U	degree of consolidation
$\sigma'_p$	pre-consolidation stress
OCR	over-consolidation ratio = $\sigma'_p / \sigma'_{vo}$

**(d) Shear Strength**

$\tau_p, \tau_r$	peak and residual shear strength
$\phi'$	effective angle of internal friction
$\delta$	angle of interface friction
$\mu$	coefficient of friction = $\tan \delta$
$c'$	effective cohesion
$c_u, s_u$	undrained shear strength ( $\phi = 0$ analysis)
p	mean total stress $(\sigma_1 + \sigma_3)/2$
$p'$	mean effective stress $(\sigma'_1 + \sigma'_3)/2$
q	$(\sigma_1 - \sigma_3)/2$ or $(\sigma'_1 - \sigma'_3)/2$
$q_u$	compressive strength $(\sigma_1 - \sigma_3)$
$S_t$	sensitivity

\* Density symbol is  $\rho$ . Unit weight symbol is  $\gamma$  where  $\gamma = \rho g$  (i.e. mass density multiplied by acceleration due to gravity)

**Notes:** 1  
2

$$\tau = c' + \sigma' \tan \phi'$$

$$\text{shear strength} = (\text{compressive strength})/2$$

**WEATHERINGS STATE**

**Fresh:** no visible sign of weathering

**Faintly weathered:** weathering limited to the surface of major discontinuities.

**Slightly weathered:** penetrative weathering developed on open discontinuity surfaces but only slight weathering of rock material.

**Moderately weathered:** weathering extends throughout the rock mass but the rock material is not friable.

**Highly weathered:** weathering extends throughout rock mass and the rock material is partly friable.

**Completely weathered:** rock is wholly decomposed and in a friable condition but the rock and structure are preserved.

**BEDDING THICKNESS**

<u>Description</u>	<u>Bedding Plane Spacing</u>
Very thickly bedded	Greater than 2 m
Thickly bedded	0.6 m to 2 m
Medium bedded	0.2 m to 0.6 m
Thinly bedded	60 mm to 0.2 m
Very thinly bedded	20 mm to 60 mm
Laminated	6 mm to 20 mm
Thinly laminated	Less than 6 mm

**JOINT OR FOLIATION SPACING**

<u>Description</u>	<u>Spacing</u>
Very wide	Greater than 3 m
Wide	1 m to 3 m
Moderately close	0.3 m to 1 m
Close	50 mm to 300 mm
Very close	Less than 50 mm

**GRAIN SIZE**

<u>Term</u>	<u>Size*</u>
Very Coarse Grained	Greater than 60 mm
Coarse Grained	2 mm to 60 mm
Medium Grained	60 microns to 2 mm
Fine Grained	2 microns to 60 microns
Very Fine Grained	Less than 2 microns

Note: \* Grains greater than 60 microns diameter are visible to the naked eye.

**CORE CONDITION**
**Total Core Recovery (TCR)**

The percentage of solid drill core recovered regardless of quality or length, measured relative to the length of the total core run.

**Solid Core Recovery (SCR)**

The percentage of solid drill core, regardless of length, recovered at full diameter, measured relative to the length of the total core run.

**Rock Quality Designation (RQD)**

The percentage of solid drill core, greater than 100 mm length, recovered at full diameter, measured relative to the length of the total core run. RQD varied from 0% for completely broken core to 100% for core in solid sticks.

**DISCONTINUITY DATA**
**Fracture Index**

A count of the number of discontinuities (physical separations) in the rock core, including both naturally occurring fractures and mechanically induced breaks caused by drilling.

**Dip with Respect to Core Axis**

The angle of the discontinuity relative to the axis (length) of the core. In a vertical borehole a discontinuity with a 90° angle is horizontal.

**Description and Notes**

An abbreviation description of the discontinuities, whether naturally occurring separations such as fractures, bedding planes and foliation planes or mechanically induced features caused by drilling such as ground or shattered core and mechanically separated bedding or foliation surfaces. Additional information concerning the nature of fracture surfaces and infillings are also noted.

**Abbreviations**

JN Joint	PL Planar
FLT Fault	CU Curved
SH Shear	UN Undulating
VN Vein	IR Irregular
FR Fracture	K Slickensided
SY Stylolite	PO Polished
BD Bedding	SM Smooth
FO Foliation	SR Slightly Rough
CO Contact	RO Rough
AXJ Axial Joint	VR Very Rough
KV Karstic Void	
MB Mechanical Break	

PROJECT: 1778651

# RECORD OF BOREHOLE: MW17-1

SHEET 1 OF 6

LOCATION: N ; E

BORING DATE: October 12, 2017

DATUM:

SPT/DCPT HAMMER: MASS, 64kg; DROP, 760mm

HAMMER TYPE: AUTOMATIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	SHEAR STRENGTH				WATER CONTENT PERCENT					
								Cu, kPa		nat V. rem V.		+		Q - U -			Wp
0		GROUND SURFACE		362.73													
		(SP) SAND, some to trace silt, trace gravel; brown; non-cohesive, moist, very loose to compact (NATIVE)		0.00	1	SS	4										
1					2	SS	23									Bentonite Seal 8 60	
2					3	SS	16										
3					4	SS	27										
4					5	SS	14										
5	Mud Rotary 200 mm Hollow Stem Augers				6	SS	9										
6					7	SS	20										
					8	SS	24									Grout	
6		(SP) SAND, some to trace gravel; grey; non-cohesive, moist, very dense to compact		356.63 6.10	9	SS	53										
7																	
8					10	SS	43										
9																	
					11	SS	31										
10																	

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DEPTH SCALE

1 : 50



LOGGED: AVR

CHECKED:



PROJECT: 1778651

# RECORD OF BOREHOLE: MW17-1

SHEET 2 OF 6

LOCATION: N ; E

BORING DATE: October 12, 2017

DATUM:

SPT/DCPT HAMMER: MASS, 64kg; DROP, 760mm

HAMMER TYPE: AUTOMATIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION		
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	SHEAR STRENGTH Cu, kPa				WATER CONTENT PERCENT					
								20	40	60	80	nat V. +	rem V. ⊕			Q - ●	U - ○
10	Mud Rotary 200 mm Hollow Stem Augers	-- CONTINUED FROM PREVIOUS PAGE -- (SP) SAND, some to trace gravel; grey; non-cohesive, moist, very dense to compact															
11				12	SS	57											
12																	
13				13	SS	68											
14																	
15				14	SS	44											
16																	
17				15	SS	30											
17				16	SS	28	345.66 17.07										
18																	
19				17	SS	24											
20																	
20				18	SS	59											

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PROJECT: 1778651

# RECORD OF BOREHOLE: MW17-1

SHEET 3 OF 6

LOCATION: N ; E

BORING DATE: October 12, 2017

DATUM:

SPT/DCPT HAMMER: MASS, 64kg; DROP, 760mm

HAMMER TYPE: AUTOMATIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	SHEAR STRENGTH				WATER CONTENT PERCENT					
								Cu, kPa		nat V. rem V.		+ Q - U		Wp			W
20	Mud Rotary 200 mm Hollow Stem Augers	-- CONTINUED FROM PREVIOUS PAGE --															
		(ML) sandy SILT; grey/light brown; non-cohesive, wet to moist, compact to very dense		18	SS	59											0 90
21																	
22																	
			(SM) SILTY SAND; grey; non-cohesive, moist to wet, very dense														
23																	
24																	
25																	
26																	
27		(SP) SAND, some to trace silt; grey; non-cohesive, moist, very dense															
28																	
29																	
30																	
		CONTINUED NEXT PAGE															

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DEPTH SCALE

1 : 50



LOGGED: AVR

CHECKED:

PROJECT: 1778651

# RECORD OF BOREHOLE: MW17-1

SHEET 4 OF 6

LOCATION: N ; E

BORING DATE: October 12, 2017

DATUM:

SPT/DCPT HAMMER: MASS, 64kg; DROP, 760mm

HAMMER TYPE: AUTOMATIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	SHEAR STRENGTH Cu, kPa				WATER CONTENT PERCENT					
								20	40	60	80	nat V. +	rem V. ⊕	Q - ●			U - ○
30		-- CONTINUED FROM PREVIOUS PAGE --															
30		(SP) SAND, some to trace silt; grey; non-cohesive, moist, very dense															
31				25	SS	72											
32				26	SS	50											
32		(SP) SAND; grey; non-cohesive, moist, very dense		331.34 31.39													
33																	
34				27	SS	98											
35	Mud Rotary 200 mm Hollow Stem Augers			28	SS	65										Grout	
36																	
37				29	SS	57											
38																	
38		- Trace gravel at a depth of 38.1 m - 38.4 m															
39				30	SS	100											
40				31	SS	50											

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DEPTH SCALE

1 : 50



LOGGED: AVR

CHECKED:

PROJECT: 1778651

# RECORD OF BOREHOLE: MW17-1

SHEET 5 OF 6

LOCATION: N; E

BORING DATE: October 12, 2017

DATUM:

SPT/DCPT HAMMER: MASS, 64kg; DROP, 760mm

HAMMER TYPE: AUTOMATIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	SHEAR STRENGTH				WATER CONTENT PERCENT					
								Cu, kPa		nat V. rem V.		+ Q - U		Wp			W
40		--- CONTINUED FROM PREVIOUS PAGE --- (SP) SAND; grey; non-cohesive, moist, very dense					20	40	60	80							
41					32	SS	50										
42																	
43		- Some gravel at a depth of 42.7 m to 44.5 m			33	SS	56										
44																	
45	Mud Rotary 200 mm Hollow Stem Augers			317.49 45.24	34	SS	67									Grout	
46		(SP) SAND, trace silt; grey; non-cohesive, moist, very dense			35	SS	60										
47																	
48					36	SS	98									2 73	
49					37	SS	25										
50				312.92 49.81												Bentonite Seal	

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DEPTH SCALE

1 : 50



LOGGED: AVR

CHECKED:

PROJECT: 1778651

# RECORD OF BOREHOLE: MW17-1

SHEET 6 OF 6

LOCATION: N ; E

BORING DATE: October 12, 2017

DATUM:

SPT/DCPT HAMMER: MASS, 64kg; DROP, 760mm

HAMMER TYPE: AUTOMATIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	SHEAR STRENGTH Cu, kPa				WATER CONTENT PERCENT					
								20	40	60	80	nat V. +	Q - ●	rem V. ⊕			U - ○
50	Mud Rotary 200 mm Hollow Stem Augers	-- CONTINUED FROM PREVIOUS PAGE -- (SP) gravelly SAND; grey; non-cohesive, moist, very dense														Bentonite Seal	
51				311.40 51.33	38	SS	92										
52		(SM) SILTY SAND; grey; non-cohesive, moist to wet, very dense				39	SS	72									
53		(SP) SAND, some silt; grey; non-cohesive, moist to wet, very dense			310.00 52.73	40	SS	60									
55					307.43 55.30	41	SS	102									
56	END OF BOREHOLE															Silica Sand Filter and Screen	
57	Note: 1. Water level measured at a depth of 49.3 m below ground surface (Elev. 313.4 m asl), Nov. 2/18.																
58																	
59																	
60																	

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DEPTH SCALE

1 : 50



LOGGED: AVR

CHECKED:

PROJECT: 1778651

LOCATION: N ; E

# RECORD OF BOREHOLE: MW17-2

SHEET 1 OF 2

BORING DATE: October 17, 2017

DATUM:

SPT/DCPT HAMMER: MASS, 64kg; DROP, 760mm

HAMMER TYPE: AUTOMATIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	SHEAR STRENGTH Cu, kPa				WATER CONTENT PERCENT					
								20	40	60	80	nat V. +	rem V. ⊕	Q - ●			U - ○
0		GROUND SURFACE		329.70													
0.00		(SP) SAND, some gravel, some to trace silt; brown; non-cohesive, moist, loose to very dense		0.00	1	SS	10										
1					2	SS	34										
2					3	SS	21										
3					4	SS	40										
3.4		- Trace wet stiff clay seams at 3.4 m			5	SS	16										
4					6	SS	72										
5				325.13													
4.57		(SP) SAND, trace to some gravel; brown to grey/brown; non-cohesive, moist, very dense		4.57	7	SS	77										
5					8	SS	53										
6					9	SS	48										
7																	
8					10	SS	70										
9																	
10					11	SS	66										

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DEPTH SCALE

1 : 50



LOGGED: AVR

CHECKED:

PROJECT: 1778651

# RECORD OF BOREHOLE: MW17-2

SHEET 2 OF 2

LOCATION: N ; E

BORING DATE: October 17, 2017

DATUM:

SPT/DCPT HAMMER: MASS, 64kg; DROP, 760mm

HAMMER TYPE: AUTOMATIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	SHEAR STRENGTH				WATER CONTENT PERCENT					
							Cu, kPa	nat V. rem V.	+ ⊕	- ⊙	Wp	W	Wi			
10		--- CONTINUED FROM PREVIOUS PAGE ---														
11		(SP) SAND, trace to some gravel; brown to grey/brown; non-cohesive, moist, very dense			12	SS	60								Grout	
12																
13		- Soft moist sandy silt layer with some clay at a depth of 12.5 m - 12.7 m			13	SS	12									
14																
15																
16																
17		(SP) gravelly SAND; grey; non-cohesive, wet, dense to very dense		313.39 16.31											Bentonite Seal	
18																
19		END OF BOREHOLE		310.95 18.75												
20		Note: 1. Water level measured at a depth of 17.1 m below ground surface (Elev. 312.6 m asl), Nov. 2/18.													Silica Sand Filter and Screen	

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DEPTH SCALE

1 : 50



LOGGED: AVR

CHECKED:

PROJECT: 1778651

# RECORD OF BOREHOLE: MW17-3

SHEET 1 OF 3

LOCATION: N ; E

BORING DATE: October 24, 2017

DATUM:

SPT/DCPT HAMMER: MASS, 64kg; DROP, 760mm

HAMMER TYPE: AUTOMATIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	SHEAR STRENGTH				WATER CONTENT PERCENT					
								Cu, kPa		nat V. rem V.		+ Q - U		Wp			W
0		GROUND SURFACE		331.01													
		(SP) gravelly SAND with SILT; brown; non-cohesive, moist, loose to very dense		0.00	1	SS	14										
1					2	SS	63										
2					3	SS	25										
3		-Trace of clay at a depth of 2.7 m			4	SS	26										
		(SP) SAND; grey; non-cohesive, moist, dense		327.96	5	SS	49										
4				3.05	6	SS	40										
5					7	SS	39										
		- Trace of silt at a depth of 5.3 m - 8.1 m		325.64	8	SS	50										
6		(SP) SAND; brown; non-cohesive, moist, very dense		5.37	9	SS	50										
7					10	SS	84										
8					11	SS	92										
9																	
10																	

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DEPTH SCALE

1 : 50



LOGGED: AVR

CHECKED:



PROJECT: 1778651

# RECORD OF BOREHOLE: MW17-3

SHEET 2 OF 3

LOCATION: N ; E

BORING DATE: October 24, 2017

DATUM:

SPT/DCPT HAMMER: MASS, 64kg; DROP, 760mm

HAMMER TYPE: AUTOMATIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION		
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	SHEAR STRENGTH				WATER CONTENT PERCENT					
								Cu, kPa		nat V. rem V.		Q - U				Wp	
10		--- CONTINUED FROM PREVIOUS PAGE --- (SP) SAND; brown; non-cohesive, moist, very dense															
11					12	SS	78										
12		- Trace of silt at a depth of 12.2 m - Grey color at a depth of 12.2 m - 15.7 m			13	SS	75										
13					14	SS	92										
14					15	SS	100										
15	B-57 Track-Mount Mobile 108 mm I.D. and 200 mm O.D. Hollow Stem Augers				15	SS	100										
16		(SP) SAND; brown; non-cohesive to cohesive, wet, very dense		315.31 15.70											Bentonite Seal		
17					16	SS	57										
18		(SP) SILTY SAND; brown; cohesive, wet, very dense		312.87 18.14													
19					17	SS	46										
20					18	SS	54										

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DEPTH SCALE

1 : 50



LOGGED: AVR

CHECKED:

PROJECT: 1778651

# RECORD OF BOREHOLE: MW17-3

SHEET 3 OF 3

LOCATION: N ; E

BORING DATE: October 24, 2017

DATUM:

SPT/DCPT HAMMER: MASS, 64kg; DROP, 760mm

HAMMER TYPE: AUTOMATIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	SHEAR STRENGTH Cu, kPa		WATER CONTENT PERCENT					
								nat V. +	rem V. ⊕	Q - ●	U - ○	Wp	W		
20		-- CONTINUED FROM PREVIOUS PAGE --													
		(SP) SILTY SAND; brown; cohesive, wet, very dense			18	SS	54								
		END OF BOREHOLE													
		NOTES:													
21		1. Groundwater level measured at a depth of about 17.5 m below ground surface upon completion of drilling.													
		2. Water level measured at a depth of 18.4 m below ground surface (Elev. 312.6 m asl), Nov. 2/18.													
22															
23															
24															
25															
26															
27															
28															
29															
30															

GTA-BHS 001 S:\CLIENTS\MILLER GROUPE\XBRIDGE BOYINGTON\_PIT\_302\_DATA\GINT\XBRIDGE-1778651.GPJ GAL-MIS.GDT 1/14/19

DEPTH SCALE



LOGGED: AVR

1 : 50

CHECKED:

PROJECT: 1778651

# RECORD OF BOREHOLE: MW17-4

SHEET 1 OF 3

LOCATION: N ; E

BORING DATE: October 19, 2017

DATUM:

SPT/DCPT HAMMER: MASS, 64kg; DROP, 760mm

HAMMER TYPE: AUTOMATIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION		
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	SHEAR STRENGTH Cu, kPa				WATER CONTENT PERCENT					
								20	40	60	80	nat V. +	rem V. ⊕			Q -	U -
0		GROUND SURFACE		333.84													
		(SP) SAND, some to trace silt, trace gravel; brown; non-cohesive, moist, compact		0.00	1	SS	13								Sand		
1					2	SS	16										
		(CL) SILTY CLAY, some gravel; grey; cohesive, w>PL, stiff		332.32													
				1.52													
2		(SM) SILTY SAND; grey; non-cohesive, moist, loose to compact		332.01	3	SS	9										
				1.83													
3					4	SS	23										
4		(SP) SAND, trace silt; grey; non-cohesive, moist, compact to dense		330.79	5	SS	31										
				3.05													
5					6	SS	26										
					7	SS	51										
6					8	SS	45										
					9	SS	32										
7																	
8					10	SS	43										
9		(ML) sandy SILT; grey; non-cohesive, wet, dense		325.31													
				8.53													
					11	SS	31										
10																	

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DEPTH SCALE

1 : 50



LOGGED: AVR

CHECKED:

PROJECT: 1778651

# RECORD OF BOREHOLE: MW17-4

SHEET 2 OF 3

LOCATION: N ; E

BORING DATE: October 19, 2017

DATUM:

SPT/DCPT HAMMER: MASS, 64kg; DROP, 760mm

HAMMER TYPE: AUTOMATIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION			
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	SHEAR STRENGTH				WATER CONTENT PERCENT						
								Cu, kPa		nat V. rem V.	+ ⊕ - ⊙	Wp	W			Wi		
		--- CONTINUED FROM PREVIOUS PAGE ---																
10	B-57 Track-Mount Mobile 200 mm Hollow Stem Augers	(ML) sandy SILT, some gravel; brown/grey (TILL-LIKE); non-cohesive, moist, very dense		323.78 10.08	12	SS	94											
11																		
12																		
13																		
14																		
15																		
16																		
17		(SP) SAND, trace gravel; grey; non-cohesive, moist to wet at 18.4 m, very dense		317.38 16.46	16	SS	60											
18																		
19																		
20																		
		CONTINUED NEXT PAGE																

Bentonite Seal

Silica Sand Filter and Screen

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DEPTH SCALE

1 : 50



LOGGED: AVR

CHECKED:

PROJECT: 1778651

# RECORD OF BOREHOLE: MW17-4

SHEET 3 OF 3

LOCATION: N ; E

BORING DATE: October 19, 2017

DATUM:

SPT/DCPT HAMMER: MASS, 64kg; DROP, 760mm

HAMMER TYPE: AUTOMATIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	SHEAR STRENGTH Cu, kPa				WATER CONTENT PERCENT					
								20	40	60	80	nat V. +	Q - ●	rem V. ⊕			U - ○
20	B-57 Track-Mount Mobile 200 mm Hollow Stem Augers	-- CONTINUED FROM PREVIOUS PAGE --															
21		(SP) SAND, trace gravel; grey; non-cohesive, moist to wet at 18.4 m, very dense		312.35	18	SS	86									Silica Sand Filter and Screen	
22		END OF BOREHOLE		21.49	19	SS	72									0 92	
23		Note: 1. Water level measured at a depth of 19.1 m below ground surface (Elev. 314.7 m asl), Nov. 2/18.															
24																	
25																	
26																	
27																	
28																	
29																	
30																	

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DEPTH SCALE

1 : 50



LOGGED: AVR

CHECKED:

PROJECT: 1778651

# RECORD OF BOREHOLE: MW18-1

SHEET 1 OF 4

LOCATION: N ; E

BORING DATE: October 29, 2018

DATUM:

SPT/DCPT HAMMER: MASS, 64kg; DROP, 760mm

HAMMER TYPE: AUTOMATIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	SHEAR STRENGTH Cu, kPa				WATER CONTENT PERCENT					
								20	40	60	80	nat V. +	Q - ●	rem V. ⊕			U - ○
0		GROUND SURFACE		349.76													
0		gravelly SAND, trace silt; brown; non-cohesive, moist, compact to dense (NATIVE)		0.00	1	SS	12										
1																	
2																	
3																	
4					2	SS	10										
5	Mud Rotary 200 mm Hollow Stem Augers																
6																	
7																	
8																	
9																	
9		sandy SILT to SILTY SAND, trace to some gravel; brown; non-cohesive, moist, dense to very dense (NATIVE)		340.62 9.14	4	SS	59										
10																	
		CONTINUED NEXT PAGE															

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DEPTH SCALE

1 : 50



LOGGED: AS

CHECKED:

PROJECT: 1778651

# RECORD OF BOREHOLE: MW18-1

SHEET 2 OF 4

LOCATION: N ; E

BORING DATE: October 29, 2018

DATUM:

SPT/DCPT HAMMER: MASS, 64kg; DROP, 760mm

HAMMER TYPE: AUTOMATIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION		
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	SHEAR STRENGTH				WATER CONTENT PERCENT					
								Cu, kPa		nat V. +	Q - ●	rem V. ⊕	U - ○			Wp	W
10		--- CONTINUED FROM PREVIOUS PAGE ---															
11		sandy SILT to SILTY SAND, trace to some gravel; brown; non-cohesive, moist, dense to very dense (NATIVE)															
12																	
13																	
14																	
15	Mud Rotary 200 mm Hollow Stem Augers																
16					5	SS	46										
17																	
18																	
19																	
20																	
		CONTINUED NEXT PAGE															

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DEPTH SCALE

1 : 50



LOGGED: AS

CHECKED:

PROJECT: 1778651

# RECORD OF BOREHOLE: MW18-1

SHEET 3 OF 4

LOCATION: N ; E

BORING DATE: October 29, 2018

DATUM:

SPT/DCPT HAMMER: MASS, 64kg; DROP, 760mm

HAMMER TYPE: AUTOMATIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	SHEAR STRENGTH Cu, kPa				WATER CONTENT PERCENT					
							20	40	60	80	nat V.	rem V.	+			Q -
20	Mud Rotary 200 mm Hollow Stem Augers	-- CONTINUED FROM PREVIOUS PAGE --														
20		sandy SILT to SILTY SAND, trace to some gravel; brown; non-cohesive, moist, dense to very dense (NATIVE)														
21																
22						6	SS	50								
23																
24																
25																
26																
27																
28																
29																
30																

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Grout

GTA-BHS 001 S:\CLIENTSMILLER GROUPE\XBRIDGE BOYINGTON.PIT.3\02\_DATA\GINT\XBRIDGE-1778651.GPJ GAL-MIS.GDT 1/14/19



PROJECT: 1778651

# RECORD OF BOREHOLE: MW18-1

SHEET 4 OF 4

LOCATION: N ; E

BORING DATE: October 29, 2018

DATUM:

SPT/DCPT HAMMER: MASS, 64kg; DROP, 760mm

HAMMER TYPE: AUTOMATIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION		
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	SHEAR STRENGTH				WATER CONTENT PERCENT					
								Cu, kPa		nat V. rem V.		+ Q - ●				U - ○	
30		--- CONTINUED FROM PREVIOUS PAGE ---															
		sandy SILT to SILTY SAND, trace to some gravel; brown; non-cohesive, moist, dense to very dense (NATIVE)															
		SAND to gravelly SAND, trace silt; brown; non-cohesive, very dense (NATIVE)		319.28													
				30.48	7	SS	50								Grout		
31																	
32															Slow Release Bentonite		
33															#2 Sand		
34	Mud Rotary 200 mm Hollow Stem Augers																
35					8	SS	80								Screen		
36																	
37				312.57													
		END OF BOREHOLE		37.19													
38																	
39																	
40																	

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DEPTH SCALE

1 : 50



LOGGED: AS

CHECKED:

PROJECT: 1778651

# RECORD OF BOREHOLE: MW18-2

SHEET 1 OF 3

LOCATION: N ; E

BORING DATE: November 1, 2018

DATUM:

SPT/DCPT HAMMER: MASS, 64kg; DROP, 760mm

HAMMER TYPE: AUTOMATIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION		
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	SHEAR STRENGTH Cu, kPa				WATER CONTENT PERCENT					
								20	40	60	80	nat V. +	rem V. ⊕			Q - ●	U - ○
0		GROUND SURFACE		333.31													
		sandy SILT, trace gravel; light brown; cohesive, w<PL, firm		0.00	1	SS	8										
1		SAND, some gravel, trace non-plastic fines; brown; non-cohesive, moist, loose to very dense		332.70													
				0.61													
2																	
3																	
4																	
5	Mud Rotary 200 mm Hollow Stem Augers																
6					2	SS	32										
7																	
8																	
9																	
10																	

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GTA-BHS 001 S:\CLIENTSMILLER GROUPEUX\BRIDGE BOYINGTON\_PIT\_3\02\_DATA\INTUX\BRIDGE-1778651.GPJ GAL-MIS.GDT 1/14/19

DEPTH SCALE

1 : 50



LOGGED: GC

CHECKED:

PROJECT: 1778651

# RECORD OF BOREHOLE: MW18-2

SHEET 2 OF 3

LOCATION: N ; E

BORING DATE: November 1, 2018

DATUM:

SPT/DCPT HAMMER: MASS, 64kg; DROP, 760mm

HAMMER TYPE: AUTOMATIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION		
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	SHEAR STRENGTH Cu, kPa				WATER CONTENT PERCENT					
								20	40	60	80	nat V. +	rem V. ⊕			Q - ●	U - ○
10		--- CONTINUED FROM PREVIOUS PAGE ---															
11		SAND, some gravel, trace non-plastic fines; brown; non-cohesive, moist, loose to very dense															
12																	
13					3	SS	40										
14															Bentonite		
15	Mud Rotary 200 mm Hollow Stem Augers																
16																	
17																	
18																	
19				315.02 18.29	4	SS	50								Sand		
20															Screen		
		CONTINUED NEXT PAGE															

GTA-BHS 001 S:\CLIENTSMILLER GROUPEUXBRIDGE BOYINGTON\_PIT\_302\_DATA\GINTUXBRIDGE-1778651.GPJ GAL-MIS.GDT 1/14/19



PROJECT: 1778651

# RECORD OF BOREHOLE: MW18-2

SHEET 3 OF 3

LOCATION: N ; E

BORING DATE: November 1, 2018

DATUM:

SPT/DCPT HAMMER: MASS, 64kg; DROP, 760mm

HAMMER TYPE: AUTOMATIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION		
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	SHEAR STRENGTH				WATER CONTENT PERCENT					
								Cu, kPa		nat V. rem V.		+ Q - U				Wp	
20	Mud Rotary 200 mm Hollow Stem Augers	--- CONTINUED FROM PREVIOUS PAGE --- gravelly SAND; brown; non-cohesive, moist, very dense															
21		SAND, some gravel; grey; non-cohesive, wet, loose		311.97 21.34	5	SS	2										
22		END OF BOREHOLE		311.36 21.95													
23																	
24																	
25																	
26																	
27																	
28																	
29																	
30																	

GTA-BHS 001 S:\CLIENTS\MILLER GROUPE\UXBRIDGE BOYINGTON\_PIT\_302\_DATA\GINT\UXBRIDGE-1778651.GPJ GAL-MIS.GDT 1/14/19

DEPTH SCALE

1 : 50



LOGGED: GC

CHECKED:



PROJECT: 1778651  
 LOCATION: N 4881116.27; E 652050.66

# RECORD OF BOREHOLE: BH17-7

SHEET 1 OF 1  
 DATUM:

BORING DATE: October 16, 2017

SPT/DCPT HAMMER: MASS, 64kg; DROP, 760mm

HAMMER TYPE: AUTOMATIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕	HYDRAULIC CONDUCTIVITY, k, cm/s	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION		
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m			HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] □	WATER CONTENT PERCENT
										ND = Not Detected	Wp — W — Wi
0		GROUND SURFACE		353.97							
		TOPSOIL		353.97							
		FILL - (ML) sandy SILT, trace gravel, trace rootlets; brown; no staining/no odour		353.97	1A	ND					
					SS	NA					
					1B	ND					
		(SM) SILTY SAND, trace gravel; brown (NATIVE)		352.45	2A	ND					
				352.45	SS	NA					
		- Moist to wet seems at a depth of about 2.3 m			2B	ND					
		(SP) SAND, some gravel, trace silt; brown; no staining/no odour (NATIVE)		350.92	3A	ND					
				350.92	SS	NA					
					3B	ND					
		END OF BOREHOLE		349.40							
				349.40							

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PROJECT: 1778651  
 LOCATION: N 4880832.10; E 652154.06

# RECORD OF BOREHOLE: BH17-8

SHEET 1 OF 1  
 DATUM:

BORING DATE: October 16, 2017

SPT/DCPT HAMMER: MASS, 64kg; DROP, 760mm

HAMMER TYPE: AUTOMATIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕	HYDRAULIC CONDUCTIVITY, k, cm/s	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION		
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m			ND = Not Detected	10 <sup>-6</sup> 10 <sup>-5</sup> 10 <sup>-4</sup> 10 <sup>-3</sup>
										HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] □	WATER CONTENT PERCENT
		GROUND SURFACE		355.57							
0	Mud Rotary 200 mm Hollow Stem Augers	TOPSOIL		355.57							
		FILL - (SM) SILTY SAND, trace gravel, trace rootlets; brown; no staining/no odour		355.57	1A	⊕	ND				
					SS	NA					
1					1B	⊕	ND				
		(SM) SILTY SAND, trace gravel; brown; no staining/no odour (NATIVE)		354.05	2A	⊕	ND				
				354.05							
					SS	NA					
2					2B	⊕	ND				
		(SP-SM) SAND to SILTY SAND, trace gravel; brown; no staining/no odour (NATIVE)		352.52	3A	⊕	ND				
			352.52								
				SS	NA						
3				3B	⊕	ND					
4											
5		END OF BOREHOLE		351.00							
				351.00							
6											
7											
8											
9											
10											

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PROJECT: 1778651  
 LOCATION: N 4880835.95; E 652160.58

# RECORD OF BOREHOLE: BH17-9

SHEET 1 OF 1  
 DATUM:

BORING DATE: October 16, 2017

SPT/DCPT HAMMER: MASS, 64kg; DROP, 760mm

HAMMER TYPE: AUTOMATIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕	HYDRAULIC CONDUCTIVITY, k, cm/s	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION		
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m			ND = Not Detected	10 <sup>-6</sup> 10 <sup>-5</sup> 10 <sup>-4</sup> 10 <sup>-3</sup>
										HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] □	WATER CONTENT PERCENT
		GROUND SURFACE		355.34							
0	Mud Rotary 200 mm Hollow Stem Augers	TOPSOIL		0.89							
		FILL - (SM) SILTY SAND, trace rootlets; brown; no staining/no odour		1A	⊕	ND					
1				SS	NA						
					1B	⊕	ND				
2			(SP) SAND, some silt, trace gravel; brown; no staining/no odour (NATIVE)		353.82						
					1.52						
					2A	⊕	ND				
					SS	NA					
3					2B	⊕					
					352.29						
				3.05							
		(SP) SAND, some silt, trace gravel; brown; no staining/no odour (NATIVE)		3A	⊕						
4				SS	NA						
				3B	⊕	ND					
5		END OF BOREHOLE		350.77							
				4.57							

GTA-BHS 001\_S:\CLIENTS\MILLER GROUPE\XBRIDGE BOYINGTON\_PIT\_302\_DATA\INTOX\BRIDGE-1778651.GPJ\_GAL-MIS.GDT\_2/13/18



PROJECT: 1778651  
 LOCATION: N 4880957.81; E 652116.55

# RECORD OF BOREHOLE: BH17-10

SHEET 1 OF 1  
 DATUM:

BORING DATE: October 16, 2017

SPT/DCPT HAMMER: MASS, 64kg; DROP, 760mm

HAMMER TYPE: AUTOMATIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕	HYDRAULIC CONDUCTIVITY, k, cm/s	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION		
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m			ND = Not Detected	10 <sup>-6</sup> 10 <sup>-5</sup> 10 <sup>-4</sup> 10 <sup>-3</sup>
										HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] □	WATER CONTENT PERCENT
		GROUND SURFACE		356.56							
0		TOPSOIL		356.56							
		FILL - (ML) sandy SILT, trace gravel, trace rootlets; brown; no staining/no odour		355.04							
1				1.52							
		FILL - (SP) SAND, some gravel, trace silt; brown; no staining/no odour		353.51							
2				3.05							
		(SP) SAND, trace to some gravel, trace silt; brown, no staining/no odour (NATIVE)									
3											
4	Mud Rotary 200 mm Hollow Stem Augers										
5											
6											
7											
8		END OF BOREHOLE		348.94							
				7.62							
9											
10											

GTA-BHS 001 S:\CLIENTS\MILLER GROUPE\XBRIDGE BOYINGTON\_PIT\_3\02\_DATA\INTOX\BRIDGE-1778651.GPJ GAL-MIS.GDT 2/13/18

DEPTH SCALE  
 1 : 50



LOGGED:  
 CHECKED:

PROJECT: 1778651  
 LOCATION: N 4880995.47; E 652455.58

# RECORD OF BOREHOLE: BH17-11

SHEET 1 OF 1  
 DATUM:

BORING DATE: October 16, 2017

SPT/DCPT HAMMER: MASS, 64kg; DROP, 760mm

HAMMER TYPE: AUTOMATIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕	HYDRAULIC CONDUCTIVITY, k, cm/s	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION		
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m			ND = Not Detected	10 <sup>-6</sup> 10 <sup>-5</sup> 10 <sup>-4</sup> 10 <sup>-3</sup>
										HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] □	WATER CONTENT PERCENT
		GROUND SURFACE		350.36							
0	Mud Rotary 200 mm Hollow Stem Augers	FILL - (SP) SAND, some silt, trace to some gravel; brown; no staining/no odour	[Cross-hatched pattern]	0.00							
				1A	⊕	ND					
		SS	NA								
1		1B	⊕								
		2A	⊕	ND							
		SS	NA								
2		2B	⊕	ND							
		3A	⊕	ND							
		SS	NA								
3		3B	⊕	ND							
4		(SP) SAND, some silt, trace gravel; brown; no staining/no odour (NATIVE)	[Dotted pattern]	347.31 3.05							
5		END OF BOREHOLE		345.79 4.57							

GTA-BHS 001 S:\CLIENTSMILLER GROUPE\XBRIDGE BOYINGTON\_PIT\_302\_DATA\INTOX\BRIDGE-1778651.GPJ GAL-MIS.GDT 2/13/18



PROJECT: 1778651  
 LOCATION: N 4880999.84; E 652464.78

# RECORD OF BOREHOLE: BH17-12

SHEET 1 OF 1  
 DATUM:

BORING DATE: October 16, 2017

SPT/DCPT HAMMER: MASS, 64kg; DROP, 760mm

HAMMER TYPE: AUTOMATIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕	HYDRAULIC CONDUCTIVITY, k, cm/s	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	ND = Not Detected			10 <sup>-6</sup> 10 <sup>-5</sup> 10 <sup>-4</sup> 10 <sup>-3</sup>
								HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] □			WATER CONTENT PERCENT
		GROUND SURFACE		350.36			100 200 300 400	10 20 30 40			
0	Mud Rotary 200 mm Hollow Stem Augers	FILL - (SP) SAND, some silt, trace to some gravel; brown; no staining/no odour		0.00	1A	⊕	ND				
				SS	NA						
1			1B	⊕	ND						
			348.84	1.52							
2		FILL - (SP) SAND, some silt, trace to some gravel; brown; no staining/no odour			2	SS	NA	⊕	ND		
3				347.31	3.05						
		(SM) SILTY SAND, trace gravel; brown; no staining/no odour (NATIVE)			3A	⊕	ND				
4					SS	NA					
					3B	⊕	ND				
5		END OF BOREHOLE		345.79	4.57						

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PROJECT: 1778651  
 LOCATION: N 4881035.94; E 652454.83

# RECORD OF BOREHOLE: BH17-13

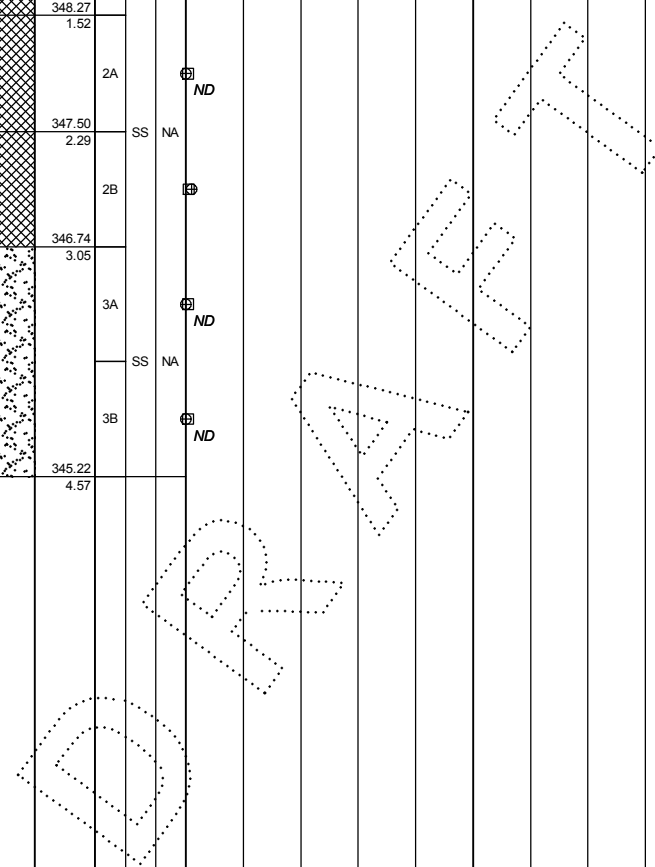
SHEET 1 OF 1  
 DATUM:

BORING DATE: October 16, 2017

SPT/DCPT HAMMER: MASS, 64kg; DROP, 760mm

HAMMER TYPE: AUTOMATIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE			SAMPLES			HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] □				WATER CONTENT PERCENT					
								ND = Not Detected				Wp — W — Wi					
						100 200 300 400				10 <sup>-6</sup> 10 <sup>-5</sup> 10 <sup>-4</sup> 10 <sup>-3</sup>				10 20 30 40			
0		GROUND SURFACE		349.79													
	Mud Rotary 200 mm Hollow Stem Augers	FILL - trace silt, some gravel; brown; no staining/no odour		0.00													
				1A	⊕	ND											
1						SS	NA										
		1B			⊕	ND											
			FILL - (GR) GRAVEL, some sand, trace silt; no staining/no odour, wet		348.27												
			1.52														
2						2A	⊕	ND									
		2B			⊕	ND											
			FILL - (SP) SAND, some silt, trace gravel; brown; no staining/ no odour		347.50												
			2.29			SS	NA										
3					3A	⊕	ND										
	3B			⊕	ND												
4		FILL - (SP) SAND, some silt, trace gravel; brown; no staining/ no odour (NATIVE)		346.74													
		3.05			SS	NA											
5		END OF BOREHOLE		345.22													
		4.57															



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**Record of Test Pits**  
**Phase II Environmental Site Assessment, Boyington Pit #3, 4499-4589 Concession Road 7**  
**Uxbridge, Ontario**

TEST PIT ID	DEPTHS (m)	SAMPLE DEPTH (m)	SAMPLE ID	SOIL DESCRIPTION	HEX	IBL
TP17-2	0.0 - 1.6	0.2 - 0.5	Sa1	Silty sand, some gravel, trace silt, brown, no/ns (Fill)	0	0
		1.0 - 1.3	Sa2		0	2
	1.6 - 2.8	1.8 - 2.1	Sa3	Silty sand, trace pockets of top soil, tan to dark brown, no/ns (Fill)	0	0
	2.8 - 3.2	3.0 - 3.2	Sa4	Silty sand, trace gravel, brown, no/ns (Native)	0	0
TP17-5	0.0 - 0.1	--		Gravel (fill)	--	--
	0.1 - 0.3	0.0 - 0.2	Sa1	Silty sand, light brown (Fill)	0	0
		0.7 - 1.0	Sa2		0	0
	0.3 - 3.2	2.0 - 2.2	Sa3	Sand, some silt, trace gravel (Native)	0	0
3.0 - 3.2		Sa4	0		0	
TP17-7	0.0 - 0.1	0.0 - 0.1	Sa1	Sandy topsoil, some crushed asphalt (Fill)	0	0
	0.1 - 0.7	0.3 - 0.5	Sa2	Gravelly Sand, trace silt, grey, no/ns (Fill)	5	2
	0.7 - 1.8	1.3 - 1.6	Sa3	Silty Sand, trace gravel, brown, no/ns (Fill)	0	0
	1.8 - 2.3	2.0 - 2.3	Sa4	Silty Sand, trace gravel, light brown, no/ns (Native)	0	0
TP17-4	0.0 - 1.4	0.2 - 0.5	Sa1	Sand, some silt, trace to some gravel, brown (Fill)	0	0
		1.0 - 1.2	Sa2		0	0
	1.4 - 2.0	1.8 - 2.0	Sa3	Silty Sand, trace gravel, light brown (possible Fill)	0	0

Project Number: 1778651  
 Date: October 16, 2017  
 Sampled by: AS  
 Entered by: GC  
 Revised by: BM

**APPENDIX B**

# Laboratory Certificates of Analysis

Your Project #: 1778651  
Your C.O.C. #: 633755-01-01

**Attention:Chris Pons**

Golder Associates Ltd  
215 Shields Court  
Unit # 1  
Markham, ON  
Canada L3R 8V2

**Report Date: 2017/10/30**  
Report #: R4812361  
Version: 2 - Revision

**CERTIFICATE OF ANALYSIS – REVISED REPORT**

**MAXXAM JOB #: B7N1828**

**Received: 2017/10/18, 14:05**

Sample Matrix: Soil  
# Samples Received: 18

Analyses	Quantity	Date		Laboratory Method	Reference
		Extracted	Analyzed		
Methylnaphthalene Sum	3	N/A	2017/10/24	CAM SOP-00301	EPA 8270D m
1,3-Dichloropropene Sum	2	N/A	2017/10/23		EPA 8260C m
1,3-Dichloropropene Sum	1	N/A	2017/10/24		EPA 8260C m
Petroleum Hydro. CCME F1 & BTEX in Soil (1)	10	N/A	2017/10/24	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydro. CCME F1 & BTEX in Soil (1)	1	N/A	2017/10/28	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Soil (2)	1	2017/10/23	2017/10/23	CAM SOP-00316	CCME CWS m
Petroleum Hydrocarbons F2-F4 in Soil (2)	11	2017/10/23	2017/10/24	CAM SOP-00316	CCME CWS m
Petroleum Hydrocarbons F2-F4 in Soil (2)	1	2017/10/27	2017/10/27	CAM SOP-00316	CCME CWS m
Strong Acid Leachable Metals by ICPMS	3	2017/10/23	2017/10/24	CAM SOP-00447	EPA 6020B m
Moisture	5	N/A	2017/10/20	CAM SOP-00445	Carter 2nd ed 51.2 m
Moisture	12	N/A	2017/10/21	CAM SOP-00445	Carter 2nd ed 51.2 m
Moisture	1	N/A	2017/10/26	CAM SOP-00445	Carter 2nd ed 51.2 m
PAH Compounds in Soil by GC/MS (SIM)	1	2017/10/23	2017/10/23	CAM SOP-00318	EPA 8270D m
PAH Compounds in Soil by GC/MS (SIM)	2	2017/10/23	2017/10/24	CAM SOP-00318	EPA 8270D m
Polychlorinated Biphenyl in Soil	2	2017/10/20	2017/10/21	CAM SOP-00309	EPA 8082A m
Volatile Organic Compounds and F1 PHCs	2	N/A	2017/10/21	CAM SOP-00230	EPA 8260C m
Volatile Organic Compounds in Soil	1	N/A	2017/10/21	CAM SOP-00228	EPA 8260C m

**Remarks:**

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Your Project #: 1778651  
Your C.O.C. #: 633755-01-01

**Attention:Chris Pons**

Golder Associates Ltd  
215 Shields Court  
Unit # 1  
Markham, ON  
Canada L3R 8V2

**Report Date: 2017/10/30**  
Report #: R4812361  
Version: 2 - Revision

**CERTIFICATE OF ANALYSIS – REVISED REPORT**

**MAXXAM JOB #: B7N1828**

**Received: 2017/10/18, 14:05**

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

- (1) No lab extraction date is given for F1BTEX & VOC samples that are field preserved with methanol. Extraction date is the date sampled unless otherwise stated.
- (2) All CCME PHC results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Maxxam conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following "Alberta Environment's Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Validation of Performance-Based Alternative Methods September 2003". Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

**Encryption Key**

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Ema Gitej, Senior Project Manager

Email: EGitej@maxxam.ca

Phone# (905)817-5829

=====

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



**O.REG 153 ICPMS METALS (SOIL)**

Maxxam ID			FJD596	FJD597	FJD610		
Sampling Date			2017/10/17 12:30	2017/10/17 07:00	2017/10/16 15:00		
COC Number			633755-01-01	633755-01-01	633755-01-01		
	UNITS	Criteria	TP17-7-SA2	DUP-3	BH17-13-SA1B	RDL	QC Batch
<b>Metals</b>							
Acid Extractable Antimony (Sb)	ug/g	40	<0.20	<0.20	<0.20	0.20	5225355
Acid Extractable Arsenic (As)	ug/g	18	<1.0	<1.0	<1.0	1.0	5225355
Acid Extractable Barium (Ba)	ug/g	670	410	460	22	0.50	5225355
Acid Extractable Beryllium (Be)	ug/g	8	<0.20	<0.20	<0.20	0.20	5225355
Acid Extractable Boron (B)	ug/g	120	6.0	6.2	<5.0	5.0	5225355
Acid Extractable Cadmium (Cd)	ug/g	1.9	<0.10	<0.10	<0.10	0.10	5225355
Acid Extractable Chromium (Cr)	ug/g	160	4.0	5.2	6.1	1.0	5225355
Acid Extractable Cobalt (Co)	ug/g	80	1.9	2.0	2.8	0.10	5225355
Acid Extractable Copper (Cu)	ug/g	230	2.4	2.5	9.3	0.50	5225355
Acid Extractable Lead (Pb)	ug/g	120	6.4	6.8	3.0	1.0	5225355
Acid Extractable Molybdenum (Mo)	ug/g	40	<0.50	<0.50	<0.50	0.50	5225355
Acid Extractable Nickel (Ni)	ug/g	270	4.1	4.3	5.0	0.50	5225355
Acid Extractable Selenium (Se)	ug/g	5.5	<0.50	<0.50	<0.50	0.50	5225355
Acid Extractable Silver (Ag)	ug/g	40	<0.20	<0.20	<0.20	0.20	5225355
Acid Extractable Thallium (Tl)	ug/g	3.3	0.062	0.057	0.075	0.050	5225355
Acid Extractable Uranium (U)	ug/g	33	0.24	0.23	0.40	0.050	5225355
Acid Extractable Vanadium (V)	ug/g	86	<5.0	<5.0	15	5.0	5225355
Acid Extractable Zinc (Zn)	ug/g	340	6.2	8.3	23	5.0	5225355
Acid Extractable Mercury (Hg)	ug/g	3.9	<0.050	<0.050	<0.050	0.050	5225355
No Fill	No Exceedance						
Grey	Exceeds 1 criteria policy/level						
Black	Exceeds both criteria/levels						
RDL = Reportable Detection Limit							
QC Batch = Quality Control Batch							
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)							
Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition							
Soil - Industrial/Commercial/Community Property Use - Coarse Texture							

**O.REG 153 PAHS (SOIL)**

Maxxam ID			FJD596		FJD597	FJD610		
Sampling Date			2017/10/17 12:30		2017/10/17 07:00	2017/10/16 15:00		
COC Number			633755-01-01		633755-01-01	633755-01-01		
	UNITS	Criteria	TP17-7-SA2	QC Batch	DUP-3	BH17-13-SA1B	RDL	QC Batch
<b>Inorganics</b>								
Moisture	%	-		5223803	3.3	7.1	1.0	5223803
<b>Calculated Parameters</b>								
Methylnaphthalene, 2-(1-)	ug/g	30	<0.0071	5220112	<0.0071	<0.0071	0.0071	5220112
<b>Polyaromatic Hydrocarbons</b>								
Acenaphthene	ug/g	21	<0.0050	5225526	<0.0050	<0.0050	0.0050	5227229
Acenaphthylene	ug/g	0.15	<0.0050	5225526	<0.0050	0.0084	0.0050	5227229
Anthracene	ug/g	0.67	<0.0050	5225526	<0.0050	0.0052	0.0050	5227229
Benzo(a)anthracene	ug/g	0.96	<0.0050	5225526	<0.0050	0.012	0.0050	5227229
Benzo(a)pyrene	ug/g	0.3	<0.0050	5225526	<0.0050	0.019	0.0050	5227229
Benzo(b/j)fluoranthene	ug/g	0.96	<0.0050	5225526	<0.0050	0.021	0.0050	5227229
Benzo(g,h,i)perylene	ug/g	9.6	<0.0050	5225526	<0.0050	0.026	0.0050	5227229
Benzo(k)fluoranthene	ug/g	0.96	<0.0050	5225526	<0.0050	0.0073	0.0050	5227229
Chrysene	ug/g	9.6	<0.0050	5225526	<0.0050	0.012	0.0050	5227229
Dibenz(a,h)anthracene	ug/g	0.1	<0.0050	5225526	<0.0050	<0.0050	0.0050	5227229
Fluoranthene	ug/g	9.6	<0.0050	5225526	<0.0050	0.014	0.0050	5227229
Fluorene	ug/g	62	<0.0050	5225526	<0.0050	<0.0050	0.0050	5227229
Indeno(1,2,3-cd)pyrene	ug/g	0.76	<0.0050	5225526	<0.0050	0.018	0.0050	5227229
1-Methylnaphthalene	ug/g	30	<0.0050	5225526	<0.0050	<0.0050	0.0050	5227229
2-Methylnaphthalene	ug/g	30	<0.0050	5225526	<0.0050	<0.0050	0.0050	5227229
Naphthalene	ug/g	9.6	<0.0050	5225526	<0.0050	<0.0050	0.0050	5227229
Phenanthrene	ug/g	12	0.0073	5225526	0.0052	0.0061	0.0050	5227229
Pyrene	ug/g	96	<0.0050	5225526	<0.0050	0.018	0.0050	5227229
<b>Surrogate Recovery (%)</b>								
D10-Anthracene	%	-	103	5225526	100	99		5227229
D14-Terphenyl (FS)	%	-	86	5225526	99	98		5227229
D8-Acenaphthylene	%	-	120	5225526	99	98		5227229
No Fill	No Exceedance							
Grey	Exceeds 1 criteria policy/level							
Black	Exceeds both criteria/levels							
RDL = Reportable Detection Limit								
QC Batch = Quality Control Batch								
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)								
Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition								
Soil - Industrial/Commercial/Community Property Use - Coarse Texture								

**O.REG 153 PCBS (SOIL)**

Maxxam ID			FJD594	FJD595	FJD595		
Sampling Date			2017/10/17 11:00	2017/10/17 07:00	2017/10/17 07:00		
COC Number			633755-01-01	633755-01-01	633755-01-01		
	UNITS	Criteria	TP17-5-SA1	DUP-2	DUP-2 Lab-Dup	RDL	QC Batch
<b>Inorganics</b>							
Moisture	%	-	20	5.4	6.2	1.0	5223922
<b>PCBs</b>							
Aroclor 1242	ug/g	-	<0.010	<0.010		0.010	5222285
Aroclor 1248	ug/g	-	<0.010	<0.010		0.010	5222285
Aroclor 1254	ug/g	-	<0.010	<0.010		0.010	5222285
Aroclor 1260	ug/g	-	<0.010	<0.010		0.010	5222285
Total PCB	ug/g	1.1	<0.010	<0.010		0.010	5222285
<b>Surrogate Recovery (%)</b>							
Decachlorobiphenyl	%	-	101	102			5222285
No Fill	No Exceedance						
Grey	Exceeds 1 criteria policy/level						
Black	Exceeds both criteria/levels						
RDL = Reportable Detection Limit							
QC Batch = Quality Control Batch							
Lab-Dup = Laboratory Initiated Duplicate							
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)							
Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition							
Soil - Industrial/Commercial/Community Property Use - Coarse Texture							

**O.REG 153 PETROLEUM HYDROCARBONS (SOIL)**

Maxxam ID			FJD596		FJD599	FJD599	FJD600	FJD601		
Sampling Date			2017/10/17 12:30		2017/10/17 13:30	2017/10/17 13:30	2017/10/16 10:00	2017/10/16 11:00		
COC Number			633755-01-01		633755-01-01	633755-01-01	633755-01-01	633755-01-01		
	UNITS	Criteria	TP17-7-SA2	QC Batch	TP17-4-SA3	TP17-4-SA3 Lab-Dup	BH17-6-SA3A	BH17-7-SA3A	RDL	QC Batch

**Inorganics**

Moisture	%	-	3.5	5223803	6.7		18	12	1.0	5224501
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**BTEX & F1 Hydrocarbons**

Benzene	ug/g	0.32	<0.020	5226492	<0.020		<0.020	<0.020	0.020	5226492
Toluene	ug/g	6.4	<0.020	5226492	<0.020		<0.020	<0.020	0.020	5226492
Ethylbenzene	ug/g	1.1	<0.020	5226492	<0.020		<0.020	<0.020	0.020	5226492
o-Xylene	ug/g	-	<0.020	5226492	<0.020		<0.020	<0.020	0.020	5226492
p+m-Xylene	ug/g	-	<0.040	5226492	<0.040		<0.040	<0.040	0.040	5226492
Total Xylenes	ug/g	26	<0.040	5226492	<0.040		<0.040	<0.040	0.040	5226492
F1 (C6-C10)	ug/g	55	<10	5226492	<10		<10	<10	10	5226492
F1 (C6-C10) - BTEX	ug/g	55	<10	5226492	<10		<10	<10	10	5226492

**F2-F4 Hydrocarbons**

F2 (C10-C16 Hydrocarbons)	ug/g	230	<10	5225515	<10	<10	<10	<10	10	5227214
F3 (C16-C34 Hydrocarbons)	ug/g	1700	<50	5225515	<50	<50	<50	<50	50	5227214
F4 (C34-C50 Hydrocarbons)	ug/g	3300	<50	5225515	<50	<50	<50	<50	50	5227214
Reached Baseline at C50	ug/g	-	Yes	5225515	Yes	Yes	Yes	Yes		5227214

**Surrogate Recovery (%)**

1,4-Difluorobenzene	%	-	101	5226492	101		101	99		5226492
4-Bromofluorobenzene	%	-	103	5226492	100		98	100		5226492
D10-Ethylbenzene	%	-	103	5226492	104		112	105		5226492
D4-1,2-Dichloroethane	%	-	100	5226492	101		98	99		5226492
o-Terphenyl	%	-	85	5225515	85	87	89	87		5227214

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)

Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition

Soil - Industrial/Commercial/Community Property Use - Coarse Texture

**O.REG 153 PETROLEUM HYDROCARBONS (SOIL)**

Maxxam ID			FJD602	FJD603	FJD603	FJD604		FJD605		
Sampling Date			2017/10/16 12:00	2017/10/16 12:30	2017/10/16 12:30	2017/10/16 08:30		2017/10/16 08:40		
COC Number			633755-01-01	633755-01-01	633755-01-01	633755-01-01		633755-01-01		
	UNITS	Criteria	BH17-8-SA3A	BH17-9-SA2B	BH17-9-SA2B Lab-Dup	BH17-10-SA3B	QC Batch	BH17-10-SA4B	RDL	QC Batch

**Inorganics**

Moisture	%	-	4.4	19	19	16	5224501	2.5	1.0	5233183
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**BTEX & F1 Hydrocarbons**

Benzene	ug/g	0.32	<0.020	<0.020		<0.020	5226492	<0.020	0.020	5236941
Toluene	ug/g	6.4	<0.020	<0.020		<0.020	5226492	<0.020	0.020	5236941
Ethylbenzene	ug/g	1.1	<0.020	<0.020		<0.020	5226492	<0.020	0.020	5236941
o-Xylene	ug/g	-	<0.020	<0.020		<0.020	5226492	<0.020	0.020	5236941
p+m-Xylene	ug/g	-	<0.040	<0.040		<0.040	5226492	<0.040	0.040	5236941
Total Xylenes	ug/g	26	<0.040	<0.040		<0.040	5226492	<0.040	0.040	5236941
F1 (C6-C10)	ug/g	55	<10	<10		<10	5226492	<10	10	5236941
F1 (C6-C10) - BTEX	ug/g	55	<10	<10		<10	5226492	<10	10	5236941

**F2-F4 Hydrocarbons**

F2 (C10-C16 Hydrocarbons)	ug/g	230	<10	<10		<b>980</b>	5227214	<10	10	5235473
F3 (C16-C34 Hydrocarbons)	ug/g	1700	<50	<50		740	5227214	<50	50	5235473
F4 (C34-C50 Hydrocarbons)	ug/g	3300	<50	<50		<50	5227214	<50	50	5235473
Reached Baseline at C50	ug/g	-	Yes	Yes		Yes	5227214	Yes		5235473

**Surrogate Recovery (%)**

1,4-Difluorobenzene	%	-	102	101		98	5226492	100		5236941
4-Bromofluorobenzene	%	-	100	101		105	5226492	99		5236941
D10-Ethylbenzene	%	-	107	112		109	5226492	100		5236941
D4-1,2-Dichloroethane	%	-	101	102		98	5226492	102		5236941
o-Terphenyl	%	-	85	86		93	5227214	86		5235473

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)

Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition

Soil - Industrial/Commercial/Community Property Use - Coarse Texture

**O.REG 153 PETROLEUM HYDROCARBONS (SOIL)**

Maxxam ID			FJD607	FJD608	FJD611		
Sampling Date			2017/10/16 07:00	2017/10/16 14:00	2017/10/16 15:05		
COC Number			633755-01-01	633755-01-01	633755-01-01		
	UNITS	Criteria	DUP-1	BH17-11-SA1B	BH17-13-SA2B	RDL	QC Batch
<b>Inorganics</b>							
Moisture	%	-	3.4	12	18	1.0	5224501
<b>BTEX &amp; F1 Hydrocarbons</b>							
Benzene	ug/g	0.32	<0.020	<0.020	<0.020	0.020	5226492
Toluene	ug/g	6.4	<0.020	<0.020	<0.020	0.020	5226492
Ethylbenzene	ug/g	1.1	<0.020	<0.020	<0.020	0.020	5226492
o-Xylene	ug/g	-	<0.020	<0.020	<0.020	0.020	5226492
p+m-Xylene	ug/g	-	<0.040	<0.040	<0.040	0.040	5226492
Total Xylenes	ug/g	26	<0.040	<0.040	<0.040	0.040	5226492
F1 (C6-C10)	ug/g	55	<10	<10	<10	10	5226492
F1 (C6-C10) - BTEX	ug/g	55	<10	<10	<10	10	5226492
<b>F2-F4 Hydrocarbons</b>							
F2 (C10-C16 Hydrocarbons)	ug/g	230	<b>770</b>	<10	<10	10	5227214
F3 (C16-C34 Hydrocarbons)	ug/g	1700	550	<50	<50	50	5227214
F4 (C34-C50 Hydrocarbons)	ug/g	3300	<50	<50	<50	50	5227214
Reached Baseline at C50	ug/g	-	Yes	Yes	Yes		5227214
<b>Surrogate Recovery (%)</b>							
1,4-Difluorobenzene	%	-	95	98	99		5226492
4-Bromofluorobenzene	%	-	110	102	99		5226492
D10-Ethylbenzene	%	-	105	107	103		5226492
D4-1,2-Dichloroethane	%	-	94	98	98		5226492
o-Terphenyl	%	-	93	87	86		5227214
No Fill	No Exceedance						
Grey	Exceeds 1 criteria policy/level						
Black	Exceeds both criteria/levels						
RDL = Reportable Detection Limit							
QC Batch = Quality Control Batch							
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)							
Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition							
Soil - Industrial/Commercial/Community Property Use - Coarse Texture							



**O.REG 153 VOCS BY HS & F1-F4 (SOIL)**

Maxxam ID			FJD593	FJD609		
Sampling Date			2017/10/17 09:30	2017/10/16 14:30		
COC Number			633755-01-01	633755-01-01		
	UNITS	Criteria	TP17-2-SA2	BH17-12-SA3A	RDL	QC Batch
<b>Inorganics</b>						
Moisture	%	-	15	8.6	1.0	5224501
<b>Calculated Parameters</b>						
1,3-Dichloropropene (cis+trans)	ug/g	0.059	<0.050	<0.050	0.050	5220113
<b>Volatile Organics</b>						
Acetone (2-Propanone)	ug/g	16	<0.50	<0.50	0.50	5222112
Benzene	ug/g	0.32	<0.020	<0.020	0.020	5222112
Bromodichloromethane	ug/g	1.5	<0.050	<0.050	0.050	5222112
Bromoform	ug/g	0.61	<0.050	<0.050	0.050	5222112
Bromomethane	ug/g	0.05	<0.050	<0.050	0.050	5222112
Carbon Tetrachloride	ug/g	0.21	<0.050	<0.050	0.050	5222112
Chlorobenzene	ug/g	2.4	<0.050	<0.050	0.050	5222112
Chloroform	ug/g	0.47	<0.050	<0.050	0.050	5222112
Dibromochloromethane	ug/g	2.3	<0.050	<0.050	0.050	5222112
1,2-Dichlorobenzene	ug/g	1.2	<0.050	<0.050	0.050	5222112
1,3-Dichlorobenzene	ug/g	9.6	<0.050	<0.050	0.050	5222112
1,4-Dichlorobenzene	ug/g	0.2	<0.050	<0.050	0.050	5222112
Dichlorodifluoromethane (FREON 12)	ug/g	16	<0.050	<0.050	0.050	5222112
1,1-Dichloroethane	ug/g	0.47	<0.050	<0.050	0.050	5222112
1,2-Dichloroethane	ug/g	0.05	<0.050	<0.050	0.050	5222112
1,1-Dichloroethylene	ug/g	0.064	<0.050	<0.050	0.050	5222112
cis-1,2-Dichloroethylene	ug/g	1.9	<0.050	<0.050	0.050	5222112
trans-1,2-Dichloroethylene	ug/g	1.3	<0.050	<0.050	0.050	5222112
1,2-Dichloropropane	ug/g	0.16	<0.050	<0.050	0.050	5222112
cis-1,3-Dichloropropene	ug/g	0.059	<0.030	<0.030	0.030	5222112
trans-1,3-Dichloropropene	ug/g	0.059	<0.040	<0.040	0.040	5222112
Ethylbenzene	ug/g	1.1	<0.020	<0.020	0.020	5222112
Ethylene Dibromide	ug/g	0.05	<0.050	<0.050	0.050	5222112
Hexane	ug/g	46	<0.050	<0.050	0.050	5222112
No Fill	No Exceedance					
Grey	Exceeds 1 criteria policy/level					
Black	Exceeds both criteria/levels					
RDL = Reportable Detection Limit						
QC Batch = Quality Control Batch						
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)						
Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition						
Soil - Industrial/Commercial/Community Property Use - Coarse Texture						

**O.REG 153 VOCS BY HS & F1-F4 (SOIL)**

Maxxam ID			FJD593	FJD609		
Sampling Date			2017/10/17 09:30	2017/10/16 14:30		
COC Number			633755-01-01	633755-01-01		
	UNITS	Criteria	TP17-2-SA2	BH17-12-SA3A	RDL	QC Batch
Methylene Chloride(Dichloromethane)	ug/g	1.6	<0.050	<0.050	0.050	5222112
Methyl Ethyl Ketone (2-Butanone)	ug/g	70	<0.50	<0.50	0.50	5222112
Methyl Isobutyl Ketone	ug/g	31	<0.50	<0.50	0.50	5222112
Methyl t-butyl ether (MTBE)	ug/g	1.6	<0.050	<0.050	0.050	5222112
Styrene	ug/g	34	<0.050	<0.050	0.050	5222112
1,1,1,2-Tetrachloroethane	ug/g	0.087	<0.050	<0.050	0.050	5222112
1,1,2,2-Tetrachloroethane	ug/g	0.05	<0.050	<0.050	0.050	5222112
Tetrachloroethylene	ug/g	1.9	<0.050	<0.050	0.050	5222112
Toluene	ug/g	6.4	<0.020	<0.020	0.020	5222112
1,1,1-Trichloroethane	ug/g	6.1	<0.050	<0.050	0.050	5222112
1,1,2-Trichloroethane	ug/g	0.05	<0.050	<0.050	0.050	5222112
Trichloroethylene	ug/g	0.55	<0.050	<0.050	0.050	5222112
Trichlorofluoromethane (FREON 11)	ug/g	4	<0.050	<0.050	0.050	5222112
Vinyl Chloride	ug/g	0.032	<0.020	<0.020	0.020	5222112
p+m-Xylene	ug/g	-	<0.020	<0.020	0.020	5222112
o-Xylene	ug/g	-	<0.020	<0.020	0.020	5222112
Total Xylenes	ug/g	26	<0.020	<0.020	0.020	5222112
F1 (C6-C10)	ug/g	55	<10	<10	10	5222112
F1 (C6-C10) - BTEX	ug/g	55	<10	<10	10	5222112
<b>F2-F4 Hydrocarbons</b>						
F2 (C10-C16 Hydrocarbons)	ug/g	230	<10	<10	10	5227214
F3 (C16-C34 Hydrocarbons)	ug/g	1700	<50	<50	50	5227214
F4 (C34-C50 Hydrocarbons)	ug/g	3300	<50	<50	50	5227214
Reached Baseline at C50	ug/g	-	Yes	Yes		5227214
<b>Surrogate Recovery (%)</b>						
o-Terphenyl	%	-	87	84		5227214
4-Bromofluorobenzene	%	-	96	96		5222112
D10-o-Xylene	%	-	95	88		5222112
D4-1,2-Dichloroethane	%	-	102	101		5222112
No Fill	No Exceedance					
Grey	Exceeds 1 criteria policy/level					
Black	Exceeds both criteria/levels					
RDL = Reportable Detection Limit						
QC Batch = Quality Control Batch						
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)						
Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition						
Soil - Industrial/Commercial/Community Property Use - Coarse Texture						

**O.REG 153 VOCS BY HS & F1-F4 (SOIL)**

Maxxam ID			FJD593	FJD609		
Sampling Date			2017/10/17 09:30	2017/10/16 14:30		
COC Number			633755-01-01	633755-01-01		
	UNITS	Criteria	TP17-2-SA2	BH17-12-SA3A	RDL	QC Batch
D8-Toluene	%	-	100	100		5222112
No Fill	No Exceedance					
Grey	Exceeds 1 criteria policy/level					
Black	Exceeds both criteria/levels					
RDL = Reportable Detection Limit						
QC Batch = Quality Control Batch						
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)						
Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition						
Soil - Industrial/Commercial/Community Property Use - Coarse Texture						

**O.REG 153 VOCS BY HS (SOIL)**

Maxxam ID			FJD598		
Sampling Date			2017/10/17 07:00		
COC Number			633755-01-01		
	UNITS	Criteria	DUP-4	RDL	QC Batch
<b>Inorganics</b>					
Moisture	%	-	5.0	1.0	5224335
<b>Calculated Parameters</b>					
1,3-Dichloropropene (cis+trans)	ug/g	0.059	<0.050	0.050	5220113
<b>Volatile Organics</b>					
Acetone (2-Propanone)	ug/g	16	<0.50	0.50	5222880
Benzene	ug/g	0.32	<0.020	0.020	5222880
Bromodichloromethane	ug/g	1.5	<0.050	0.050	5222880
Bromoform	ug/g	0.61	<0.050	0.050	5222880
Bromomethane	ug/g	0.05	<0.050	0.050	5222880
Carbon Tetrachloride	ug/g	0.21	<0.050	0.050	5222880
Chlorobenzene	ug/g	2.4	<0.050	0.050	5222880
Chloroform	ug/g	0.47	<0.050	0.050	5222880
Dibromochloromethane	ug/g	2.3	<0.050	0.050	5222880
1,2-Dichlorobenzene	ug/g	1.2	<0.050	0.050	5222880
1,3-Dichlorobenzene	ug/g	9.6	<0.050	0.050	5222880
1,4-Dichlorobenzene	ug/g	0.2	<0.050	0.050	5222880
Dichlorodifluoromethane (FREON 12)	ug/g	16	<0.050	0.050	5222880
1,1-Dichloroethane	ug/g	0.47	<0.050	0.050	5222880
1,2-Dichloroethane	ug/g	0.05	<0.050	0.050	5222880
1,1-Dichloroethylene	ug/g	0.064	<0.050	0.050	5222880
cis-1,2-Dichloroethylene	ug/g	1.9	<0.050	0.050	5222880
trans-1,2-Dichloroethylene	ug/g	1.3	<0.050	0.050	5222880
1,2-Dichloropropane	ug/g	0.16	<0.050	0.050	5222880
cis-1,3-Dichloropropene	ug/g	0.059	<0.030	0.030	5222880
trans-1,3-Dichloropropene	ug/g	0.059	<0.040	0.040	5222880
Ethylbenzene	ug/g	1.1	<0.020	0.020	5222880
Ethylene Dibromide	ug/g	0.05	<0.050	0.050	5222880
Hexane	ug/g	46	<0.050	0.050	5222880
No Fill	No Exceedance				
Grey	Exceeds 1 criteria policy/level				
Black	Exceeds both criteria/levels				
RDL = Reportable Detection Limit					
QC Batch = Quality Control Batch					
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)					
Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition Soil - Industrial/Commercial/Community Property Use - Coarse Texture					

**O.REG 153 VOCs BY HS (SOIL)**

Maxxam ID			FJD598		
Sampling Date			2017/10/17 07:00		
COC Number			633755-01-01		
	UNITS	Criteria	DUP-4	RDL	QC Batch
Methylene Chloride(Dichloromethane)	ug/g	1.6	<0.050	0.050	5222880
Methyl Ethyl Ketone (2-Butanone)	ug/g	70	<0.50	0.50	5222880
Methyl Isobutyl Ketone	ug/g	31	<0.50	0.50	5222880
Methyl t-butyl ether (MTBE)	ug/g	1.6	<0.050	0.050	5222880
Styrene	ug/g	34	<0.050	0.050	5222880
1,1,1,2-Tetrachloroethane	ug/g	0.087	<0.050	0.050	5222880
1,1,2,2-Tetrachloroethane	ug/g	0.05	<0.050	0.050	5222880
Tetrachloroethylene	ug/g	1.9	<0.050	0.050	5222880
Toluene	ug/g	6.4	<0.020	0.020	5222880
1,1,1-Trichloroethane	ug/g	6.1	<0.050	0.050	5222880
1,1,2-Trichloroethane	ug/g	0.05	<0.050	0.050	5222880
Trichloroethylene	ug/g	0.55	<0.050	0.050	5222880
Trichlorofluoromethane (FREON 11)	ug/g	4	<0.050	0.050	5222880
Vinyl Chloride	ug/g	0.032	<0.020	0.020	5222880
p+m-Xylene	ug/g	-	<0.020	0.020	5222880
o-Xylene	ug/g	-	<0.020	0.020	5222880
Total Xylenes	ug/g	26	<0.020	0.020	5222880
<b>Surrogate Recovery (%)</b>					
4-Bromofluorobenzene	%	-	99		5222880
D10-o-Xylene	%	-	93		5222880
D4-1,2-Dichloroethane	%	-	101		5222880
D8-Toluene	%	-	101		5222880
No Fill	No Exceedance				
Grey	Exceeds 1 criteria policy/level				
Black	Exceeds both criteria/levels				
RDL = Reportable Detection Limit					
QC Batch = Quality Control Batch					
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)					
Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition Soil - Industrial/Commercial/Community Property Use - Coarse Texture					

### TEST SUMMARY

**Maxxam ID:** FJD593  
**Sample ID:** TP17-2-SA2  
**Matrix:** Soil

**Collected:** 2017/10/17  
**Shipped:**  
**Received:** 2017/10/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	5220113	N/A	2017/10/23	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5227214	2017/10/23	2017/10/24	Zhiyue (Frank) Zhu
Moisture	BAL	5224501	N/A	2017/10/21	Min Yang
Volatile Organic Compounds and F1 PHCs	GC/MSFD	5222112	N/A	2017/10/21	James Zou

**Maxxam ID:** FJD594  
**Sample ID:** TP17-5-SA1  
**Matrix:** Soil

**Collected:** 2017/10/17  
**Shipped:**  
**Received:** 2017/10/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	5223922	N/A	2017/10/20	Min Yang
Polychlorinated Biphenyl in Soil	GC/ECD	5222285	2017/10/20	2017/10/21	Sarah Huang

**Maxxam ID:** FJD595  
**Sample ID:** DUP-2  
**Matrix:** Soil

**Collected:** 2017/10/17  
**Shipped:**  
**Received:** 2017/10/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	5223922	N/A	2017/10/20	Min Yang
Polychlorinated Biphenyl in Soil	GC/ECD	5222285	2017/10/20	2017/10/21	Sarah Huang

**Maxxam ID:** FJD595 Dup  
**Sample ID:** DUP-2  
**Matrix:** Soil

**Collected:** 2017/10/17  
**Shipped:**  
**Received:** 2017/10/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	5223922	N/A	2017/10/20	Min Yang

**Maxxam ID:** FJD596  
**Sample ID:** TP17-7-SA2  
**Matrix:** Soil

**Collected:** 2017/10/17  
**Shipped:**  
**Received:** 2017/10/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5220112	N/A	2017/10/24	Automated Statchk
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5226492	N/A	2017/10/24	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5225515	2017/10/23	2017/10/23	Barbara Wowk
Strong Acid Leachable Metals by ICPMS	ICP/MS	5225355	2017/10/23	2017/10/24	Daniel Teclu
Moisture	BAL	5223803	N/A	2017/10/20	Min Yang
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5225526	2017/10/23	2017/10/23	Lingyun Feng

**Maxxam ID:** FJD597  
**Sample ID:** DUP-3  
**Matrix:** Soil

**Collected:** 2017/10/17  
**Shipped:**  
**Received:** 2017/10/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5220112	N/A	2017/10/24	Automated Statchk



### TEST SUMMARY

**Maxxam ID:** FJD597  
**Sample ID:** DUP-3  
**Matrix:** Soil

**Collected:** 2017/10/17  
**Shipped:**  
**Received:** 2017/10/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	5225355	2017/10/23	2017/10/24	Daniel Teclu
Moisture	BAL	5223803	N/A	2017/10/20	Min Yang
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5227229	2017/10/23	2017/10/24	Jett Wu

**Maxxam ID:** FJD598  
**Sample ID:** DUP-4  
**Matrix:** Soil

**Collected:** 2017/10/17  
**Shipped:**  
**Received:** 2017/10/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	5220113	N/A	2017/10/24	Automated Statchk
Moisture	BAL	5224335	N/A	2017/10/21	Chun Yan
Volatile Organic Compounds in Soil	GC/MS	5222880	N/A	2017/10/21	Rebecca Schultz

**Maxxam ID:** FJD599  
**Sample ID:** TP17-4-SA3  
**Matrix:** Soil

**Collected:** 2017/10/17  
**Shipped:**  
**Received:** 2017/10/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5226492	N/A	2017/10/24	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5227214	2017/10/23	2017/10/24	Zhiyue (Frank) Zhu
Moisture	BAL	5224501	N/A	2017/10/21	Min Yang

**Maxxam ID:** FJD599 Dup  
**Sample ID:** TP17-4-SA3  
**Matrix:** Soil

**Collected:** 2017/10/17  
**Shipped:**  
**Received:** 2017/10/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5227214	2017/10/23	2017/10/24	Zhiyue (Frank) Zhu

**Maxxam ID:** FJD600  
**Sample ID:** BH17-6-SA3A  
**Matrix:** Soil

**Collected:** 2017/10/16  
**Shipped:**  
**Received:** 2017/10/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5226492	N/A	2017/10/24	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5227214	2017/10/23	2017/10/24	Zhiyue (Frank) Zhu
Moisture	BAL	5224501	N/A	2017/10/21	Min Yang

**Maxxam ID:** FJD601  
**Sample ID:** BH17-7-SA3A  
**Matrix:** Soil

**Collected:** 2017/10/16  
**Shipped:**  
**Received:** 2017/10/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5226492	N/A	2017/10/24	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5227214	2017/10/23	2017/10/24	Zhiyue (Frank) Zhu
Moisture	BAL	5224501	N/A	2017/10/21	Min Yang

### TEST SUMMARY

**Maxxam ID:** FJD602  
**Sample ID:** BH17-8-SA3A  
**Matrix:** Soil

**Collected:** 2017/10/16  
**Shipped:**  
**Received:** 2017/10/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5226492	N/A	2017/10/24	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5227214	2017/10/23	2017/10/24	Zhiyue (Frank) Zhu
Moisture	BAL	5224501	N/A	2017/10/21	Min Yang

**Maxxam ID:** FJD603  
**Sample ID:** BH17-9-SA2B  
**Matrix:** Soil

**Collected:** 2017/10/16  
**Shipped:**  
**Received:** 2017/10/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5226492	N/A	2017/10/24	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5227214	2017/10/23	2017/10/24	Zhiyue (Frank) Zhu
Moisture	BAL	5224501	N/A	2017/10/21	Min Yang

**Maxxam ID:** FJD603 Dup  
**Sample ID:** BH17-9-SA2B  
**Matrix:** Soil

**Collected:** 2017/10/16  
**Shipped:**  
**Received:** 2017/10/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	5224501	N/A	2017/10/21	Min Yang

**Maxxam ID:** FJD604  
**Sample ID:** BH17-10-SA3B  
**Matrix:** Soil

**Collected:** 2017/10/16  
**Shipped:**  
**Received:** 2017/10/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5226492	N/A	2017/10/24	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5227214	2017/10/23	2017/10/24	Zhiyue (Frank) Zhu
Moisture	BAL	5224501	N/A	2017/10/21	Min Yang

**Maxxam ID:** FJD605  
**Sample ID:** BH17-10-SA4B  
**Matrix:** Soil

**Collected:** 2017/10/16  
**Shipped:**  
**Received:** 2017/10/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5236941	N/A	2017/10/28	Haibin Wu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5235473	2017/10/27	2017/10/27	Atoosa Keshavarz
Moisture	BAL	5233183	N/A	2017/10/26	Chun Yan

**Maxxam ID:** FJD607  
**Sample ID:** DUP-1  
**Matrix:** Soil

**Collected:** 2017/10/16  
**Shipped:**  
**Received:** 2017/10/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5226492	N/A	2017/10/24	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5227214	2017/10/23	2017/10/24	Zhiyue (Frank) Zhu
Moisture	BAL	5224501	N/A	2017/10/21	Min Yang

### TEST SUMMARY

**Maxxam ID:** FJD608  
**Sample ID:** BH17-11-SA1B  
**Matrix:** Soil

**Collected:** 2017/10/16  
**Shipped:**  
**Received:** 2017/10/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5226492	N/A	2017/10/24	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5227214	2017/10/23	2017/10/24	Zhiyue (Frank) Zhu
Moisture	BAL	5224501	N/A	2017/10/21	Min Yang

**Maxxam ID:** FJD609  
**Sample ID:** BH17-12-SA3A  
**Matrix:** Soil

**Collected:** 2017/10/16  
**Shipped:**  
**Received:** 2017/10/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	5220113	N/A	2017/10/23	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5227214	2017/10/23	2017/10/24	Zhiyue (Frank) Zhu
Moisture	BAL	5224501	N/A	2017/10/21	Min Yang
Volatile Organic Compounds and F1 PHCs	GC/MSFD	5222112	N/A	2017/10/21	James Zou

**Maxxam ID:** FJD610  
**Sample ID:** BH17-13-SA1B  
**Matrix:** Soil

**Collected:** 2017/10/16  
**Shipped:**  
**Received:** 2017/10/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	5220112	N/A	2017/10/24	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	5225355	2017/10/23	2017/10/24	Daniel Teclu
Moisture	BAL	5223803	N/A	2017/10/20	Min Yang
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	5227229	2017/10/23	2017/10/24	Jett Wu

**Maxxam ID:** FJD611  
**Sample ID:** BH17-13-SA2B  
**Matrix:** Soil

**Collected:** 2017/10/16  
**Shipped:**  
**Received:** 2017/10/18

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5226492	N/A	2017/10/24	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5227214	2017/10/23	2017/10/24	Zhiyue (Frank) Zhu
Moisture	BAL	5224501	N/A	2017/10/21	Min Yang

### GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	1.7°C
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Revised report (2017/10/30): Additional analysis is included as requested.

Custody seal was present and intact.

Sample FJD605 [BH17-10-SA4B] : Sample analyzed for BTEX/F1-F4 as per client request.

**Results relate only to the items tested.**

### QUALITY ASSURANCE REPORT

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
	5222112	JZO	Matrix Spike	4-Bromofluorobenzene	2017/10/21		101	%	60 - 140
				D10-o-Xylene	2017/10/21		94	%	60 - 130
				D4-1,2-Dichloroethane	2017/10/21		101	%	60 - 140
				D8-Toluene	2017/10/21		99	%	60 - 140
				Acetone (2-Propanone)	2017/10/21		98	%	60 - 140
				Benzene	2017/10/21		97	%	60 - 140
				Bromodichloromethane	2017/10/21		95	%	60 - 140
				Bromoform	2017/10/21		98	%	60 - 140
				Bromomethane	2017/10/21		93	%	60 - 140
				Carbon Tetrachloride	2017/10/21		93	%	60 - 140
				Chlorobenzene	2017/10/21		94	%	60 - 140
				Chloroform	2017/10/21		94	%	60 - 140
				Dibromochloromethane	2017/10/21		98	%	60 - 140
				1,2-Dichlorobenzene	2017/10/21		94	%	60 - 140
				1,3-Dichlorobenzene	2017/10/21		99	%	60 - 140
				1,4-Dichlorobenzene	2017/10/21		102	%	60 - 140
				Dichlorodifluoromethane (FREON 12)	2017/10/21		100	%	60 - 140
				1,1-Dichloroethane	2017/10/21		102	%	60 - 140
				1,2-Dichloroethane	2017/10/21		96	%	60 - 140
				1,1-Dichloroethylene	2017/10/21		108	%	60 - 140
				cis-1,2-Dichloroethylene	2017/10/21		94	%	60 - 140
				trans-1,2-Dichloroethylene	2017/10/21		101	%	60 - 140
				1,2-Dichloropropane	2017/10/21		93	%	60 - 140
				cis-1,3-Dichloropropene	2017/10/21		89	%	60 - 140
				trans-1,3-Dichloropropene	2017/10/21		93	%	60 - 140
				Ethylbenzene	2017/10/21		96	%	60 - 140
				Ethylene Dibromide	2017/10/21		99	%	60 - 140
				Hexane	2017/10/21		104	%	60 - 140
				Methylene Chloride(Dichloromethane)	2017/10/21		99	%	60 - 140
				Methyl Ethyl Ketone (2-Butanone)	2017/10/21		97	%	60 - 140
				Methyl Isobutyl Ketone	2017/10/21		96	%	60 - 140
				Methyl t-butyl ether (MTBE)	2017/10/21		95	%	60 - 140
				Styrene	2017/10/21		94	%	60 - 140
				1,1,1,2-Tetrachloroethane	2017/10/21		99	%	60 - 140
				1,1,2,2-Tetrachloroethane	2017/10/21		100	%	60 - 140
				Tetrachloroethylene	2017/10/21		91	%	60 - 140
				Toluene	2017/10/21		91	%	60 - 140
				1,1,1-Trichloroethane	2017/10/21		94	%	60 - 140
				1,1,2-Trichloroethane	2017/10/21		96	%	60 - 140
				Trichloroethylene	2017/10/21		94	%	60 - 140
				Trichlorofluoromethane (FREON 11)	2017/10/21		99	%	60 - 140
				Vinyl Chloride	2017/10/21		99	%	60 - 140
				p+m-Xylene	2017/10/21		97	%	60 - 140
				o-Xylene	2017/10/21		96	%	60 - 140
				F1 (C6-C10)	2017/10/21		112	%	60 - 140
	5222112	JZO	Spiked Blank	4-Bromofluorobenzene	2017/10/21		101	%	60 - 140
				D10-o-Xylene	2017/10/21		99	%	60 - 130
				D4-1,2-Dichloroethane	2017/10/21		101	%	60 - 140
				D8-Toluene	2017/10/21		99	%	60 - 140
				Acetone (2-Propanone)	2017/10/21		99	%	60 - 140
				Benzene	2017/10/21		94	%	60 - 130
				Bromodichloromethane	2017/10/21		93	%	60 - 130
				Bromoform	2017/10/21		99	%	60 - 130
				Bromomethane	2017/10/21		91	%	60 - 140

**QUALITY ASSURANCE REPORT(CONT'D)**

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Carbon Tetrachloride	2017/10/21		90	%	60 - 130
			Chlorobenzene	2017/10/21		93	%	60 - 130
			Chloroform	2017/10/21		92	%	60 - 130
			Dibromochloromethane	2017/10/21		98	%	60 - 130
			1,2-Dichlorobenzene	2017/10/21		92	%	60 - 130
			1,3-Dichlorobenzene	2017/10/21		98	%	60 - 130
			1,4-Dichlorobenzene	2017/10/21		100	%	60 - 130
			Dichlorodifluoromethane (FREON 12)	2017/10/21		96	%	60 - 140
			1,1-Dichloroethane	2017/10/21		100	%	60 - 130
			1,2-Dichloroethane	2017/10/21		95	%	60 - 130
			1,1-Dichloroethylene	2017/10/21		104	%	60 - 130
			cis-1,2-Dichloroethylene	2017/10/21		92	%	60 - 130
			trans-1,2-Dichloroethylene	2017/10/21		98	%	60 - 130
			1,2-Dichloropropane	2017/10/21		91	%	60 - 130
			cis-1,3-Dichloropropene	2017/10/21		88	%	60 - 130
			trans-1,3-Dichloropropene	2017/10/21		93	%	60 - 130
			Ethylbenzene	2017/10/21		95	%	60 - 130
			Ethylene Dibromide	2017/10/21		99	%	60 - 130
			Hexane	2017/10/21		100	%	60 - 130
			Methylene Chloride(Dichloromethane)	2017/10/21		97	%	60 - 130
			Methyl Ethyl Ketone (2-Butanone)	2017/10/21		99	%	60 - 140
			Methyl Isobutyl Ketone	2017/10/21		97	%	60 - 130
			Methyl t-butyl ether (MTBE)	2017/10/21		94	%	60 - 130
			Styrene	2017/10/21		93	%	60 - 130
			1,1,1,2-Tetrachloroethane	2017/10/21		99	%	60 - 130
			1,1,2,2-Tetrachloroethane	2017/10/21		100	%	60 - 130
			Tetrachloroethylene	2017/10/21		89	%	60 - 130
			Toluene	2017/10/21		89	%	60 - 130
			1,1,1-Trichloroethane	2017/10/21		91	%	60 - 130
			1,1,2-Trichloroethane	2017/10/21		97	%	60 - 130
			Trichloroethylene	2017/10/21		91	%	60 - 130
			Trichlorofluoromethane (FREON 11)	2017/10/21		96	%	60 - 130
			Vinyl Chloride	2017/10/21		95	%	60 - 130
			p+m-Xylene	2017/10/21		95	%	60 - 130
			o-Xylene	2017/10/21		94	%	60 - 130
			F1 (C6-C10)	2017/10/21		95	%	80 - 120
5222112	JZO	Method Blank	4-Bromofluorobenzene	2017/10/21		97	%	60 - 140
			D10-o-Xylene	2017/10/21		84	%	60 - 130
			D4-1,2-Dichloroethane	2017/10/21		101	%	60 - 140
			D8-Toluene	2017/10/21		100	%	60 - 140
			Acetone (2-Propanone)	2017/10/21	<0.50		ug/g	
			Benzene	2017/10/21	<0.020		ug/g	
			Bromodichloromethane	2017/10/21	<0.050		ug/g	
			Bromoform	2017/10/21	<0.050		ug/g	
			Bromomethane	2017/10/21	<0.050		ug/g	
			Carbon Tetrachloride	2017/10/21	<0.050		ug/g	
			Chlorobenzene	2017/10/21	<0.050		ug/g	
			Chloroform	2017/10/21	<0.050		ug/g	
			Dibromochloromethane	2017/10/21	<0.050		ug/g	
			1,2-Dichlorobenzene	2017/10/21	<0.050		ug/g	
			1,3-Dichlorobenzene	2017/10/21	<0.050		ug/g	
			1,4-Dichlorobenzene	2017/10/21	<0.050		ug/g	
			Dichlorodifluoromethane (FREON 12)	2017/10/21	<0.050		ug/g	
			1,1-Dichloroethane	2017/10/21	<0.050		ug/g	



**QUALITY ASSURANCE REPORT(CONT'D)**

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			1,2-Dichloroethane	2017/10/21	<0.050		ug/g	
			1,1-Dichloroethylene	2017/10/21	<0.050		ug/g	
			cis-1,2-Dichloroethylene	2017/10/21	<0.050		ug/g	
			trans-1,2-Dichloroethylene	2017/10/21	<0.050		ug/g	
			1,2-Dichloropropane	2017/10/21	<0.050		ug/g	
			cis-1,3-Dichloropropene	2017/10/21	<0.030		ug/g	
			trans-1,3-Dichloropropene	2017/10/21	<0.040		ug/g	
			Ethylbenzene	2017/10/21	<0.020		ug/g	
			Ethylene Dibromide	2017/10/21	<0.050		ug/g	
			Hexane	2017/10/21	<0.050		ug/g	
			Methylene Chloride(Dichloromethane)	2017/10/21	<0.050		ug/g	
			Methyl Ethyl Ketone (2-Butanone)	2017/10/21	<0.50		ug/g	
			Methyl Isobutyl Ketone	2017/10/21	<0.50		ug/g	
			Methyl t-butyl ether (MTBE)	2017/10/21	<0.050		ug/g	
			Styrene	2017/10/21	<0.050		ug/g	
			1,1,1,2-Tetrachloroethane	2017/10/21	<0.050		ug/g	
			1,1,2,2-Tetrachloroethane	2017/10/21	<0.050		ug/g	
			Tetrachloroethylene	2017/10/21	<0.050		ug/g	
			Toluene	2017/10/21	<0.020		ug/g	
			1,1,1-Trichloroethane	2017/10/21	<0.050		ug/g	
			1,1,2-Trichloroethane	2017/10/21	<0.050		ug/g	
			Trichloroethylene	2017/10/21	<0.050		ug/g	
			Trichlorofluoromethane (FREON 11)	2017/10/21	<0.050		ug/g	
			Vinyl Chloride	2017/10/21	<0.020		ug/g	
			p+m-Xylene	2017/10/21	<0.020		ug/g	
			o-Xylene	2017/10/21	<0.020		ug/g	
			Total Xylenes	2017/10/21	<0.020		ug/g	
			F1 (C6-C10)	2017/10/21	<10		ug/g	
			F1 (C6-C10) - BTEX	2017/10/21	<10		ug/g	
5222112	JZO	RPD	Acetone (2-Propanone)	2017/10/21	NC		%	50
			Benzene	2017/10/21	NC		%	50
			Bromodichloromethane	2017/10/21	NC		%	50
			Bromoform	2017/10/21	NC		%	50
			Bromomethane	2017/10/21	NC		%	50
			Carbon Tetrachloride	2017/10/21	NC		%	50
			Chlorobenzene	2017/10/21	NC		%	50
			Chloroform	2017/10/21	NC		%	50
			Dibromochloromethane	2017/10/21	NC		%	50
			1,2-Dichlorobenzene	2017/10/21	NC		%	50
			1,3-Dichlorobenzene	2017/10/21	NC		%	50
			1,4-Dichlorobenzene	2017/10/21	NC		%	50
			Dichlorodifluoromethane (FREON 12)	2017/10/21	NC		%	50
			1,1-Dichloroethane	2017/10/21	NC		%	50
			1,2-Dichloroethane	2017/10/21	NC		%	50
			1,1-Dichloroethylene	2017/10/21	NC		%	50
			cis-1,2-Dichloroethylene	2017/10/21	NC		%	50
			trans-1,2-Dichloroethylene	2017/10/21	NC		%	50
			1,2-Dichloropropane	2017/10/21	NC		%	50
			cis-1,3-Dichloropropene	2017/10/21	NC		%	50
			trans-1,3-Dichloropropene	2017/10/21	NC		%	50
			Ethylbenzene	2017/10/21	NC		%	50
			Ethylene Dibromide	2017/10/21	NC		%	50
			Hexane	2017/10/21	NC		%	50
			Methylene Chloride(Dichloromethane)	2017/10/21	NC		%	50

**QUALITY ASSURANCE REPORT(CONT'D)**

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Methyl Ethyl Ketone (2-Butanone)	2017/10/21	NC		%	50
			Methyl Isobutyl Ketone	2017/10/21	NC		%	50
			Methyl t-butyl ether (MTBE)	2017/10/21	NC		%	50
			Styrene	2017/10/21	NC		%	50
			1,1,1,2-Tetrachloroethane	2017/10/21	NC		%	50
			1,1,2,2-Tetrachloroethane	2017/10/21	NC		%	50
			Tetrachloroethylene	2017/10/21	NC		%	50
			Toluene	2017/10/21	NC		%	50
			1,1,1-Trichloroethane	2017/10/21	NC		%	50
			1,1,2-Trichloroethane	2017/10/21	NC		%	50
			Trichloroethylene	2017/10/21	NC		%	50
			Trichlorofluoromethane (FREON 11)	2017/10/21	NC		%	50
			Vinyl Chloride	2017/10/21	NC		%	50
			p+m-Xylene	2017/10/21	NC		%	50
			o-Xylene	2017/10/21	NC		%	50
			Total Xylenes	2017/10/21	NC		%	50
			F1 (C6-C10)	2017/10/21	NC		%	30
			F1 (C6-C10) - BTEX	2017/10/21	NC		%	30
5222285	SHG	Matrix Spike	Decachlorobiphenyl	2017/10/20		113	%	60 - 130
			Aroclor 1260	2017/10/20		113	%	60 - 130
			Total PCB	2017/10/20		113	%	60 - 130
5222285	SHG	Spiked Blank	Decachlorobiphenyl	2017/10/20		110	%	60 - 130
			Aroclor 1260	2017/10/20		114	%	60 - 130
			Total PCB	2017/10/20		114	%	60 - 130
5222285	SHG	Method Blank	Decachlorobiphenyl	2017/10/20		108	%	60 - 130
			Aroclor 1242	2017/10/20	<0.010		ug/g	
			Aroclor 1248	2017/10/20	<0.010		ug/g	
			Aroclor 1254	2017/10/20	<0.010		ug/g	
			Aroclor 1260	2017/10/20	<0.010		ug/g	
			Total PCB	2017/10/20	<0.010		ug/g	
5222285	SHG	RPD	Aroclor 1242	2017/10/20	NC		%	50
			Aroclor 1248	2017/10/20	NC		%	50
			Aroclor 1254	2017/10/20	NC		%	50
			Aroclor 1260	2017/10/20	NC		%	50
			Total PCB	2017/10/20	NC		%	50
5222880	RSC	Matrix Spike	4-Bromofluorobenzene	2017/10/21		102	%	60 - 140
			D10-o-Xylene	2017/10/21		89	%	60 - 130
			D4-1,2-Dichloroethane	2017/10/21		97	%	60 - 140
			D8-Toluene	2017/10/21		97	%	60 - 140
			Acetone (2-Propanone)	2017/10/21		121	%	60 - 140
			Benzene	2017/10/21		99	%	60 - 140
			Bromodichloromethane	2017/10/21		102	%	60 - 140
			Bromoform	2017/10/21		116	%	60 - 140
			Bromomethane	2017/10/21		98	%	60 - 140
			Carbon Tetrachloride	2017/10/21		93	%	60 - 140
			Chlorobenzene	2017/10/21		102	%	60 - 140
			Chloroform	2017/10/21		94	%	60 - 140
			Dibromochloromethane	2017/10/21		109	%	60 - 140
			1,2-Dichlorobenzene	2017/10/21		98	%	60 - 140
			1,3-Dichlorobenzene	2017/10/21		98	%	60 - 140
			1,4-Dichlorobenzene	2017/10/21		97	%	60 - 140
			Dichlorodifluoromethane (FREON 12)	2017/10/21		98	%	60 - 140
			1,1-Dichloroethane	2017/10/21		99	%	60 - 140
			1,2-Dichloroethane	2017/10/21		99	%	60 - 140

**QUALITY ASSURANCE REPORT(CONT'D)**

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			1,1-Dichloroethylene	2017/10/21		103	%	60 - 140
			cis-1,2-Dichloroethylene	2017/10/21		93	%	60 - 140
			trans-1,2-Dichloroethylene	2017/10/21		96	%	60 - 140
			1,2-Dichloropropane	2017/10/21		93	%	60 - 140
			cis-1,3-Dichloropropene	2017/10/21		95	%	60 - 140
			trans-1,3-Dichloropropene	2017/10/21		101	%	60 - 140
			Ethylbenzene	2017/10/21		NC	%	60 - 140
			Ethylene Dibromide	2017/10/21		110	%	60 - 140
			Hexane	2017/10/21		104	%	60 - 140
			Methylene Chloride(Dichloromethane)	2017/10/21		111	%	60 - 140
			Methyl Ethyl Ketone (2-Butanone)	2017/10/21		108	%	60 - 140
			Methyl Isobutyl Ketone	2017/10/21		103	%	60 - 140
			Methyl t-butyl ether (MTBE)	2017/10/21		97	%	60 - 140
			Styrene	2017/10/21		103	%	60 - 140
			1,1,1,2-Tetrachloroethane	2017/10/21		105	%	60 - 140
			1,1,2,2-Tetrachloroethane	2017/10/21		110	%	60 - 140
			Tetrachloroethylene	2017/10/21		95	%	60 - 140
			Toluene	2017/10/21		NC	%	60 - 140
			1,1,1-Trichloroethane	2017/10/21		93	%	60 - 140
			1,1,2-Trichloroethane	2017/10/21		103	%	60 - 140
			Trichloroethylene	2017/10/21		94	%	60 - 140
			Trichlorofluoromethane (FREON 11)	2017/10/21		94	%	60 - 140
			Vinyl Chloride	2017/10/21		95	%	60 - 140
			p+m-Xylene	2017/10/21		NC	%	60 - 140
			o-Xylene	2017/10/21		NC	%	60 - 140
5222880	RSC	Spiked Blank	4-Bromofluorobenzene	2017/10/20		101	%	60 - 140
			D10-o-Xylene	2017/10/20		99	%	60 - 130
			D4-1,2-Dichloroethane	2017/10/20		103	%	60 - 140
			D8-Toluene	2017/10/20		99	%	60 - 140
			Acetone (2-Propanone)	2017/10/20		118	%	60 - 140
			Benzene	2017/10/20		95	%	60 - 130
			Bromodichloromethane	2017/10/20		98	%	60 - 130
			Bromoform	2017/10/20		112	%	60 - 130
			Bromomethane	2017/10/20		89	%	60 - 140
			Carbon Tetrachloride	2017/10/20		95	%	60 - 130
			Chlorobenzene	2017/10/20		97	%	60 - 130
			Chloroform	2017/10/20		95	%	60 - 130
			Dibromochloromethane	2017/10/20		105	%	60 - 130
			1,2-Dichlorobenzene	2017/10/20		96	%	60 - 130
			1,3-Dichlorobenzene	2017/10/20		96	%	60 - 130
			1,4-Dichlorobenzene	2017/10/20		95	%	60 - 130
			Dichlorodifluoromethane (FREON 12)	2017/10/20		61	%	60 - 140
			1,1-Dichloroethane	2017/10/20		98	%	60 - 130
			1,2-Dichloroethane	2017/10/20		98	%	60 - 130
			1,1-Dichloroethylene	2017/10/20		99	%	60 - 130
			cis-1,2-Dichloroethylene	2017/10/20		93	%	60 - 130
			trans-1,2-Dichloroethylene	2017/10/20		94	%	60 - 130
			1,2-Dichloropropane	2017/10/20		93	%	60 - 130
			cis-1,3-Dichloropropene	2017/10/20		92	%	60 - 130
			trans-1,3-Dichloropropene	2017/10/20		94	%	60 - 130
			Ethylbenzene	2017/10/20		94	%	60 - 130
			Ethylene Dibromide	2017/10/20		104	%	60 - 130
			Hexane	2017/10/20		95	%	60 - 130
			Methylene Chloride(Dichloromethane)	2017/10/20		103	%	60 - 130

**QUALITY ASSURANCE REPORT(CONT'D)**

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Methyl Ethyl Ketone (2-Butanone)	2017/10/20		105	%	60 - 140
			Methyl Isobutyl Ketone	2017/10/20		100	%	60 - 130
			Methyl t-butyl ether (MTBE)	2017/10/20		95	%	60 - 130
			Styrene	2017/10/20		97	%	60 - 130
			1,1,1,2-Tetrachloroethane	2017/10/20		103	%	60 - 130
			1,1,2,2-Tetrachloroethane	2017/10/20		106	%	60 - 130
			Tetrachloroethylene	2017/10/20		92	%	60 - 130
			Toluene	2017/10/20		92	%	60 - 130
			1,1,1-Trichloroethane	2017/10/20		93	%	60 - 130
			1,1,2-Trichloroethane	2017/10/20		100	%	60 - 130
			Trichloroethylene	2017/10/20		94	%	60 - 130
			Trichlorofluoromethane (FREON 11)	2017/10/20		90	%	60 - 130
			Vinyl Chloride	2017/10/20		82	%	60 - 130
			p+m-Xylene	2017/10/20		98	%	60 - 130
			o-Xylene	2017/10/20		96	%	60 - 130
5222880	RSC	Method Blank	4-Bromofluorobenzene	2017/10/20		100	%	60 - 140
			D10-o-Xylene	2017/10/20		97	%	60 - 130
			D4-1,2-Dichloroethane	2017/10/20		105	%	60 - 140
			D8-Toluene	2017/10/20		98	%	60 - 140
			Acetone (2-Propanone)	2017/10/20	<0.50		ug/g	
			Benzene	2017/10/20	<0.020		ug/g	
			Bromodichloromethane	2017/10/20	<0.050		ug/g	
			Bromoform	2017/10/20	<0.050		ug/g	
			Bromomethane	2017/10/20	<0.050		ug/g	
			Carbon Tetrachloride	2017/10/20	<0.050		ug/g	
			Chlorobenzene	2017/10/20	<0.050		ug/g	
			Chloroform	2017/10/20	<0.050		ug/g	
			Dibromochloromethane	2017/10/20	<0.050		ug/g	
			1,2-Dichlorobenzene	2017/10/20	<0.050		ug/g	
			1,3-Dichlorobenzene	2017/10/20	<0.050		ug/g	
			1,4-Dichlorobenzene	2017/10/20	<0.050		ug/g	
			Dichlorodifluoromethane (FREON 12)	2017/10/20	<0.050		ug/g	
			1,1-Dichloroethane	2017/10/20	<0.050		ug/g	
			1,2-Dichloroethane	2017/10/20	<0.050		ug/g	
			1,1-Dichloroethylene	2017/10/20	<0.050		ug/g	
			cis-1,2-Dichloroethylene	2017/10/20	<0.050		ug/g	
			trans-1,2-Dichloroethylene	2017/10/20	<0.050		ug/g	
			1,2-Dichloropropane	2017/10/20	<0.050		ug/g	
			cis-1,3-Dichloropropene	2017/10/20	<0.030		ug/g	
			trans-1,3-Dichloropropene	2017/10/20	<0.040		ug/g	
			Ethylbenzene	2017/10/20	<0.020		ug/g	
			Ethylene Dibromide	2017/10/20	<0.050		ug/g	
			Hexane	2017/10/20	<0.050		ug/g	
			Methylene Chloride(Dichloromethane)	2017/10/20	<0.050		ug/g	
			Methyl Ethyl Ketone (2-Butanone)	2017/10/20	<0.50		ug/g	
			Methyl Isobutyl Ketone	2017/10/20	<0.50		ug/g	
			Methyl t-butyl ether (MTBE)	2017/10/20	<0.050		ug/g	
			Styrene	2017/10/20	<0.050		ug/g	
			1,1,1,2-Tetrachloroethane	2017/10/20	<0.050		ug/g	
			1,1,2,2-Tetrachloroethane	2017/10/20	<0.050		ug/g	
			Tetrachloroethylene	2017/10/20	<0.050		ug/g	
			Toluene	2017/10/20	<0.020		ug/g	
			1,1,1-Trichloroethane	2017/10/20	<0.050		ug/g	
			1,1,2-Trichloroethane	2017/10/20	<0.050		ug/g	

**QUALITY ASSURANCE REPORT(CONT'D)**

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
				Trichloroethylene	2017/10/20	<0.050		ug/g	
				Trichlorofluoromethane (FREON 11)	2017/10/20	<0.050		ug/g	
				Vinyl Chloride	2017/10/20	<0.020		ug/g	
				p+m-Xylene	2017/10/20	<0.020		ug/g	
				o-Xylene	2017/10/20	<0.020		ug/g	
				Total Xylenes	2017/10/20	<0.020		ug/g	
5222880	RSC	RPD		Acetone (2-Propanone)	2017/10/21	NC		%	50
				Benzene	2017/10/21	0.14		%	50
				Bromodichloromethane	2017/10/21	NC		%	50
				Bromoform	2017/10/21	NC		%	50
				Bromomethane	2017/10/21	NC		%	50
				Carbon Tetrachloride	2017/10/21	NC		%	50
				Chlorobenzene	2017/10/21	NC		%	50
				Chloroform	2017/10/21	NC		%	50
				Dibromochloromethane	2017/10/21	NC		%	50
				1,2-Dichlorobenzene	2017/10/21	NC		%	50
				1,3-Dichlorobenzene	2017/10/21	NC		%	50
				1,4-Dichlorobenzene	2017/10/21	NC		%	50
				Dichlorodifluoromethane (FREON 12)	2017/10/21	NC		%	50
				1,1-Dichloroethane	2017/10/21	NC		%	50
				1,2-Dichloroethane	2017/10/21	NC		%	50
				1,1-Dichloroethylene	2017/10/21	NC		%	50
				cis-1,2-Dichloroethylene	2017/10/21	NC		%	50
				trans-1,2-Dichloroethylene	2017/10/21	NC		%	50
				1,2-Dichloropropane	2017/10/21	NC		%	50
				cis-1,3-Dichloropropene	2017/10/21	NC		%	50
				trans-1,3-Dichloropropene	2017/10/21	NC		%	50
				Ethylbenzene	2017/10/21	0.58		%	50
				Ethylene Dibromide	2017/10/21	NC		%	50
				Hexane	2017/10/21	0.38		%	50
				Methylene Chloride(Dichloromethane)	2017/10/21	NC		%	50
				Methyl Ethyl Ketone (2-Butanone)	2017/10/21	NC		%	50
				Methyl Isobutyl Ketone	2017/10/21	NC		%	50
				Methyl t-butyl ether (MTBE)	2017/10/21	NC		%	50
				Styrene	2017/10/21	NC		%	50
				1,1,1,2-Tetrachloroethane	2017/10/21	NC		%	50
				1,1,2,2-Tetrachloroethane	2017/10/21	NC		%	50
				Tetrachloroethylene	2017/10/21	NC		%	50
				Toluene	2017/10/21	0.38		%	50
				1,1,1-Trichloroethane	2017/10/21	NC		%	50
				1,1,2-Trichloroethane	2017/10/21	NC		%	50
				Trichloroethylene	2017/10/21	NC		%	50
				Trichlorofluoromethane (FREON 11)	2017/10/21	NC		%	50
				Vinyl Chloride	2017/10/21	NC		%	50
				p+m-Xylene	2017/10/21	0.31		%	50
				o-Xylene	2017/10/21	0.28		%	50
				Total Xylenes	2017/10/21	0.31		%	50
5223803	AUP	RPD		Moisture	2017/10/20	4.3		%	20
5223922	AUP	RPD [FJD595-01]		Moisture	2017/10/20	14		%	20
5224335	AUP	RPD		Moisture	2017/10/21	4.6		%	20
5224501	GG2	RPD [FJD603-01]		Moisture	2017/10/21	0		%	20
5225355	DT1	Matrix Spike		Acid Extractable Antimony (Sb)	2017/10/24		91	%	75 - 125
				Acid Extractable Arsenic (As)	2017/10/24		102	%	75 - 125
				Acid Extractable Barium (Ba)	2017/10/24		NC	%	75 - 125

**QUALITY ASSURANCE REPORT(CONT'D)**

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acid Extractable Beryllium (Be)	2017/10/24		99	%	75 - 125
			Acid Extractable Boron (B)	2017/10/24		96	%	75 - 125
			Acid Extractable Cadmium (Cd)	2017/10/24		96	%	75 - 125
			Acid Extractable Chromium (Cr)	2017/10/24		105	%	75 - 125
			Acid Extractable Cobalt (Co)	2017/10/24		101	%	75 - 125
			Acid Extractable Copper (Cu)	2017/10/24		95	%	75 - 125
			Acid Extractable Lead (Pb)	2017/10/24		97	%	75 - 125
			Acid Extractable Molybdenum (Mo)	2017/10/24		100	%	75 - 125
			Acid Extractable Nickel (Ni)	2017/10/24		96	%	75 - 125
			Acid Extractable Selenium (Se)	2017/10/24		99	%	75 - 125
			Acid Extractable Silver (Ag)	2017/10/24		100	%	75 - 125
			Acid Extractable Thallium (Tl)	2017/10/24		98	%	75 - 125
			Acid Extractable Uranium (U)	2017/10/24		99	%	75 - 125
			Acid Extractable Vanadium (V)	2017/10/24		NC	%	75 - 125
			Acid Extractable Zinc (Zn)	2017/10/24		NC	%	75 - 125
5225355	DT1	Spiked Blank	Acid Extractable Mercury (Hg)	2017/10/24		98	%	75 - 125
			Acid Extractable Antimony (Sb)	2017/10/23		99	%	80 - 120
			Acid Extractable Arsenic (As)	2017/10/23		101	%	80 - 120
			Acid Extractable Barium (Ba)	2017/10/23		93	%	80 - 120
			Acid Extractable Beryllium (Be)	2017/10/23		96	%	80 - 120
			Acid Extractable Boron (B)	2017/10/23		97	%	80 - 120
			Acid Extractable Cadmium (Cd)	2017/10/23		96	%	80 - 120
			Acid Extractable Chromium (Cr)	2017/10/23		99	%	80 - 120
			Acid Extractable Cobalt (Co)	2017/10/23		100	%	80 - 120
			Acid Extractable Copper (Cu)	2017/10/23		99	%	80 - 120
			Acid Extractable Lead (Pb)	2017/10/23		99	%	80 - 120
			Acid Extractable Molybdenum (Mo)	2017/10/23		98	%	80 - 120
			Acid Extractable Nickel (Ni)	2017/10/23		102	%	80 - 120
			Acid Extractable Selenium (Se)	2017/10/23		103	%	80 - 120
			Acid Extractable Silver (Ag)	2017/10/23		102	%	80 - 120
			Acid Extractable Thallium (Tl)	2017/10/23		100	%	80 - 120
			Acid Extractable Uranium (U)	2017/10/23		97	%	80 - 120
			Acid Extractable Vanadium (V)	2017/10/23		101	%	80 - 120
			Acid Extractable Zinc (Zn)	2017/10/23		102	%	80 - 120
5225355	DT1	Method Blank	Acid Extractable Mercury (Hg)	2017/10/23		101	%	80 - 120
			Acid Extractable Antimony (Sb)	2017/10/23	<0.20		ug/g	
			Acid Extractable Arsenic (As)	2017/10/23	<1.0		ug/g	
			Acid Extractable Barium (Ba)	2017/10/23	<0.50		ug/g	
			Acid Extractable Beryllium (Be)	2017/10/23	<0.20		ug/g	
			Acid Extractable Boron (B)	2017/10/23	<5.0		ug/g	
			Acid Extractable Cadmium (Cd)	2017/10/23	<0.10		ug/g	
			Acid Extractable Chromium (Cr)	2017/10/23	<1.0		ug/g	
			Acid Extractable Cobalt (Co)	2017/10/23	<0.10		ug/g	
			Acid Extractable Copper (Cu)	2017/10/23	<0.50		ug/g	
			Acid Extractable Lead (Pb)	2017/10/23	<1.0		ug/g	
			Acid Extractable Molybdenum (Mo)	2017/10/23	<0.50		ug/g	
			Acid Extractable Nickel (Ni)	2017/10/23	<0.50		ug/g	
			Acid Extractable Selenium (Se)	2017/10/23	<0.50		ug/g	
			Acid Extractable Silver (Ag)	2017/10/23	<0.20		ug/g	
			Acid Extractable Thallium (Tl)	2017/10/23	<0.050		ug/g	
			Acid Extractable Uranium (U)	2017/10/23	<0.050		ug/g	
			Acid Extractable Vanadium (V)	2017/10/23	<5.0		ug/g	
			Acid Extractable Zinc (Zn)	2017/10/23	<5.0		ug/g	
			Acid Extractable Mercury (Hg)	2017/10/23	<0.050		ug/g	

**QUALITY ASSURANCE REPORT(CONT'D)**

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
5225355	DT1	RPD		Acid Extractable Antimony (Sb)	2017/10/24	NC		%	30
				Acid Extractable Arsenic (As)	2017/10/24	8.1		%	30
				Acid Extractable Barium (Ba)	2017/10/24	0.31		%	30
				Acid Extractable Beryllium (Be)	2017/10/24	1.9		%	30
				Acid Extractable Boron (B)	2017/10/24	1.2		%	30
				Acid Extractable Cadmium (Cd)	2017/10/24	8.4		%	30
				Acid Extractable Chromium (Cr)	2017/10/24	2.6		%	30
				Acid Extractable Cobalt (Co)	2017/10/24	4.9		%	30
				Acid Extractable Copper (Cu)	2017/10/24	0.83		%	30
				Acid Extractable Lead (Pb)	2017/10/24	4.8		%	30
				Acid Extractable Molybdenum (Mo)	2017/10/24	NC		%	30
				Acid Extractable Nickel (Ni)	2017/10/24	6.5		%	30
				Acid Extractable Selenium (Se)	2017/10/24	NC		%	30
				Acid Extractable Silver (Ag)	2017/10/24	NC		%	30
5225515	BWW	Matrix Spike		o-Terphenyl	2017/10/23		83	%	60 - 130
				F2 (C10-C16 Hydrocarbons)	2017/10/23		91	%	50 - 130
				F3 (C16-C34 Hydrocarbons)	2017/10/23		89	%	50 - 130
				F4 (C34-C50 Hydrocarbons)	2017/10/23		89	%	50 - 130
				o-Terphenyl	2017/10/23		78	%	60 - 130
5225515	BWW	Spiked Blank		F2 (C10-C16 Hydrocarbons)	2017/10/23		85	%	80 - 120
				F3 (C16-C34 Hydrocarbons)	2017/10/23		88	%	80 - 120
				F4 (C34-C50 Hydrocarbons)	2017/10/23		85	%	80 - 120
				o-Terphenyl	2017/10/23		82	%	60 - 130
5225515	BWW	Method Blank		F2 (C10-C16 Hydrocarbons)	2017/10/23	<10		ug/g	
				F3 (C16-C34 Hydrocarbons)	2017/10/23	<50		ug/g	
				F4 (C34-C50 Hydrocarbons)	2017/10/23	<50		ug/g	
				o-Terphenyl	2017/10/23		82	%	60 - 130
5225515	BWW	RPD		F2 (C10-C16 Hydrocarbons)	2017/10/23	NC		%	30
				F3 (C16-C34 Hydrocarbons)	2017/10/23	NC		%	30
				F4 (C34-C50 Hydrocarbons)	2017/10/23	NC		%	30
5225526	LFE	Matrix Spike		D10-Anthracene	2017/10/23		95	%	50 - 130
				D14-Terphenyl (FS)	2017/10/23		88	%	50 - 130
				D8-Acenaphthylene	2017/10/23		110	%	50 - 130
				Acenaphthene	2017/10/23		83	%	50 - 130
				Acenaphthylene	2017/10/23		94	%	50 - 130
				Anthracene	2017/10/23		74	%	50 - 130
				Benzo(a)anthracene	2017/10/23		85	%	50 - 130
				Benzo(a)pyrene	2017/10/23		80	%	50 - 130
				Benzo(b/j)fluoranthene	2017/10/23		78	%	50 - 130
				Benzo(g,h,i)perylene	2017/10/23		76	%	50 - 130
				Benzo(k)fluoranthene	2017/10/23		82	%	50 - 130
				Chrysene	2017/10/23		86	%	50 - 130
				Dibenz(a,h)anthracene	2017/10/23		82	%	50 - 130
				Fluoranthene	2017/10/23		83	%	50 - 130
				Fluorene	2017/10/23		90	%	50 - 130
				Indeno(1,2,3-cd)pyrene	2017/10/23		77	%	50 - 130
				1-Methylnaphthalene	2017/10/23		87	%	50 - 130
	2-Methylnaphthalene	2017/10/23		77	%	50 - 130			
	Naphthalene	2017/10/23		71	%	50 - 130			
	Phenanthrene	2017/10/23		86	%	50 - 130			
	Pyrene	2017/10/23		80	%	50 - 130			



**QUALITY ASSURANCE REPORT(CONT'D)**

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
	5225526	LFE	Spiked Blank	D10-Anthracene	2017/10/23		88	%	50 - 130
				D14-Terphenyl (FS)	2017/10/23		84	%	50 - 130
				D8-Acenaphthylene	2017/10/23		93	%	50 - 130
				Acenaphthene	2017/10/23		78	%	50 - 130
				Acenaphthylene	2017/10/23		81	%	50 - 130
				Anthracene	2017/10/23		69	%	50 - 130
				Benzo(a)anthracene	2017/10/23		78	%	50 - 130
				Benzo(a)pyrene	2017/10/23		81	%	50 - 130
				Benzo(b/j)fluoranthene	2017/10/23		85	%	50 - 130
				Benzo(g,h,i)perylene	2017/10/23		82	%	50 - 130
				Benzo(k)fluoranthene	2017/10/23		84	%	50 - 130
				Chrysene	2017/10/23		84	%	50 - 130
				Dibenz(a,h)anthracene	2017/10/23		80	%	50 - 130
				Fluoranthene	2017/10/23		78	%	50 - 130
				Fluorene	2017/10/23		84	%	50 - 130
				Indeno(1,2,3-cd)pyrene	2017/10/23		77	%	50 - 130
				1-Methylnaphthalene	2017/10/23		82	%	50 - 130
				2-Methylnaphthalene	2017/10/23		73	%	50 - 130
				Naphthalene	2017/10/23		69	%	50 - 130
				Phenanthrene	2017/10/23		83	%	50 - 130
				Pyrene	2017/10/23		76	%	50 - 130
	5225526	LFE	Method Blank	D10-Anthracene	2017/10/23		88	%	50 - 130
				D14-Terphenyl (FS)	2017/10/23		84	%	50 - 130
				D8-Acenaphthylene	2017/10/23		96	%	50 - 130
				Acenaphthene	2017/10/23	<0.0050		ug/g	
				Acenaphthylene	2017/10/23	<0.0050		ug/g	
				Anthracene	2017/10/23	<0.0050		ug/g	
				Benzo(a)anthracene	2017/10/23	<0.0050		ug/g	
				Benzo(a)pyrene	2017/10/23	<0.0050		ug/g	
				Benzo(b/j)fluoranthene	2017/10/23	<0.0050		ug/g	
				Benzo(g,h,i)perylene	2017/10/23	<0.0050		ug/g	
				Benzo(k)fluoranthene	2017/10/23	<0.0050		ug/g	
				Chrysene	2017/10/23	<0.0050		ug/g	
				Dibenz(a,h)anthracene	2017/10/23	<0.0050		ug/g	
				Fluoranthene	2017/10/23	<0.0050		ug/g	
				Fluorene	2017/10/23	<0.0050		ug/g	
				Indeno(1,2,3-cd)pyrene	2017/10/23	<0.0050		ug/g	
				1-Methylnaphthalene	2017/10/23	<0.0050		ug/g	
				2-Methylnaphthalene	2017/10/23	<0.0050		ug/g	
				Naphthalene	2017/10/23	<0.0050		ug/g	
				Phenanthrene	2017/10/23	<0.0050		ug/g	
				Pyrene	2017/10/23	<0.0050		ug/g	
	5225526	LFE	RPD	Acenaphthene	2017/10/23	NC		%	40
				Acenaphthylene	2017/10/23	NC		%	40
				Anthracene	2017/10/23	NC		%	40
				Benzo(a)anthracene	2017/10/23	NC		%	40
				Benzo(a)pyrene	2017/10/23	NC		%	40
				Benzo(b/j)fluoranthene	2017/10/23	NC		%	40
				Benzo(g,h,i)perylene	2017/10/23	NC		%	40
				Benzo(k)fluoranthene	2017/10/23	NC		%	40
				Chrysene	2017/10/23	NC		%	40
				Dibenz(a,h)anthracene	2017/10/23	NC		%	40
				Fluoranthene	2017/10/23	NC		%	40
				Fluorene	2017/10/23	NC		%	40

**QUALITY ASSURANCE REPORT(CONT'D)**

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits			
5226492	GRU	Matrix Spike	Indeno(1,2,3-cd)pyrene	2017/10/23	NC		%	40			
			1-Methylnaphthalene	2017/10/23	NC		%	40			
			2-Methylnaphthalene	2017/10/23	NC		%	40			
			Naphthalene	2017/10/23	NC		%	40			
			Phenanthrene	2017/10/23	NC		%	40			
			Pyrene	2017/10/23	NC		%	40			
			1,4-Difluorobenzene	2017/10/24		101	%	60 - 140			
			4-Bromofluorobenzene	2017/10/24		102	%	60 - 140			
			D10-Ethylbenzene	2017/10/24		116	%	60 - 140			
			D4-1,2-Dichloroethane	2017/10/24		101	%	60 - 140			
			Benzene	2017/10/24		112	%	60 - 140			
			Toluene	2017/10/24		105	%	60 - 140			
			Ethylbenzene	2017/10/24		105	%	60 - 140			
			o-Xylene	2017/10/24		109	%	60 - 140			
			p+m-Xylene	2017/10/24		104	%	60 - 140			
5226492	GRU	Spiked Blank	F1 (C6-C10)	2017/10/24		102	%	60 - 140			
			1,4-Difluorobenzene	2017/10/24		101	%	60 - 140			
			4-Bromofluorobenzene	2017/10/24		102	%	60 - 140			
			D10-Ethylbenzene	2017/10/24		103	%	60 - 140			
			D4-1,2-Dichloroethane	2017/10/24		100	%	60 - 140			
			Benzene	2017/10/24		110	%	60 - 140			
			Toluene	2017/10/24		104	%	60 - 140			
			Ethylbenzene	2017/10/24		103	%	60 - 140			
			o-Xylene	2017/10/24		107	%	60 - 140			
			p+m-Xylene	2017/10/24		103	%	60 - 140			
			F1 (C6-C10)	2017/10/24		94	%	80 - 120			
			5226492	GRU	Method Blank	1,4-Difluorobenzene	2017/10/24		100	%	60 - 140
						4-Bromofluorobenzene	2017/10/24		101	%	60 - 140
						D10-Ethylbenzene	2017/10/24		102	%	60 - 140
						D4-1,2-Dichloroethane	2017/10/24		99	%	60 - 140
Benzene	2017/10/24	<0.020					ug/g				
Toluene	2017/10/24	<0.020					ug/g				
Ethylbenzene	2017/10/24	<0.020					ug/g				
o-Xylene	2017/10/24	<0.020					ug/g				
p+m-Xylene	2017/10/24	<0.040					ug/g				
Total Xylenes	2017/10/24	<0.040					ug/g				
F1 (C6-C10)	2017/10/24	<10					ug/g				
F1 (C6-C10) - BTEX	2017/10/24	<10					ug/g				
5226492	GRU	RPD				Benzene	2017/10/24	NC		%	50
						Toluene	2017/10/24	NC		%	50
						Ethylbenzene	2017/10/24	NC		%	50
			o-Xylene	2017/10/24	NC		%	50			
			p+m-Xylene	2017/10/24	NC		%	50			
			Total Xylenes	2017/10/24	NC		%	50			
			F1 (C6-C10)	2017/10/24	NC		%	30			
			F1 (C6-C10) - BTEX	2017/10/24	NC		%	30			
			5227214	ZZ	Matrix Spike [FJD599-01]	o-Terphenyl	2017/10/24		75	%	60 - 130
						F2 (C10-C16 Hydrocarbons)	2017/10/24		91	%	50 - 130
						F3 (C16-C34 Hydrocarbons)	2017/10/24		90	%	50 - 130
						F4 (C34-C50 Hydrocarbons)	2017/10/24		90	%	50 - 130
						5227214	ZZ	Spiked Blank	o-Terphenyl	2017/10/24	
			F2 (C10-C16 Hydrocarbons)	2017/10/24					86	%	80 - 120
			F3 (C16-C34 Hydrocarbons)	2017/10/24					81	%	80 - 120
F4 (C34-C50 Hydrocarbons)	2017/10/24		81	%	80 - 120						

**QUALITY ASSURANCE REPORT(CONT'D)**

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
5227214	ZZ	Method Blank	o-Terphenyl	2017/10/24		91	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2017/10/24	<10		ug/g	
			F3 (C16-C34 Hydrocarbons)	2017/10/24	<50		ug/g	
			F4 (C34-C50 Hydrocarbons)	2017/10/24	<50		ug/g	
5227214	ZZ	RPD [FJD599-01]	F2 (C10-C16 Hydrocarbons)	2017/10/24	NC		%	30
			F3 (C16-C34 Hydrocarbons)	2017/10/24	NC		%	30
			F4 (C34-C50 Hydrocarbons)	2017/10/24	NC		%	30
5227229	JET	Matrix Spike	D10-Anthracene	2017/10/24		93	%	50 - 130
			D14-Terphenyl (FS)	2017/10/24		96	%	50 - 130
			D8-Acenaphthylene	2017/10/24		85	%	50 - 130
			Acenaphthene	2017/10/24		85	%	50 - 130
			Acenaphthylene	2017/10/24		83	%	50 - 130
			Anthracene	2017/10/24		75	%	50 - 130
			Benzo(a)anthracene	2017/10/24		82	%	50 - 130
			Benzo(a)pyrene	2017/10/24		78	%	50 - 130
			Benzo(b/j)fluoranthene	2017/10/24		83	%	50 - 130
			Benzo(g,h,i)perylene	2017/10/24		79	%	50 - 130
			Benzo(k)fluoranthene	2017/10/24		82	%	50 - 130
			Chrysene	2017/10/24		85	%	50 - 130
			Dibenz(a,h)anthracene	2017/10/24		74	%	50 - 130
			Fluoranthene	2017/10/24		86	%	50 - 130
			Fluorene	2017/10/24		90	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2017/10/24		74	%	50 - 130
			1-Methylnaphthalene	2017/10/24		91	%	50 - 130
			2-Methylnaphthalene	2017/10/24		84	%	50 - 130
			Naphthalene	2017/10/24		79	%	50 - 130
			Phenanthrene	2017/10/24		82	%	50 - 130
			Pyrene	2017/10/24		88	%	50 - 130
5227229	JET	Spiked Blank	D10-Anthracene	2017/10/24		95	%	50 - 130
			D14-Terphenyl (FS)	2017/10/24		96	%	50 - 130
			D8-Acenaphthylene	2017/10/24		92	%	50 - 130
			Acenaphthene	2017/10/24		88	%	50 - 130
			Acenaphthylene	2017/10/24		84	%	50 - 130
			Anthracene	2017/10/24		75	%	50 - 130
			Benzo(a)anthracene	2017/10/24		82	%	50 - 130
			Benzo(a)pyrene	2017/10/24		81	%	50 - 130
			Benzo(b/j)fluoranthene	2017/10/24		88	%	50 - 130
			Benzo(g,h,i)perylene	2017/10/24		85	%	50 - 130
			Benzo(k)fluoranthene	2017/10/24		85	%	50 - 130
			Chrysene	2017/10/24		88	%	50 - 130
			Dibenz(a,h)anthracene	2017/10/24		75	%	50 - 130
			Fluoranthene	2017/10/24		87	%	50 - 130
			Fluorene	2017/10/24		92	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2017/10/24		78	%	50 - 130
			1-Methylnaphthalene	2017/10/24		92	%	50 - 130
			2-Methylnaphthalene	2017/10/24		86	%	50 - 130
			Naphthalene	2017/10/24		83	%	50 - 130
			Phenanthrene	2017/10/24		84	%	50 - 130
			Pyrene	2017/10/24		90	%	50 - 130
5227229	JET	RPD	Acenaphthene	2017/10/24	0.89		%	40
			Acenaphthylene	2017/10/24	0.26		%	40
			Anthracene	2017/10/24	0.25		%	40
			Benzo(a)anthracene	2017/10/24	1.6		%	40
			Benzo(a)pyrene	2017/10/24	0.64		%	40

**QUALITY ASSURANCE REPORT(CONT'D)**

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Benzo(b/j)fluoranthene	2017/10/24	0.17		%	40
			Benzo(g,h,i)perylene	2017/10/24	0.77		%	40
			Benzo(k)fluoranthene	2017/10/24	3.6		%	40
			Chrysene	2017/10/24	0.080		%	40
			Dibenz(a,h)anthracene	2017/10/24	0.040		%	40
			Fluoranthene	2017/10/24	1.9		%	40
			Fluorene	2017/10/24	0.63		%	40
			Indeno(1,2,3-cd)pyrene	2017/10/24	0.28		%	40
			1-Methylnaphthalene	2017/10/24	0.34		%	40
			2-Methylnaphthalene	2017/10/24	0.36		%	40
			Naphthalene	2017/10/24	0.61		%	40
			Phenanthrene	2017/10/24	0.73		%	40
			Pyrene	2017/10/24	0.77		%	40
			Acenaphthene	2017/10/24	NC		%	40
			Acenaphthylene	2017/10/24	NC		%	40
			Anthracene	2017/10/24	NC		%	40
			Benzo(a)anthracene	2017/10/24	NC		%	40
			Benzo(a)pyrene	2017/10/24	NC		%	40
			Benzo(b/j)fluoranthene	2017/10/24	NC		%	40
			Benzo(g,h,i)perylene	2017/10/24	NC		%	40
			Benzo(k)fluoranthene	2017/10/24	NC		%	40
			Chrysene	2017/10/24	NC		%	40
			Dibenz(a,h)anthracene	2017/10/24	NC		%	40
			Fluoranthene	2017/10/24	NC		%	40
			Fluorene	2017/10/24	NC		%	40
			Indeno(1,2,3-cd)pyrene	2017/10/24	NC		%	40
			1-Methylnaphthalene	2017/10/24	NC		%	40
			2-Methylnaphthalene	2017/10/24	NC		%	40
			Naphthalene	2017/10/24	NC		%	40
			Phenanthrene	2017/10/24	NC		%	40
			Pyrene	2017/10/24	NC		%	40
5227229	JET	Method Blank	D10-Anthracene	2017/10/24		96	%	50 - 130
			D14-Terphenyl (FS)	2017/10/24		99	%	50 - 130
			D8-Acenaphthylene	2017/10/24		92	%	50 - 130
			Acenaphthene	2017/10/24	<0.0050		ug/g	
			Acenaphthylene	2017/10/24	<0.0050		ug/g	
			Anthracene	2017/10/24	<0.0050		ug/g	
			Benzo(a)anthracene	2017/10/24	<0.0050		ug/g	
			Benzo(a)pyrene	2017/10/24	<0.0050		ug/g	
			Benzo(b/j)fluoranthene	2017/10/24	<0.0050		ug/g	
			Benzo(g,h,i)perylene	2017/10/24	<0.0050		ug/g	
			Benzo(k)fluoranthene	2017/10/24	<0.0050		ug/g	
			Chrysene	2017/10/24	<0.0050		ug/g	
			Dibenz(a,h)anthracene	2017/10/24	<0.0050		ug/g	
			Fluoranthene	2017/10/24	<0.0050		ug/g	
			Fluorene	2017/10/24	<0.0050		ug/g	
			Indeno(1,2,3-cd)pyrene	2017/10/24	<0.0050		ug/g	
			1-Methylnaphthalene	2017/10/24	<0.0050		ug/g	
			2-Methylnaphthalene	2017/10/24	<0.0050		ug/g	
			Naphthalene	2017/10/24	<0.0050		ug/g	
			Phenanthrene	2017/10/24	<0.0050		ug/g	
			Pyrene	2017/10/24	<0.0050		ug/g	
5233183	AUP	RPD	Moisture	2017/10/26	15		%	20
5235473	AKS	Matrix Spike	o-Terphenyl	2017/10/27		74	%	60 - 130

**QUALITY ASSURANCE REPORT(CONT'D)**


QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
5235473	AKS	Spiked Blank	F2 (C10-C16 Hydrocarbons)	2017/10/27		81	%	50 - 130
			F3 (C16-C34 Hydrocarbons)	2017/10/27		80	%	50 - 130
			F4 (C34-C50 Hydrocarbons)	2017/10/27		84	%	50 - 130
			o-Terphenyl	2017/10/28		95	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2017/10/28		84	%	80 - 120
5235473	AKS	Method Blank	F3 (C16-C34 Hydrocarbons)	2017/10/28		90	%	80 - 120
			F4 (C34-C50 Hydrocarbons)	2017/10/28		87	%	80 - 120
			o-Terphenyl	2017/10/27		83	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2017/10/27	<10		ug/g	
			F3 (C16-C34 Hydrocarbons)	2017/10/27	<50		ug/g	
5235473	AKS	RPD	F4 (C34-C50 Hydrocarbons)	2017/10/27	<50		ug/g	
			F2 (C10-C16 Hydrocarbons)	2017/10/27	NC		%	30
			F3 (C16-C34 Hydrocarbons)	2017/10/27	NC		%	30
			F4 (C34-C50 Hydrocarbons)	2017/10/27	NC		%	30
5236941	H_W	Matrix Spike	1,4-Difluorobenzene	2017/10/28		101	%	60 - 140
			4-Bromofluorobenzene	2017/10/28		101	%	60 - 140
			D10-Ethylbenzene	2017/10/28		101	%	60 - 140
			D4-1,2-Dichloroethane	2017/10/28		102	%	60 - 140
			Benzene	2017/10/28		94	%	60 - 140
			Toluene	2017/10/28		92	%	60 - 140
			Ethylbenzene	2017/10/28		92	%	60 - 140
			o-Xylene	2017/10/28		96	%	60 - 140
			p+m-Xylene	2017/10/28		94	%	60 - 140
			F1 (C6-C10)	2017/10/28		95	%	60 - 140
			1,4-Difluorobenzene	2017/10/28		101	%	60 - 140
			4-Bromofluorobenzene	2017/10/28		101	%	60 - 140
			D10-Ethylbenzene	2017/10/28		96	%	60 - 140
			D4-1,2-Dichloroethane	2017/10/28		102	%	60 - 140
5236941	H_W	Method Blank	Benzene	2017/10/28		102	%	60 - 140
			Toluene	2017/10/28		95	%	60 - 140
			Ethylbenzene	2017/10/28		96	%	60 - 140
			o-Xylene	2017/10/28		99	%	60 - 140
			p+m-Xylene	2017/10/28		98	%	60 - 140
			F1 (C6-C10)	2017/10/28		98	%	80 - 120
			1,4-Difluorobenzene	2017/10/28		103	%	60 - 140
			4-Bromofluorobenzene	2017/10/28		100	%	60 - 140
			D10-Ethylbenzene	2017/10/28		95	%	60 - 140
			D4-1,2-Dichloroethane	2017/10/28		102	%	60 - 140
			Benzene	2017/10/28	<0.020		ug/g	
			Toluene	2017/10/28	<0.020		ug/g	
			Ethylbenzene	2017/10/28	<0.020		ug/g	
			o-Xylene	2017/10/28	<0.020		ug/g	
p+m-Xylene	2017/10/28	<0.040		ug/g				
Total Xylenes	2017/10/28	<0.040		ug/g				
5236941	H_W	RPD	F1 (C6-C10)	2017/10/28	<10		ug/g	
			F1 (C6-C10) - BTEX	2017/10/28	<10		ug/g	
			Benzene	2017/10/28	NC		%	50
			Toluene	2017/10/28	NC		%	50
			Ethylbenzene	2017/10/28	NC		%	50
			o-Xylene	2017/10/28	NC		%	50
			p+m-Xylene	2017/10/28	NC		%	50
Total Xylenes	2017/10/28	NC		%	50			
F1 (C6-C10)	2017/10/28	NC		%	30			

**QUALITY ASSURANCE REPORT(CONT'D)**

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
				F1 (C6-C10) - BTEX	2017/10/28	NC		%	30
<p>Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.</p> <p>Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.</p> <p>Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.</p> <p>Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.</p> <p>Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.</p> <p>NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)</p> <p>NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference &lt;= 2x RDL).</p>									

### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

*Eva P.*  


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Ewa Pranjic, M.Sc., C.Chem, Scientific Specialist

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



**Exceedence Summary Table – Reg153/04 T2-Soil/Ind-C**  
**Result Exceedences**

<b>Sample ID</b>	<b>Maxxam ID</b>	<b>Parameter</b>	<b>Criteria</b>	<b>Result</b>	<b>DL</b>	<b>Units</b>
BH17-10-SA3B	FJD604-01	F2 (C10-C16 Hydrocarbons)	230	980	10	ug/g
DUP-1	FJD607-01	F2 (C10-C16 Hydrocarbons)	230	770	10	ug/g
The exceedence summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.						



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**INVOICE TO:**  
 Company Name: #25670 Golder Associates Ltd  
 Attention: Accounts Payable  
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 Markham ON L3R 8V2  
 Tel: (905) 475-2625 x Fax: (905) 475-5257 x  
 Email: AP\_CustomerService@golder.com

**REPORT TO:**  
 Company Name:  
 Attention: Chris Pons  
 Address:  
 Tel: (905) 475-5591 x6680 Fax: (905) 475-5257 x  
 Email: Chris\_Pons@golder.com

**PROJECT INFORMATION:**  
 Quotation #: B70916  
 P.O. #:  
 Project: 1778651  
 Project Name:  
 Site #:  
 Sampled By: Amir Sodagar

J\_L ENV-791

Bottle Order #:  
 633755  
 Project Manager:  
 Ena Gitej

**MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY**

Regulation 153 (2011)	Other Regulations	Special Instructions
<input type="checkbox"/> Table 1 <input checked="" type="checkbox"/> Table 2 <input type="checkbox"/> Table 3 <input type="checkbox"/> Table	<input type="checkbox"/> Res/Park <input checked="" type="checkbox"/> Ind/Comm <input type="checkbox"/> Agri/Other <input type="checkbox"/> Medium/Fine <input checked="" type="checkbox"/> Coarse <input checked="" type="checkbox"/> For RSC <input type="checkbox"/> CCME <input type="checkbox"/> Reg 558 <input type="checkbox"/> MISA <input type="checkbox"/> PWGO <input type="checkbox"/> Other	<input type="checkbox"/> Sanitary Sewer Bylaw <input type="checkbox"/> Storm Sewer Bylaw <input type="checkbox"/> Municipality

**ANALYSIS REQUESTED (PLEASE BE SPECIFIC)**

Field Filtered (please circle): Metals / Hg / Cr / V	VOC	PHC FI-F4 (6166)	PAH	metals, Cr, Cu, V hydrocarbon forming metals	PCB
	X	X			
				X	
			X	X	
			X	X	
	X				

**Turnaround Time (TAT) Required:**  
 Please provide advance notice for rush projects

**Regular (Standard) TAT:**  
 (will be applied if Rush TAT is not specified):  
 Standard TAT = 5-7 Working days for most tests.  
 Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

**Job Specific Rush TAT (if applies to entire submission)**  
 Date Required: Time Required:  
 Rush Confirmation Number: (call lab for #)

**Include Criteria on Certificate of Analysis (Y/N)?** Yes

Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix
1	TP17-2-SA2	Oct 17, 2017	9:30	Soil
2	TP17-5-SA1		11:00	
3	Dnp-2		9:00	
4	TP17-7-SA2		12:30	
5	Dnp-3		7:00	
6	Dnp-4		7:00	
7	TP17-4-SA3		13:30	
8	BH17-6-SA3A	Oct 16, 2017	10:00	
9	BH17-7-SA3A		11:00	
10	BH17-8-SA3A		12:00	

# of Bottles	Comments
3	
1	
1	
5	
3	
3	
3	
3	
3	
3	

**\* RELINQUISHED BY: (Signature/Print)** Amir Sodagar  
**Date: (YY/MM/DD)** 17/10/17  
**Time** 15:00  
**RECEIVED BY: (Signature/Print)** [Signature]  
**Date: (YY/MM/DD)** 20/10/17  
**Time** 14:05  
 # jars used and not submitted: 0

**Laboratory Use Only**

Time Sensitive	Temperature (°C) on Recept	Custody Seal Present	Intact	Yes	No
	3.11				

\* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.  
 \* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.  
 \*\* SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

SAMPLES MUST BE KEPT COOL (< 10° C ) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM  
 White: Maxxa Yellow: Client

<b>INVOICE TO:</b>		<b>REPORT TO:</b>		<b>PROJECT INFORMATION:</b>		<b>Laboratory Use Only:</b>	
Company Name: #25670 Golder Associates Ltd		Company Name: _____		Quotation #: B70916		Maxxam Job #: _____	
Attention: Accounts Payable		Attention: Chris Pons		P.O. #: _____		Bottle Order #: _____	
Address: 215 Shields Court Unit # 1		Address: _____		Project: 177851		634012	
Markham ON L3R 8V2		_____		Project Name: _____		COC #: _____	
Tel: (905) 475-2625 x _____ Fax: (905) 475-5257 x _____		Tel: (905) 475-5591 x6680 Fax: (905) 475-5257 x _____		Site #: _____		Project Manager: _____	
Email: AP_CustomerService@golder.com		Email: Chris_Pons@golder.com		Sampled By: Amir Sedagoo		Erna Gitej	

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY					ANALYSIS REQUESTED (PLEASE BE SPECIFIC)										Turnaround Time (TAT) Required:			
Regulation 153 (2011)			Other Regulations		Special Instructions											Please provide advance notice for rush projects		
<input type="checkbox"/> Table 1	<input type="checkbox"/> Res/Park	<input type="checkbox"/> Medium/Fine	<input type="checkbox"/> CCME	<input type="checkbox"/> Sanitary Sewer Bylaw												<b>Regular (Standard) TAT:</b>		
<input checked="" type="checkbox"/> Table 2	<input checked="" type="checkbox"/> Ind/Comm	<input checked="" type="checkbox"/> Coarse	<input type="checkbox"/> Reg 558	<input type="checkbox"/> Storm Sewer Bylaw												<i>(will be applied if Rush TAT is not specified):</i>		
<input type="checkbox"/> Table 3	<input type="checkbox"/> Agri/Other	<input checked="" type="checkbox"/> For RSC	<input type="checkbox"/> MISA	Municipality _____												Standard TAT = 5-7 Working days for most tests.		
<input type="checkbox"/> Table _____			<input type="checkbox"/> PWQO	_____												Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.		
Include Criteria on Certificate of Analysis (Y/N)? <u>Y25</u>															<b>Job Specific Rush TAT (if applies to entire submission)</b>			
															Date Required: _____ Time Required: _____			
															Rush Confirmation Number: _____ (call lab for #)			
Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	Pb	Cd	Cu	Zn	Mn	Fe	Al	As	Hg	Cr VI	Other	# of Bottles	Comments
1	BH17-9-SA2B	Oct 16, 2017	12:30	soil		X											3	
2	BH17-10-SA3B		8:30			X											3	
3	BH17-10-SA4B		8:40														X	3
4	BH17-10-SA5B		8:45														X	3
5	Dup-1		7:00			X												3
6	BH17-11-SA1B		14:00			X												3
7	BH17-12-SA3A		14:30			X	X											3
8	BH17-13-SA1B		15:00						X	X								3
9	BH17-13-SA2B		15:05			X												3
10																		

* RELINQUISHED BY: (Signature/Print)		Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)		Date: (YY/MM/DD)	Time	# jars used and not submitted	Laboratory Use Only		
<i>Amir Sedagoo</i>		17/10/17	15:00	<i>Erna Gitej</i>		21/10/17	14:05	0	Time Sensitive	Temperature (°C) on Receptacle	Custody Seal Present
										3/11/17	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

\* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

\* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

\*\* SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

White: Maxxa Yellow: Client

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

**Attention:Chris Pons**

Golder Associates Ltd  
215 Shields Court  
Unit # 1  
Markham, ON  
Canada L3R 8V2

**Report Date: 2017/11/10**  
Report #: R4845099  
Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B707808**

**Received: 2017/11/03, 14:55**

Sample Matrix: Water  
# Samples Received: 5

<b>Analyses</b>	<b>Quantity</b>	<b>Date Extracted</b>	<b>Date Analyzed</b>	<b>Laboratory Method</b>	<b>Reference</b>
Alkalinity	5	N/A	2017/11/09	CAM SOP-00448	SM 22 2320 B m
Carbonate, Bicarbonate and Hydroxide	5	N/A	2017/11/09	CAM SOP-00102	APHA 4500-CO2 D
1,3-Dichloropropene Sum	5	N/A	2017/11/10		EPA 8260C m
Chloride by Automated Colourimetry	5	N/A	2017/11/09	CAM SOP-00463	EPA 325.2 m
Conductivity	5	N/A	2017/11/09	CAM SOP-00414	SM 22 2510 m
Dissolved Organic Carbon (DOC) (1)	4	N/A	2017/11/08	CAM SOP-00446	SM 22 5310 B m
Dissolved Organic Carbon (DOC) (1)	1	N/A	2017/11/09	CAM SOP-00446	SM 22 5310 B m
Petroleum Hydrocarbons F2-F4 in Water (2)	5	2017/11/08	2017/11/09	CAM SOP-00316	CCME PHC-CWS m
Hardness (calculated as CaCO3)	5	N/A	2017/11/09	CAM SOP 00102/00408/00447	SM 2340 B
Mercury	5	2017/11/09	2017/11/09	CAM SOP-00453	EPA 7470A m
Dissolved Metals by ICPMS	5	N/A	2017/11/09	CAM SOP-00447	EPA 6020B m
Ion Balance (% Difference)	5	N/A	2017/11/09		
Anion and Cation Sum	5	N/A	2017/11/09		
Total Ammonia-N	5	N/A	2017/11/09	CAM SOP-00441	EPA GS I-2522-90 m
Nitrate (NO3) and Nitrite (NO2) in Water (3)	5	N/A	2017/11/09	CAM SOP-00440	SM 22 4500-NO3I/NO2B
Polychlorinated Biphenyl in Water	4	2017/11/08	2017/11/09	CAM SOP-00309	EPA 8082A m
pH	5	N/A	2017/11/09	CAM SOP-00413	SM 4500H+ B m
Orthophosphate	5	N/A	2017/11/09	CAM SOP-00461	EPA 365.1 m
Sat. pH and Langelier Index (@ 20C)	5	N/A	2017/11/09		
Sat. pH and Langelier Index (@ 4C)	5	N/A	2017/11/09		
Sulphate by Automated Colourimetry	5	N/A	2017/11/09	CAM SOP-00464	EPA 375.4 m
Total Dissolved Solids (TDS calc)	5	N/A	2017/11/09		
Total Kjeldahl Nitrogen in Water	5	2017/11/08	2017/11/09	CAM SOP-00938	OMOE E3516 m
Volatile Organic Compounds and F1 PHCs	5	N/A	2017/11/09	CAM SOP-00230	EPA 8260C m

**Remarks:**

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

Your Project #: 1778651  
Your C.O.C. #: 636857-03-01

**Attention:Chris Pons**

Golder Associates Ltd  
215 Shields Court  
Unit # 1  
Markham, ON  
Canada L3R 8V2

**Report Date: 2017/11/10**  
Report #: R4845099  
Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B707808**

**Received: 2017/11/03, 14:55**

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) Dissolved Organic Carbon (DOC) present in the sample should be considered as non-purgeable DOC.

(2) All CCME PHC results met required criteria unless otherwise stated in the report. The CVS PHC methods employed by Maxxam conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following "Alberta Environment's Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Validation of Performance-Based Alternative Methods September 2003". Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

(3) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

**Encryption Key**

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Ema Gitej, Senior Project Manager

Email: EGitej@maxxam.ca

Phone# (905)817-5829

=====

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



**RCAP - COMPREHENSIVE (WATER)**

Maxxam ID		FMH814	FMH814	FMH882	FMH919	FMH919		
Sampling Date		2017/11/02 16:00	2017/11/02 16:00	2017/11/02 11:00	2017/11/02 14:00	2017/11/02 14:00		
COC Number		636857-03-01	636857-03-01	636857-03-01	636857-03-01	636857-03-01		
	UNITS	MW17-1	MW17-1 Lab-Dup	MW17-2	MW17-3	MW17-3 Lab-Dup	RDL	QC Batch
<b>Calculated Parameters</b>								
Anion Sum	me/L	4.56		5.31	4.49		N/A	5254445
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	140		210	150		1.0	5254443
Calculated TDS	mg/L	250		270	240		1.0	5254441
Carb. Alkalinity (calc. as CaCO3)	mg/L	1.9		2.0	2.0		1.0	5254443
Cation Sum	me/L	3.91		4.84	4.00		N/A	5254445
Hardness (CaCO3)	mg/L	75		220	110		1.0	5254418
Ion Balance (% Difference)	%	7.78		4.64	5.83		N/A	5254444
Langelier Index (@ 20C)	N/A	0.193		0.748	0.434			5254439
Langelier Index (@ 4C)	N/A	-0.0570		0.499	0.184			5254440
Saturation pH (@ 20C)	N/A	7.95		7.26	7.72			5254439
Saturation pH (@ 4C)	N/A	8.20		7.51	7.97			5254440
<b>Inorganics</b>								
Total Ammonia-N	mg/L	0.11		<0.050	0.082		0.050	5256052
Conductivity	umho/cm	420		460	410		1.0	5256257
Dissolved Organic Carbon	mg/L	1.4		0.86	2.0	1.9	0.50	5256093
Orthophosphate (P)	mg/L	<0.010	<0.010	<0.010	<0.010		0.010	5256354
pH	pH	8.14		8.01	8.15			5256254
Dissolved Sulphate (SO4)	mg/L	36	36	25	19		1.0	5256353
Alkalinity (Total as CaCO3)	mg/L	140		210	160		1.0	5256277
Dissolved Chloride (Cl)	mg/L	33	33	15	34		1.0	5256350
Nitrite (N)	mg/L	0.023		<0.010	0.030		0.010	5256244
Nitrate (N)	mg/L	0.10		1.08	0.18		0.10	5256244
Nitrate + Nitrite (N)	mg/L	0.12		1.08	0.21		0.10	5256244
<b>Metals</b>								
Dissolved Aluminum (Al)	ug/L	8.6		6.7	13		5.0	5255842
Dissolved Antimony (Sb)	ug/L	<0.50		<0.50	<0.50		0.50	5255842
Dissolved Arsenic (As)	ug/L	<1.0		<1.0	<1.0		1.0	5255842
Dissolved Barium (Ba)	ug/L	32		65	28		2.0	5255842
Dissolved Beryllium (Be)	ug/L	<0.50		<0.50	<0.50		0.50	5255842
Dissolved Boron (B)	ug/L	160		27	110		10	5255842
Dissolved Cadmium (Cd)	ug/L	<0.10		<0.10	<0.10		0.10	5255842
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate								

**RCAP - COMPREHENSIVE (WATER)**

Maxxam ID		FMH814	FMH814	FMH882	FMH919	FMH919		
Sampling Date		2017/11/02 16:00	2017/11/02 16:00	2017/11/02 11:00	2017/11/02 14:00	2017/11/02 14:00		
COC Number		636857-03-01	636857-03-01	636857-03-01	636857-03-01	636857-03-01		
	UNITS	MW17-1	MW17-1 Lab-Dup	MW17-2	MW17-3	MW17-3 Lab-Dup	RDL	QC Batch
Dissolved Calcium (Ca)	ug/L	20000		67000	31000		200	5255842
Dissolved Chromium (Cr)	ug/L	<5.0		<5.0	<5.0		5.0	5255842
Dissolved Cobalt (Co)	ug/L	<0.50		<0.50	<0.50		0.50	5255842
Dissolved Copper (Cu)	ug/L	4.9		2.2	4.4		1.0	5255842
Dissolved Iron (Fe)	ug/L	<100		<100	<100		100	5255842
Dissolved Lead (Pb)	ug/L	<0.50		<0.50	<0.50		0.50	5255842
Dissolved Magnesium (Mg)	ug/L	6300		12000	7700		50	5255842
Dissolved Manganese (Mn)	ug/L	5.1		3.2	7.8		2.0	5255842
Dissolved Molybdenum (Mo)	ug/L	4.3		14	16		0.50	5255842
Dissolved Nickel (Ni)	ug/L	1.1		<1.0	1.1		1.0	5255842
Dissolved Phosphorus (P)	ug/L	<100		<100	<100		100	5255842
Dissolved Potassium (K)	ug/L	1700		2500	3300		200	5255842
Dissolved Selenium (Se)	ug/L	<2.0		<2.0	<2.0		2.0	5255842
Dissolved Silicon (Si)	ug/L	4100		4100	4300		50	5255842
Dissolved Silver (Ag)	ug/L	<0.10		<0.10	<0.10		0.10	5255842
Dissolved Sodium (Na)	ug/L	54000		11000	40000		100	5255842
Dissolved Strontium (Sr)	ug/L	630		200	230		1.0	5255842
Dissolved Thallium (Tl)	ug/L	<0.050		<0.050	<0.050		0.050	5255842
Dissolved Titanium (Ti)	ug/L	<5.0		<5.0	<5.0		5.0	5255842
Dissolved Uranium (U)	ug/L	0.25		0.37	0.35		0.10	5255842
Dissolved Vanadium (V)	ug/L	<0.50		<0.50	<0.50		0.50	5255842
Dissolved Zinc (Zn)	ug/L	<5.0		<5.0	<5.0		5.0	5255842
RDL = Reportable Detection Limit								
QC Batch = Quality Control Batch								
Lab-Dup = Laboratory Initiated Duplicate								



**RCAP - COMPREHENSIVE (WATER)**

Maxxam ID		FMH920	FMH921		
Sampling Date		2017/11/02 15:00	2017/11/02 12:00		
COC Number		636857-03-01	636857-03-01		
	UNITS	MW17-4	DUP1	RDL	QC Batch
<b>Calculated Parameters</b>					
Anion Sum	me/L	4.30	5.26	N/A	5254445
Bicarb. Alkalinity (calc. as CaCO <sub>3</sub> )	mg/L	150	210	1.0	5254443
Calculated TDS	mg/L	220	270	1.0	5254441
Carb. Alkalinity (calc. as CaCO <sub>3</sub> )	mg/L	2.0	2.2	1.0	5254443
Cation Sum	me/L	3.77	4.92	N/A	5254445
Hardness (CaCO <sub>3</sub> )	mg/L	110	220	1.0	5254418
Ion Balance (% Difference)	%	6.54	3.31	N/A	5254444
Langelier Index (@ 20C)	N/A	0.437	0.789		5254439
Langelier Index (@ 4C)	N/A	0.187	0.540		5254440
Saturation pH (@ 20C)	N/A	7.71	7.26		5254439
Saturation pH (@ 4C)	N/A	7.96	7.51		5254440
<b>Inorganics</b>					
Total Ammonia-N	mg/L	0.097	<0.050	0.050	5256052
Conductivity	umho/cm	390	440	1.0	5256257
Dissolved Organic Carbon	mg/L	1.3	0.77	0.50	5256093
Orthophosphate (P)	mg/L	<0.010	<0.010	0.010	5256354
pH	pH	8.15	8.05		5256254
Dissolved Sulphate (SO <sub>4</sub> )	mg/L	19	27	1.0	5256353
Alkalinity (Total as CaCO <sub>3</sub> )	mg/L	150	210	1.0	5256277
Dissolved Chloride (Cl)	mg/L	29	14	1.0	5256350
Nitrite (N)	mg/L	0.065	<0.010	0.010	5256244
Nitrate (N)	mg/L	<0.10	0.79	0.10	5256244
Nitrate + Nitrite (N)	mg/L	<0.10	0.79	0.10	5256244
<b>Metals</b>					
Dissolved Aluminum (Al)	ug/L	12	9.6	5.0	5255842
Dissolved Antimony (Sb)	ug/L	<0.50	<0.50	0.50	5255842
Dissolved Arsenic (As)	ug/L	<1.0	<1.0	1.0	5255842
Dissolved Barium (Ba)	ug/L	25	65	2.0	5255842
Dissolved Beryllium (Be)	ug/L	<0.50	<0.50	0.50	5255842
Dissolved Boron (B)	ug/L	94	32	10	5255842
Dissolved Cadmium (Cd)	ug/L	<0.10	<0.10	0.10	5255842
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable					

**RCAP - COMPREHENSIVE (WATER)**

Maxxam ID		FMH920	FMH921		
Sampling Date		2017/11/02 15:00	2017/11/02 12:00		
COC Number		636857-03-01	636857-03-01		
	UNITS	MW17-4	DUP1	RDL	QC Batch
Dissolved Calcium (Ca)	ug/L	31000	67000	200	5255842
Dissolved Chromium (Cr)	ug/L	<5.0	<5.0	5.0	5255842
Dissolved Cobalt (Co)	ug/L	<0.50	<0.50	0.50	5255842
Dissolved Copper (Cu)	ug/L	1.9	3.3	1.0	5255842
Dissolved Iron (Fe)	ug/L	<100	<100	100	5255842
Dissolved Lead (Pb)	ug/L	<0.50	<0.50	0.50	5255842
Dissolved Magnesium (Mg)	ug/L	7200	12000	50	5255842
Dissolved Manganese (Mn)	ug/L	21	2.6	2.0	5255842
Dissolved Molybdenum (Mo)	ug/L	51	17	0.50	5255842
Dissolved Nickel (Ni)	ug/L	1.1	<1.0	1.0	5255842
Dissolved Phosphorus (P)	ug/L	<100	<100	100	5255842
Dissolved Potassium (K)	ug/L	4400	2500	200	5255842
Dissolved Selenium (Se)	ug/L	<2.0	<2.0	2.0	5255842
Dissolved Silicon (Si)	ug/L	2900	4200	50	5255842
Dissolved Silver (Ag)	ug/L	<0.10	<0.10	0.10	5255842
Dissolved Sodium (Na)	ug/L	34000	12000	100	5255842
Dissolved Strontium (Sr)	ug/L	270	200	1.0	5255842
Dissolved Thallium (Tl)	ug/L	<0.050	<0.050	0.050	5255842
Dissolved Titanium (Ti)	ug/L	<5.0	<5.0	5.0	5255842
Dissolved Uranium (U)	ug/L	0.26	0.37	0.10	5255842
Dissolved Vanadium (V)	ug/L	<0.50	<0.50	0.50	5255842
Dissolved Zinc (Zn)	ug/L	<5.0	<5.0	5.0	5255842
RDL = Reportable Detection Limit					
QC Batch = Quality Control Batch					

**RESULTS OF ANALYSES OF WATER**

Maxxam ID		FMH814	FMH882	FMH919	FMH920	FMH921		
Sampling Date		2017/11/02 16:00	2017/11/02 11:00	2017/11/02 14:00	2017/11/02 15:00	2017/11/02 12:00		
COC Number		636857-03-01	636857-03-01	636857-03-01	636857-03-01	636857-03-01		
	<b>UNITS</b>	<b>MW17-1</b>	<b>MW17-2</b>	<b>MW17-3</b>	<b>MW17-4</b>	<b>DUP1</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Inorganics</b>								
Total Kjeldahl Nitrogen (TKN)	mg/L	0.23	0.27	0.55	0.20	0.16	0.10	5255484
RDL = Reportable Detection Limit								
QC Batch = Quality Control Batch								

**ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)**

<b>Maxxam ID</b>		FMH814	FMH882	FMH919	FMH920	FMH920	FMH921		
<b>Sampling Date</b>		2017/11/02 16:00	2017/11/02 11:00	2017/11/02 14:00	2017/11/02 15:00	2017/11/02 15:00	2017/11/02 12:00		
<b>COC Number</b>		636857-03-01	636857-03-01	636857-03-01	636857-03-01	636857-03-01	636857-03-01		
	<b>UNITS</b>	<b>MW17-1</b>	<b>MW17-2</b>	<b>MW17-3</b>	<b>MW17-4</b>	<b>MW17-4 Lab-Dup</b>	<b>DUP1</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Metals</b>									
Mercury (Hg)	ug/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	5256678
RDL = Reportable Detection Limit									
QC Batch = Quality Control Batch									
Lab-Dup = Laboratory Initiated Duplicate									

**O.REG 153 PCBS (WATER)**

Maxxam ID		FMH882	FMH919	FMH920	FMH921		
Sampling Date		2017/11/02 11:00	2017/11/02 14:00	2017/11/02 15:00	2017/11/02 12:00		
COC Number		636857-03-01	636857-03-01	636857-03-01	636857-03-01		
	<b>UNITS</b>	<b>MW17-2</b>	<b>MW17-3</b>	<b>MW17-4</b>	<b>DUP1</b>	<b>RDL</b>	<b>QC Batch</b>
<b>PCBs</b>							
Aroclor 1242	ug/L	<0.05	<0.05	<0.05	<0.05	0.05	5255612
Aroclor 1248	ug/L	<0.05	<0.05	<0.05	<0.05	0.05	5255612
Aroclor 1254	ug/L	<0.05	<0.05	<0.05	<0.05	0.05	5255612
Aroclor 1260	ug/L	<0.05	<0.05	<0.05	<0.05	0.05	5255612
Total PCB	ug/L	<0.05	<0.05	<0.05	<0.05	0.05	5255612
<b>Surrogate Recovery (%)</b>							
Decachlorobiphenyl	%	96	96	86	99		5255612
RDL = Reportable Detection Limit							
QC Batch = Quality Control Batch							

**O.REG 153 VOCs BY HS & F1-F4 (WATER)**

Maxxam ID		FMH814	FMH882	FMH919	FMH920	FMH921		
Sampling Date		2017/11/02 16:00	2017/11/02 11:00	2017/11/02 14:00	2017/11/02 15:00	2017/11/02 12:00		
COC Number		636857-03-01	636857-03-01	636857-03-01	636857-03-01	636857-03-01		
	UNITS	MW17-1	MW17-2	MW17-3	MW17-4	DUP1	RDL	QC Batch
<b>Calculated Parameters</b>								
1,3-Dichloropropene (cis+trans)	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5254338
<b>Volatile Organics</b>								
Acetone (2-Propanone)	ug/L	<10	<10	<10	<10	<10	10	5254817
Benzene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5254817
Bromodichloromethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5254817
Bromoform	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	5254817
Bromomethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5254817
Carbon Tetrachloride	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5254817
Chlorobenzene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5254817
Chloroform	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5254817
Dibromochloromethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5254817
1,2-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5254817
1,3-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5254817
1,4-Dichlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5254817
Dichlorodifluoromethane (FREON 12)	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	5254817
1,1-Dichloroethane	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5254817
1,2-Dichloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5254817
1,1-Dichloroethylene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5254817
cis-1,2-Dichloroethylene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5254817
trans-1,2-Dichloroethylene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5254817
1,2-Dichloropropane	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5254817
cis-1,3-Dichloropropene	ug/L	<0.30	<0.30	<0.30	<0.30	<0.30	0.30	5254817
trans-1,3-Dichloropropene	ug/L	<0.40	<0.40	<0.40	<0.40	<0.40	0.40	5254817
Ethylbenzene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5254817
Ethylene Dibromide	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5254817
Hexane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	5254817
Methylene Chloride(Dichloromethane)	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	5254817
Methyl Ethyl Ketone (2-Butanone)	ug/L	<10	<10	<10	<10	<10	10	5254817
Methyl Isobutyl Ketone	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	5254817
Methyl t-butyl ether (MTBE)	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5254817
Styrene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5254817
RDL = Reportable Detection Limit								
QC Batch = Quality Control Batch								

**O.REG 153 VOCs BY HS & F1-F4 (WATER)**

Maxxam ID		FMH814	FMH882	FMH919	FMH920	FMH921		
Sampling Date		2017/11/02 16:00	2017/11/02 11:00	2017/11/02 14:00	2017/11/02 15:00	2017/11/02 12:00		
COC Number		636857-03-01	636857-03-01	636857-03-01	636857-03-01	636857-03-01		
	UNITS	MW17-1	MW17-2	MW17-3	MW17-4	DUP1	RDL	QC Batch
1,1,1,2-Tetrachloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5254817
1,1,2-Tetrachloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5254817
Tetrachloroethylene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5254817
Toluene	ug/L	<0.20	<0.20	<0.20	0.23	<0.20	0.20	5254817
1,1,1-Trichloroethane	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5254817
1,1,2-Trichloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5254817
Trichloroethylene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5254817
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	5254817
Vinyl Chloride	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5254817
p+m-Xylene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5254817
o-Xylene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5254817
Total Xylenes	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	5254817
F1 (C6-C10)	ug/L	<25	<25	<25	<25	<25	25	5254817
F1 (C6-C10) - BTEX	ug/L	<25	<25	<25	<25	<25	25	5254817
<b>F2-F4 Hydrocarbons</b>								
F2 (C10-C16 Hydrocarbons)	ug/L	<100	<100	<100	<100	<100	100	5256371
F3 (C16-C34 Hydrocarbons)	ug/L	<200	<200	<200	<200	<200	200	5256371
F4 (C34-C50 Hydrocarbons)	ug/L	<200	<200	<200	<200	<200	200	5256371
Reached Baseline at C50	ug/L	Yes	Yes	Yes	Yes	Yes		5256371
<b>Surrogate Recovery (%)</b>								
o-Terphenyl	%	101	89	92	88	90		5256371
4-Bromofluorobenzene	%	93	92	91	91	92		5254817
D4-1,2-Dichloroethane	%	107	107	107	105	108		5254817
D8-Toluene	%	93	94	94	94	94		5254817
RDL = Reportable Detection Limit								
QC Batch = Quality Control Batch								



### TEST SUMMARY

**Maxxam ID:** FMH814  
**Sample ID:** MW17-1  
**Matrix:** Water

**Collected:** 2017/11/02  
**Shipped:**  
**Received:** 2017/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	5256277	N/A	2017/11/09	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	5254443	N/A	2017/11/09	Automated Statchk
1,3-Dichloropropene Sum	CALC	5254338	N/A	2017/11/10	Automated Statchk
Chloride by Automated Colourimetry	KONE	5256350	N/A	2017/11/09	Alina Dobreanu
Conductivity	AT	5256257	N/A	2017/11/09	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	5256093	N/A	2017/11/08	Anastasia Hamanov
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	5256371	2017/11/08	2017/11/09	Barbara Wowk
Hardness (calculated as CaCO3)		5254418	N/A	2017/11/09	Automated Statchk
Mercury	CV/AA	5256678	2017/11/09	2017/11/09	Ron Morrison
Dissolved Metals by ICPMS	ICP/MS	5255842	N/A	2017/11/09	Thao Nguyen
Ion Balance (% Difference)	CALC	5254444	N/A	2017/11/09	Automated Statchk
Anion and Cation Sum	CALC	5254445	N/A	2017/11/09	Automated Statchk
Total Ammonia-N	LACH/NH4	5256052	N/A	2017/11/09	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	5256244	N/A	2017/11/09	Chandra Nandlal
pH	AT	5256254	N/A	2017/11/09	Surinder Rai
Orthophosphate	KONE	5256354	N/A	2017/11/09	Alina Dobreanu
Sat. pH and Langelier Index (@ 20C)	CALC	5254439	N/A	2017/11/09	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	5254440	N/A	2017/11/09	Automated Statchk
Sulphate by Automated Colourimetry	KONE	5256353	N/A	2017/11/09	Alina Dobreanu
Total Dissolved Solids (TDS calc)	CALC	5254441	N/A	2017/11/09	Automated Statchk
Total Kjeldahl Nitrogen in Water	SKAL	5255484	2017/11/08	2017/11/09	Rajni Tyagi
Volatile Organic Compounds and F1 PHCs	GC/MSFD	5254817	N/A	2017/11/09	Karen Hughes

**Maxxam ID:** FMH814 Dup  
**Sample ID:** MW17-1  
**Matrix:** Water

**Collected:** 2017/11/02  
**Shipped:**  
**Received:** 2017/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chloride by Automated Colourimetry	KONE	5256350	N/A	2017/11/09	Alina Dobreanu
Orthophosphate	KONE	5256354	N/A	2017/11/09	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	5256353	N/A	2017/11/09	Alina Dobreanu

**Maxxam ID:** FMH882  
**Sample ID:** MW17-2  
**Matrix:** Water

**Collected:** 2017/11/02  
**Shipped:**  
**Received:** 2017/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	5256277	N/A	2017/11/09	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	5254443	N/A	2017/11/09	Automated Statchk
1,3-Dichloropropene Sum	CALC	5254338	N/A	2017/11/10	Automated Statchk
Chloride by Automated Colourimetry	KONE	5256350	N/A	2017/11/09	Alina Dobreanu
Conductivity	AT	5256257	N/A	2017/11/09	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	5256093	N/A	2017/11/08	Anastasia Hamanov
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	5256371	2017/11/08	2017/11/09	Barbara Wowk
Hardness (calculated as CaCO3)		5254418	N/A	2017/11/09	Automated Statchk

### TEST SUMMARY

**Maxxam ID:** FMH882  
**Sample ID:** MW17-2  
**Matrix:** Water

**Collected:** 2017/11/02  
**Shipped:**  
**Received:** 2017/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury	CV/AA	5256678	2017/11/09	2017/11/09	Ron Morrison
Dissolved Metals by ICPMS	ICP/MS	5255842	N/A	2017/11/09	Thao Nguyen
Ion Balance (% Difference)	CALC	5254444	N/A	2017/11/09	Automated Statchk
Anion and Cation Sum	CALC	5254445	N/A	2017/11/09	Automated Statchk
Total Ammonia-N	LACH/NH4	5256052	N/A	2017/11/09	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	5256244	N/A	2017/11/09	Chandra Nandlal
Polychlorinated Biphenyl in Water	GC/ECD	5255612	2017/11/08	2017/11/09	Sarah Huang
pH	AT	5256254	N/A	2017/11/09	Surinder Rai
Orthophosphate	KONE	5256354	N/A	2017/11/09	Alina Dobreanu
Sat. pH and Langelier Index (@ 20C)	CALC	5254439	N/A	2017/11/09	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	5254440	N/A	2017/11/09	Automated Statchk
Sulphate by Automated Colourimetry	KONE	5256353	N/A	2017/11/09	Alina Dobreanu
Total Dissolved Solids (TDS calc)	CALC	5254441	N/A	2017/11/09	Automated Statchk
Total Kjeldahl Nitrogen in Water	SKAL	5255484	2017/11/08	2017/11/09	Rajni Tyagi
Volatile Organic Compounds and F1 PHCs	GC/MSFD	5254817	N/A	2017/11/09	Karen Hughes

**Maxxam ID:** FMH919  
**Sample ID:** MW17-3  
**Matrix:** Water

**Collected:** 2017/11/02  
**Shipped:**  
**Received:** 2017/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	5256277	N/A	2017/11/09	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	5254443	N/A	2017/11/09	Automated Statchk
1,3-Dichloropropene Sum	CALC	5254338	N/A	2017/11/10	Automated Statchk
Chloride by Automated Colourimetry	KONE	5256350	N/A	2017/11/09	Alina Dobreanu
Conductivity	AT	5256257	N/A	2017/11/09	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	5256093	N/A	2017/11/08	Anastasia Hamanov
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	5256371	2017/11/08	2017/11/09	Barbara Wowk
Hardness (calculated as CaCO3)		5254418	N/A	2017/11/09	Automated Statchk
Mercury	CV/AA	5256678	2017/11/09	2017/11/09	Ron Morrison
Dissolved Metals by ICPMS	ICP/MS	5255842	N/A	2017/11/09	Thao Nguyen
Ion Balance (% Difference)	CALC	5254444	N/A	2017/11/09	Automated Statchk
Anion and Cation Sum	CALC	5254445	N/A	2017/11/09	Automated Statchk
Total Ammonia-N	LACH/NH4	5256052	N/A	2017/11/09	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	5256244	N/A	2017/11/09	Chandra Nandlal
Polychlorinated Biphenyl in Water	GC/ECD	5255612	2017/11/08	2017/11/09	Sarah Huang
pH	AT	5256254	N/A	2017/11/09	Surinder Rai
Orthophosphate	KONE	5256354	N/A	2017/11/09	Alina Dobreanu
Sat. pH and Langelier Index (@ 20C)	CALC	5254439	N/A	2017/11/09	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	5254440	N/A	2017/11/09	Automated Statchk
Sulphate by Automated Colourimetry	KONE	5256353	N/A	2017/11/09	Alina Dobreanu
Total Dissolved Solids (TDS calc)	CALC	5254441	N/A	2017/11/09	Automated Statchk
Total Kjeldahl Nitrogen in Water	SKAL	5255484	2017/11/08	2017/11/09	Rajni Tyagi
Volatile Organic Compounds and F1 PHCs	GC/MSFD	5254817	N/A	2017/11/09	Karen Hughes

### TEST SUMMARY

**Maxxam ID:** FMH919 Dup  
**Sample ID:** MW17-3  
**Matrix:** Water

**Collected:** 2017/11/02  
**Shipped:**  
**Received:** 2017/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Organic Carbon (DOC)	TOCV/NDIR	5256093	N/A	2017/11/08	Anastasia Hamanov

**Maxxam ID:** FMH920  
**Sample ID:** MW17-4  
**Matrix:** Water

**Collected:** 2017/11/02  
**Shipped:**  
**Received:** 2017/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	5256277	N/A	2017/11/09	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	5254443	N/A	2017/11/09	Automated Statchk
1,3-Dichloropropene Sum	CALC	5254338	N/A	2017/11/10	Automated Statchk
Chloride by Automated Colourimetry	KONE	5256350	N/A	2017/11/09	Alina Dobreanu
Conductivity	AT	5256257	N/A	2017/11/09	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	5256093	N/A	2017/11/08	Anastasia Hamanov
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	5256371	2017/11/08	2017/11/09	Barbara Wowk
Hardness (calculated as CaCO3)		5254418	N/A	2017/11/09	Automated Statchk
Mercury	CV/AA	5256678	2017/11/09	2017/11/09	Ron Morrison
Dissolved Metals by ICPMS	ICP/MS	5255842	N/A	2017/11/09	Thao Nguyen
Ion Balance (% Difference)	CALC	5254444	N/A	2017/11/09	Automated Statchk
Anion and Cation Sum	CALC	5254445	N/A	2017/11/09	Automated Statchk
Total Ammonia-N	LACH/NH4	5256052	N/A	2017/11/09	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	5256244	N/A	2017/11/09	Chandra Nandlal
Polychlorinated Biphenyl in Water	GC/ECD	5255612	2017/11/08	2017/11/09	Sarah Huang
pH	AT	5256254	N/A	2017/11/09	Surinder Rai
Orthophosphate	KONE	5256354	N/A	2017/11/09	Alina Dobreanu
Sat. pH and Langelier Index (@ 20C)	CALC	5254439	N/A	2017/11/09	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	5254440	N/A	2017/11/09	Automated Statchk
Sulphate by Automated Colourimetry	KONE	5256353	N/A	2017/11/09	Alina Dobreanu
Total Dissolved Solids (TDS calc)	CALC	5254441	N/A	2017/11/09	Automated Statchk
Total Kjeldahl Nitrogen in Water	SKAL	5255484	2017/11/08	2017/11/09	Rajni Tyagi
Volatile Organic Compounds and F1 PHCS	GC/MSFD	5254817	N/A	2017/11/09	Karen Hughes

**Maxxam ID:** FMH920 Dup  
**Sample ID:** MW17-4  
**Matrix:** Water

**Collected:** 2017/11/02  
**Shipped:**  
**Received:** 2017/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury	CV/AA	5256678	2017/11/09	2017/11/09	Ron Morrison

**Maxxam ID:** FMH921  
**Sample ID:** DUP1  
**Matrix:** Water

**Collected:** 2017/11/02  
**Shipped:**  
**Received:** 2017/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	5256277	N/A	2017/11/09	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	5254443	N/A	2017/11/09	Automated Statchk
1,3-Dichloropropene Sum	CALC	5254338	N/A	2017/11/10	Automated Statchk

### TEST SUMMARY

**Maxxam ID:** FMH921  
**Sample ID:** DUP1  
**Matrix:** Water

**Collected:** 2017/11/02  
**Shipped:**  
**Received:** 2017/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chloride by Automated Colourimetry	KONE	5256350	N/A	2017/11/09	Alina Dobreanu
Conductivity	AT	5256257	N/A	2017/11/09	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	5256093	N/A	2017/11/09	Anastasia Hamanov
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	5256371	2017/11/08	2017/11/09	Barbara Wowk
Hardness (calculated as CaCO3)		5254418	N/A	2017/11/09	Automated Statchk
Mercury	CV/AA	5256678	2017/11/09	2017/11/09	Ron Morrison
Dissolved Metals by ICPMS	ICP/MS	5255842	N/A	2017/11/09	Thao Nguyen
Ion Balance (% Difference)	CALC	5254444	N/A	2017/11/09	Automated Statchk
Anion and Cation Sum	CALC	5254445	N/A	2017/11/09	Automated Statchk
Total Ammonia-N	LACH/NH4	5256052	N/A	2017/11/09	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	5256244	N/A	2017/11/09	Chandra Nandlal
Polychlorinated Biphenyl in Water	GC/ECD	5255612	2017/11/08	2017/11/09	Sarah Huang
pH	AT	5256254	N/A	2017/11/09	Surinder Rai
Orthophosphate	KONE	5256354	N/A	2017/11/09	Alina Dobreanu
Sat. pH and Langelier Index (@ 20C)	CALC	5254439	N/A	2017/11/09	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	5254440	N/A	2017/11/09	Automated Statchk
Sulphate by Automated Colourimetry	KONE	5256353	N/A	2017/11/09	Alina Dobreanu
Total Dissolved Solids (TDS calc)	CALC	5254441	N/A	2017/11/09	Automated Statchk
Total Kjeldahl Nitrogen in Water	SKAL	5255484	2017/11/08	2017/11/09	Rajni Tyagi
Volatile Organic Compounds and F1 PHCs	GC/MSFD	5254817	N/A	2017/11/09	Karen Hughes

**GENERAL COMMENTS**

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	8.3°C
Package 2	7.7°C

Sample FMH814 [MW17-1] : PCB bottles received empty, PCB analysis not completed for this sample.

**Results relate only to the items tested.**

**QUALITY ASSURANCE REPORT**

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
	5254817	KH2	Matrix Spike	4-Bromofluorobenzene	2017/11/09		99	%	70 - 130
				D4-1,2-Dichloroethane	2017/11/09		105	%	70 - 130
				D8-Toluene	2017/11/09		99	%	70 - 130
				Acetone (2-Propanone)	2017/11/09		99	%	60 - 140
				Benzene	2017/11/09		100	%	70 - 130
				Bromodichloromethane	2017/11/09		96	%	70 - 130
				Bromoform	2017/11/09		97	%	70 - 130
				Bromomethane	2017/11/09		99	%	60 - 140
				Carbon Tetrachloride	2017/11/09		91	%	70 - 130
				Chlorobenzene	2017/11/09		97	%	70 - 130
				Chloroform	2017/11/09		99	%	70 - 130
				Dibromochloromethane	2017/11/09		99	%	70 - 130
				1,2-Dichlorobenzene	2017/11/09		95	%	70 - 130
				1,3-Dichlorobenzene	2017/11/09		98	%	70 - 130
				1,4-Dichlorobenzene	2017/11/09		101	%	70 - 130
				Dichlorodifluoromethane (FREON 12)	2017/11/09		89	%	60 - 140
				1,1-Dichloroethane	2017/11/09		105	%	70 - 130
				1,2-Dichloroethane	2017/11/09		100	%	70 - 130
				1,1-Dichloroethylene	2017/11/09		107	%	70 - 130
				cis-1,2-Dichloroethylene	2017/11/09		100	%	70 - 130
				trans-1,2-Dichloroethylene	2017/11/09		106	%	70 - 130
				1,2-Dichloropropane	2017/11/09		95	%	70 - 130
				cis-1,3-Dichloropropene	2017/11/09		84	%	70 - 130
				trans-1,3-Dichloropropene	2017/11/09		90	%	70 - 130
				Ethylbenzene	2017/11/09		90	%	70 - 130
				Ethylene Dibromide	2017/11/09		103	%	70 - 130
				Hexane	2017/11/09		101	%	70 - 130
				Methylene Chloride(Dichloromethane)	2017/11/09		109	%	70 - 130
				Methyl Ethyl Ketone (2-Butanone)	2017/11/09		97	%	60 - 140
				Methyl Isobutyl Ketone	2017/11/09		88	%	70 - 130
				Methyl t-butyl ether (MTBE)	2017/11/09		89	%	70 - 130
				Styrene	2017/11/09		85	%	70 - 130
				1,1,1,2-Tetrachloroethane	2017/11/09		102	%	70 - 130
				1,1,2,2-Tetrachloroethane	2017/11/09		106	%	70 - 130
				Tetrachloroethylene	2017/11/09		96	%	70 - 130
				Toluene	2017/11/09		91	%	70 - 130
				1,1,1-Trichloroethane	2017/11/09		92	%	70 - 130
				1,1,2-Trichloroethane	2017/11/09		103	%	70 - 130
				Trichloroethylene	2017/11/09		97	%	70 - 130
				Trichlorofluoromethane (FREON 11)	2017/11/09		98	%	70 - 130
				Vinyl Chloride	2017/11/09		98	%	70 - 130
				p+m-Xylene	2017/11/09		89	%	70 - 130
				o-Xylene	2017/11/09		90	%	70 - 130
				F1 (C6-C10)	2017/11/09		91	%	60 - 140
	5254817	KH2	Spiked Blank	4-Bromofluorobenzene	2017/11/09		99	%	70 - 130
				D4-1,2-Dichloroethane	2017/11/09		104	%	70 - 130
				D8-Toluene	2017/11/09		100	%	70 - 130
				Acetone (2-Propanone)	2017/11/09		103	%	60 - 140
				Benzene	2017/11/09		101	%	70 - 130
				Bromodichloromethane	2017/11/09		96	%	70 - 130
				Bromoform	2017/11/09		98	%	70 - 130
				Bromomethane	2017/11/09		99	%	60 - 140
				Carbon Tetrachloride	2017/11/09		94	%	70 - 130
				Chlorobenzene	2017/11/09		98	%	70 - 130

**QUALITY ASSURANCE REPORT(CONT'D)**

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Chloroform	2017/11/09		100	%	70 - 130
			Dibromochloromethane	2017/11/09		100	%	70 - 130
			1,2-Dichlorobenzene	2017/11/09		97	%	70 - 130
			1,3-Dichlorobenzene	2017/11/09		101	%	70 - 130
			1,4-Dichlorobenzene	2017/11/09		104	%	70 - 130
			Dichlorodifluoromethane (FREON 12)	2017/11/09		92	%	60 - 140
			1,1-Dichloroethane	2017/11/09		107	%	70 - 130
			1,2-Dichloroethane	2017/11/09		101	%	70 - 130
			1,1-Dichloroethylene	2017/11/09		109	%	70 - 130
			cis-1,2-Dichloroethylene	2017/11/09		101	%	70 - 130
			trans-1,2-Dichloroethylene	2017/11/09		108	%	70 - 130
			1,2-Dichloropropane	2017/11/09		96	%	70 - 130
			cis-1,3-Dichloropropene	2017/11/09		83	%	70 - 130
			trans-1,3-Dichloropropene	2017/11/09		86	%	70 - 130
			Ethylbenzene	2017/11/09		92	%	70 - 130
			Ethylene Dibromide	2017/11/09		104	%	70 - 130
			Hexane	2017/11/09		103	%	70 - 130
			Methylene Chloride(Dichloromethane)	2017/11/09		110	%	70 - 130
			Methyl Ethyl Ketone (2-Butanone)	2017/11/09		98	%	60 - 140
			Methyl Isobutyl Ketone	2017/11/09		89	%	70 - 130
			Methyl t-butyl ether (MTBE)	2017/11/09		90	%	70 - 130
			Styrene	2017/11/09		87	%	70 - 130
			1,1,1,2-Tetrachloroethane	2017/11/09		104	%	70 - 130
			1,1,2,2-Tetrachloroethane	2017/11/09		106	%	70 - 130
			Tetrachloroethylene	2017/11/09		98	%	70 - 130
			Toluene	2017/11/09		92	%	70 - 130
			1,1,1-Trichloroethane	2017/11/09		95	%	70 - 130
			1,1,2-Trichloroethane	2017/11/09		104	%	70 - 130
			Trichloroethylene	2017/11/09		99	%	70 - 130
			Trichlorofluoromethane (FREON 11)	2017/11/09		101	%	70 - 130
			Vinyl Chloride	2017/11/09		99	%	70 - 130
			p+m-Xylene	2017/11/09		91	%	70 - 130
			o-Xylene	2017/11/09		92	%	70 - 130
			F1 (C6-C10)	2017/11/09		93	%	60 - 140
5254817	KH2	Method Blank	4-Bromofluorobenzene	2017/11/09		92	%	70 - 130
			D4-1,2-Dichloroethane	2017/11/09		105	%	70 - 130
			D8-Toluene	2017/11/09		96	%	70 - 130
			Acetone (2-Propanone)	2017/11/09	<10		ug/L	
			Benzene	2017/11/09	<0.20		ug/L	
			Bromodichloromethane	2017/11/09	<0.50		ug/L	
			Bromoform	2017/11/09	<1.0		ug/L	
			Bromomethane	2017/11/09	<0.50		ug/L	
			Carbon Tetrachloride	2017/11/09	<0.20		ug/L	
			Chlorobenzene	2017/11/09	<0.20		ug/L	
			Chloroform	2017/11/09	<0.20		ug/L	
			Dibromochloromethane	2017/11/09	<0.50		ug/L	
			1,2-Dichlorobenzene	2017/11/09	<0.50		ug/L	
			1,3-Dichlorobenzene	2017/11/09	<0.50		ug/L	
			1,4-Dichlorobenzene	2017/11/09	<0.50		ug/L	
			Dichlorodifluoromethane (FREON 12)	2017/11/09	<1.0		ug/L	
			1,1-Dichloroethane	2017/11/09	<0.20		ug/L	
			1,2-Dichloroethane	2017/11/09	<0.50		ug/L	
			1,1-Dichloroethylene	2017/11/09	<0.20		ug/L	
			cis-1,2-Dichloroethylene	2017/11/09	<0.50		ug/L	



**QUALITY ASSURANCE REPORT(CONT'D)**

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			trans-1,2-Dichloroethylene	2017/11/09	<0.50		ug/L	
			1,2-Dichloropropane	2017/11/09	<0.20		ug/L	
			cis-1,3-Dichloropropene	2017/11/09	<0.30		ug/L	
			trans-1,3-Dichloropropene	2017/11/09	<0.40		ug/L	
			Ethylbenzene	2017/11/09	<0.20		ug/L	
			Ethylene Dibromide	2017/11/09	<0.20		ug/L	
			Hexane	2017/11/09	<1.0		ug/L	
			Methylene Chloride(Dichloromethane)	2017/11/09	<2.0		ug/L	
			Methyl Ethyl Ketone (2-Butanone)	2017/11/09	<10		ug/L	
			Methyl Isobutyl Ketone	2017/11/09	<5.0		ug/L	
			Methyl t-butyl ether (MTBE)	2017/11/09	<0.50		ug/L	
			Styrene	2017/11/09	<0.50		ug/L	
			1,1,1,2-Tetrachloroethane	2017/11/09	<0.50		ug/L	
			1,1,2,2-Tetrachloroethane	2017/11/09	<0.50		ug/L	
			Tetrachloroethylene	2017/11/09	<0.20		ug/L	
			Toluene	2017/11/09	<0.20		ug/L	
			1,1,1-Trichloroethane	2017/11/09	<0.20		ug/L	
			1,1,2-Trichloroethane	2017/11/09	<0.50		ug/L	
			Trichloroethylene	2017/11/09	<0.20		ug/L	
			Trichlorofluoromethane (FREON 11)	2017/11/09	<0.50		ug/L	
			Vinyl Chloride	2017/11/09	<0.20		ug/L	
			p+m-Xylene	2017/11/09	<0.20		ug/L	
			o-Xylene	2017/11/09	<0.20		ug/L	
			Total Xylenes	2017/11/09	<0.20		ug/L	
			F1 (C6-C10)	2017/11/09	<25		ug/L	
			F1 (C6-C10) - BTEX	2017/11/09	<25		ug/L	
5254817	KH2	RPD	Acetone (2-Propanone)	2017/11/09	NC		%	30
			Benzene	2017/11/09	NC		%	30
			Bromodichloromethane	2017/11/09	NC		%	30
			Bromoform	2017/11/09	NC		%	30
			Bromomethane	2017/11/09	NC		%	30
			Carbon Tetrachloride	2017/11/09	NC		%	30
			Chlorobenzene	2017/11/09	NC		%	30
			Chloroform	2017/11/09	NC		%	30
			Dibromochloromethane	2017/11/09	NC		%	30
			1,2-Dichlorobenzene	2017/11/09	NC		%	30
			1,3-Dichlorobenzene	2017/11/09	NC		%	30
			1,4-Dichlorobenzene	2017/11/09	NC		%	30
			Dichlorodifluoromethane (FREON 12)	2017/11/09	NC		%	30
			1,1-Dichloroethane	2017/11/09	NC		%	30
			1,2-Dichloroethane	2017/11/09	NC		%	30
			1,1-Dichloroethylene	2017/11/09	NC		%	30
			cis-1,2-Dichloroethylene	2017/11/09	NC		%	30
			trans-1,2-Dichloroethylene	2017/11/09	NC		%	30
			1,2-Dichloropropane	2017/11/09	NC		%	30
			cis-1,3-Dichloropropene	2017/11/09	NC		%	30
			trans-1,3-Dichloropropene	2017/11/09	NC		%	30
			Ethylbenzene	2017/11/09	NC		%	30
			Ethylene Dibromide	2017/11/09	NC		%	30
			Hexane	2017/11/09	NC		%	30
			Methylene Chloride(Dichloromethane)	2017/11/09	NC		%	30
			Methyl Ethyl Ketone (2-Butanone)	2017/11/09	NC		%	30
			Methyl Isobutyl Ketone	2017/11/09	NC		%	30
			Methyl t-butyl ether (MTBE)	2017/11/09	NC		%	30

**QUALITY ASSURANCE REPORT(CONT'D)**

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Styrene	2017/11/09	NC		%	30
			1,1,1,2-Tetrachloroethane	2017/11/09	NC		%	30
			1,1,2,2-Tetrachloroethane	2017/11/09	NC		%	30
			Tetrachloroethylene	2017/11/09	NC		%	30
			Toluene	2017/11/09	NC		%	30
			1,1,1-Trichloroethane	2017/11/09	NC		%	30
			1,1,2-Trichloroethane	2017/11/09	NC		%	30
			Trichloroethylene	2017/11/09	NC		%	30
			Trichlorofluoromethane (FREON 11)	2017/11/09	NC		%	30
			Vinyl Chloride	2017/11/09	NC		%	30
			p+m-Xylene	2017/11/09	NC		%	30
			o-Xylene	2017/11/09	NC		%	30
			Total Xylenes	2017/11/09	NC		%	30
			F1 (C6-C10)	2017/11/09	NC		%	30
			F1 (C6-C10) - BTEX	2017/11/09	NC		%	30
5255484	RTY	Matrix Spike	Total Kjeldahl Nitrogen (TKN)	2017/11/09		93	%	80 - 120
5255484	RTY	QC Standard	Total Kjeldahl Nitrogen (TKN)	2017/11/09		100	%	80 - 120
5255484	RTY	Spiked Blank	Total Kjeldahl Nitrogen (TKN)	2017/11/09		101	%	80 - 120
5255484	RTY	Method Blank	Total Kjeldahl Nitrogen (TKN)	2017/11/09	<0.10		mg/L	
5255484	RTY	RPD	Total Kjeldahl Nitrogen (TKN)	2017/11/09	NC (1)		%	20
5255612	SHG	Matrix Spike	Decachlorobiphenyl	2017/11/09		102	%	60 - 130
			Aroclor 1260	2017/11/09		90	%	60 - 130
			Total PCB	2017/11/09		90	%	60 - 130
5255612	SHG	Spiked Blank	Decachlorobiphenyl	2017/11/09		100	%	60 - 130
			Aroclor 1260	2017/11/09		92	%	60 - 130
			Total PCB	2017/11/09		92	%	60 - 130
5255612	SHG	Method Blank	Decachlorobiphenyl	2017/11/09		106	%	60 - 130
			Aroclor 1242	2017/11/09	<0.05		ug/L	
			Aroclor 1248	2017/11/09	<0.05		ug/L	
			Aroclor 1254	2017/11/09	<0.05		ug/L	
			Aroclor 1260	2017/11/09	<0.05		ug/L	
			Total PCB	2017/11/09	<0.05		ug/L	
5255612	SHG	RPD	Aroclor 1242	2017/11/09	NC		%	30
			Aroclor 1248	2017/11/09	NC		%	30
			Aroclor 1254	2017/11/09	NC		%	30
			Aroclor 1260	2017/11/09	NC		%	30
			Total PCB	2017/11/09	NC		%	40
5255842	TNG	Matrix Spike	Dissolved Aluminum (Al)	2017/11/09		102	%	80 - 120
			Dissolved Antimony (Sb)	2017/11/09		102	%	80 - 120
			Dissolved Arsenic (As)	2017/11/09		101	%	80 - 120
			Dissolved Barium (Ba)	2017/11/09		99	%	80 - 120
			Dissolved Beryllium (Be)	2017/11/09		101	%	80 - 120
			Dissolved Boron (B)	2017/11/09		104	%	80 - 120
			Dissolved Cadmium (Cd)	2017/11/09		100	%	80 - 120
			Dissolved Calcium (Ca)	2017/11/09		NC	%	80 - 120
			Dissolved Chromium (Cr)	2017/11/09		98	%	80 - 120
			Dissolved Cobalt (Co)	2017/11/09		96	%	80 - 120
			Dissolved Copper (Cu)	2017/11/09		100	%	80 - 120
			Dissolved Iron (Fe)	2017/11/09		100	%	80 - 120
			Dissolved Lead (Pb)	2017/11/09		94	%	80 - 120
			Dissolved Magnesium (Mg)	2017/11/09		100	%	80 - 120
			Dissolved Manganese (Mn)	2017/11/09		97	%	80 - 120
			Dissolved Molybdenum (Mo)	2017/11/09		101	%	80 - 120
			Dissolved Nickel (Ni)	2017/11/09		96	%	80 - 120

**QUALITY ASSURANCE REPORT(CONT'D)**

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
				Dissolved Phosphorus (P)	2017/11/09		109	%	80 - 120
				Dissolved Potassium (K)	2017/11/09		100	%	80 - 120
				Dissolved Selenium (Se)	2017/11/09		103	%	80 - 120
				Dissolved Silicon (Si)	2017/11/09		99	%	80 - 120
				Dissolved Silver (Ag)	2017/11/09		95	%	80 - 120
				Dissolved Sodium (Na)	2017/11/09		NC	%	80 - 120
				Dissolved Strontium (Sr)	2017/11/09		95	%	80 - 120
				Dissolved Thallium (Tl)	2017/11/09		94	%	80 - 120
				Dissolved Titanium (Ti)	2017/11/09		99	%	80 - 120
				Dissolved Uranium (U)	2017/11/09		95	%	80 - 120
				Dissolved Vanadium (V)	2017/11/09		96	%	80 - 120
				Dissolved Zinc (Zn)	2017/11/09		95	%	80 - 120
5255842	TNG		Spiked Blank	Dissolved Aluminum (Al)	2017/11/09		102	%	80 - 120
				Dissolved Antimony (Sb)	2017/11/09		101	%	80 - 120
				Dissolved Arsenic (As)	2017/11/09		99	%	80 - 120
				Dissolved Barium (Ba)	2017/11/09		100	%	80 - 120
				Dissolved Beryllium (Be)	2017/11/09		101	%	80 - 120
				Dissolved Boron (B)	2017/11/09		103	%	80 - 120
				Dissolved Cadmium (Cd)	2017/11/09		99	%	80 - 120
				Dissolved Calcium (Ca)	2017/11/09		97	%	80 - 120
				Dissolved Chromium (Cr)	2017/11/09		97	%	80 - 120
				Dissolved Cobalt (Co)	2017/11/09		96	%	80 - 120
				Dissolved Copper (Cu)	2017/11/09		101	%	80 - 120
				Dissolved Iron (Fe)	2017/11/09		100	%	80 - 120
				Dissolved Lead (Pb)	2017/11/09		95	%	80 - 120
				Dissolved Magnesium (Mg)	2017/11/09		100	%	80 - 120
				Dissolved Manganese (Mn)	2017/11/09		96	%	80 - 120
				Dissolved Molybdenum (Mo)	2017/11/09		99	%	80 - 120
				Dissolved Nickel (Ni)	2017/11/09		96	%	80 - 120
				Dissolved Phosphorus (P)	2017/11/09		115	%	80 - 120
				Dissolved Potassium (K)	2017/11/09		100	%	80 - 120
				Dissolved Selenium (Se)	2017/11/09		100	%	80 - 120
				Dissolved Silicon (Si)	2017/11/09		97	%	80 - 120
				Dissolved Silver (Ag)	2017/11/09		97	%	80 - 120
				Dissolved Sodium (Na)	2017/11/09		99	%	80 - 120
				Dissolved Strontium (Sr)	2017/11/09		95	%	80 - 120
				Dissolved Thallium (Tl)	2017/11/09		94	%	80 - 120
				Dissolved Titanium (Ti)	2017/11/09		97	%	80 - 120
				Dissolved Uranium (U)	2017/11/09		94	%	80 - 120
				Dissolved Vanadium (V)	2017/11/09		97	%	80 - 120
				Dissolved Zinc (Zn)	2017/11/09		98	%	80 - 120
5255842	TNG		Method Blank	Dissolved Aluminum (Al)	2017/11/09	<5.0		ug/L	
				Dissolved Antimony (Sb)	2017/11/09	<0.50		ug/L	
				Dissolved Arsenic (As)	2017/11/09	<1.0		ug/L	
				Dissolved Barium (Ba)	2017/11/09	<2.0		ug/L	
				Dissolved Beryllium (Be)	2017/11/09	<0.50		ug/L	
				Dissolved Boron (B)	2017/11/09	<10		ug/L	
				Dissolved Cadmium (Cd)	2017/11/09	<0.10		ug/L	
				Dissolved Calcium (Ca)	2017/11/09	<200		ug/L	
				Dissolved Chromium (Cr)	2017/11/09	<5.0		ug/L	
				Dissolved Cobalt (Co)	2017/11/09	<0.50		ug/L	
				Dissolved Copper (Cu)	2017/11/09	<1.0		ug/L	
				Dissolved Iron (Fe)	2017/11/09	<100		ug/L	
				Dissolved Lead (Pb)	2017/11/09	<0.50		ug/L	

**QUALITY ASSURANCE REPORT(CONT'D)**

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Magnesium (Mg)	2017/11/09	<50		ug/L	
			Dissolved Manganese (Mn)	2017/11/09	<2.0		ug/L	
			Dissolved Molybdenum (Mo)	2017/11/09	<0.50		ug/L	
			Dissolved Nickel (Ni)	2017/11/09	<1.0		ug/L	
			Dissolved Phosphorus (P)	2017/11/09	<100		ug/L	
			Dissolved Potassium (K)	2017/11/09	<200		ug/L	
			Dissolved Selenium (Se)	2017/11/09	<2.0		ug/L	
			Dissolved Silicon (Si)	2017/11/09	<50		ug/L	
			Dissolved Silver (Ag)	2017/11/09	<0.10		ug/L	
			Dissolved Sodium (Na)	2017/11/09	<100		ug/L	
			Dissolved Strontium (Sr)	2017/11/09	<1.0		ug/L	
			Dissolved Thallium (Tl)	2017/11/09	<0.050		ug/L	
			Dissolved Titanium (Ti)	2017/11/09	<5.0		ug/L	
			Dissolved Uranium (U)	2017/11/09	<0.10		ug/L	
			Dissolved Vanadium (V)	2017/11/09	<0.50		ug/L	
			Dissolved Zinc (Zn)	2017/11/09	<5.0		ug/L	
5255842	TNG	RPD	Dissolved Antimony (Sb)	2017/11/09	NC		%	20
			Dissolved Arsenic (As)	2017/11/09	NC		%	20
			Dissolved Barium (Ba)	2017/11/09	2.2		%	20
			Dissolved Beryllium (Be)	2017/11/09	NC		%	20
			Dissolved Boron (B)	2017/11/09	1.2		%	20
			Dissolved Cadmium (Cd)	2017/11/09	NC		%	20
			Dissolved Chromium (Cr)	2017/11/09	NC		%	20
			Dissolved Cobalt (Co)	2017/11/09	NC		%	20
			Dissolved Copper (Cu)	2017/11/09	NC		%	20
			Dissolved Lead (Pb)	2017/11/09	NC		%	20
			Dissolved Molybdenum (Mo)	2017/11/09	0.55		%	20
			Dissolved Nickel (Ni)	2017/11/09	NC		%	20
			Dissolved Selenium (Se)	2017/11/09	NC		%	20
			Dissolved Silver (Ag)	2017/11/09	NC		%	20
			Dissolved Sodium (Na)	2017/11/09	0.60		%	20
			Dissolved Thallium (Tl)	2017/11/09	NC		%	20
			Dissolved Uranium (U)	2017/11/09	2.3		%	20
			Dissolved Vanadium (V)	2017/11/09	NC		%	20
			Dissolved Zinc (Zn)	2017/11/09	NC		%	20
5256052	COP	Matrix Spike	Total Ammonia-N	2017/11/09		95	%	80 - 120
5256052	COP	Spiked Blank	Total Ammonia-N	2017/11/09		100	%	85 - 115
5256052	COP	Method Blank	Total Ammonia-N	2017/11/09	<0.050		mg/L	
5256052	COP	RPD	Total Ammonia-N	2017/11/09	12		%	20
5256093	AHA	Matrix Spike [FMH919-05]	Dissolved Organic Carbon	2017/11/08		95	%	80 - 120
5256093	AHA	Spiked Blank	Dissolved Organic Carbon	2017/11/08		99	%	80 - 120
5256093	AHA	Method Blank	Dissolved Organic Carbon	2017/11/08	<0.50		mg/L	
5256093	AHA	RPD [FMH919-05]	Dissolved Organic Carbon	2017/11/08	3.5		%	20
5256244	C_N	Matrix Spike	Nitrite (N)	2017/11/09		110	%	80 - 120
			Nitrate (N)	2017/11/09		108	%	80 - 120
5256244	C_N	Spiked Blank	Nitrite (N)	2017/11/09		103	%	80 - 120
			Nitrate (N)	2017/11/09		100	%	80 - 120
5256244	C_N	Method Blank	Nitrite (N)	2017/11/09	<0.010		mg/L	
			Nitrate (N)	2017/11/09	<0.10		mg/L	
5256244	C_N	RPD	Nitrite (N)	2017/11/09	NC		%	20
5256254	SAU	Spiked Blank	pH	2017/11/09		101	%	98 - 103
5256254	SAU	RPD	pH	2017/11/09	0.017		%	N/A
5256257	SAU	Spiked Blank	Conductivity	2017/11/09		99	%	85 - 115

**QUALITY ASSURANCE REPORT(CONT'D)**

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
5256257	SAU	Method Blank	Conductivity	2017/11/09	<1.0		umho/cm	
5256257	SAU	RPD	Conductivity	2017/11/09	0.50		%	25
5256277	SAU	Spiked Blank	Alkalinity (Total as CaCO3)	2017/11/09		96	%	85 - 115
5256277	SAU	Method Blank	Alkalinity (Total as CaCO3)	2017/11/09	<1.0		mg/L	
5256277	SAU	RPD	Alkalinity (Total as CaCO3)	2017/11/09	1.1		%	20
5256350	ADB	Matrix Spike [FMH814-02]	Dissolved Chloride (Cl)	2017/11/09		NC	%	80 - 120
5256350	ADB	Spiked Blank	Dissolved Chloride (Cl)	2017/11/09		104	%	80 - 120
5256350	ADB	Method Blank	Dissolved Chloride (Cl)	2017/11/09	<1.0		mg/L	
5256350	ADB	RPD [FMH814-02]	Dissolved Chloride (Cl)	2017/11/09	0.33		%	20
5256353	ADB	Matrix Spike [FMH814-02]	Dissolved Sulphate (SO4)	2017/11/09		NC	%	75 - 125
5256353	ADB	Spiked Blank	Dissolved Sulphate (SO4)	2017/11/09		106	%	80 - 120
5256353	ADB	Method Blank	Dissolved Sulphate (SO4)	2017/11/09	<1.0		mg/L	
5256353	ADB	RPD [FMH814-02]	Dissolved Sulphate (SO4)	2017/11/09	0.61		%	20
5256354	ADB	Matrix Spike [FMH814-02]	Orthophosphate (P)	2017/11/09		89	%	75 - 125
5256354	ADB	Spiked Blank	Orthophosphate (P)	2017/11/09		99	%	80 - 120
5256354	ADB	Method Blank	Orthophosphate (P)	2017/11/09	<0.010		mg/L	
5256354	ADB	RPD [FMH814-02]	Orthophosphate (P)	2017/11/09	NC		%	25
5256371	BWW	Matrix Spike	o-Terphenyl	2017/11/09		96	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2017/11/09		NC	%	50 - 130
			F3 (C16-C34 Hydrocarbons)	2017/11/09		99	%	50 - 130
			F4 (C34-C50 Hydrocarbons)	2017/11/09		100	%	50 - 130
5256371	BWW	Spiked Blank	o-Terphenyl	2017/11/09		94	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2017/11/09		103	%	60 - 130
			F3 (C16-C34 Hydrocarbons)	2017/11/09		99	%	60 - 130
			F4 (C34-C50 Hydrocarbons)	2017/11/09		97	%	60 - 130
5256371	BWW	Method Blank	o-Terphenyl	2017/11/08		89	%	60 - 130
			F2 (C10-C16 Hydrocarbons)	2017/11/08	<100		ug/L	
			F3 (C16-C34 Hydrocarbons)	2017/11/08	<200		ug/L	
			F4 (C34-C50 Hydrocarbons)	2017/11/08	<200		ug/L	
5256371	BWW	RPD	F2 (C10-C16 Hydrocarbons)	2017/11/09	NC		%	30
			F3 (C16-C34 Hydrocarbons)	2017/11/09	NC		%	30
			F4 (C34-C50 Hydrocarbons)	2017/11/09	NC		%	30
5256678	RON	Matrix Spike [FMH920-07]	Mercury (Hg)	2017/11/09		104	%	75 - 125
5256678	RON	Spiked Blank	Mercury (Hg)	2017/11/09		91	%	80 - 120
5256678	RON	Method Blank	Mercury (Hg)	2017/11/09	<0.1		ug/L	

**QUALITY ASSURANCE REPORT(CONT'D)**

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
	5256678	RON	RPD [FMH920-07]	Mercury (Hg)	2017/11/09	NC		%	20
<p>N/A = Not Applicable</p> <p>Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.</p> <p>Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.</p> <p>QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.</p> <p>Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.</p> <p>Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.</p> <p>Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.</p> <p>NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)</p> <p>NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference &lt;= 2x RDL).</p> <p>(1) Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.</p>									

### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

*Eva P.*  


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Ewa Pranjic, M.Sc., C.Chem, Scientific Specialist

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



<b>INVOICE TO:</b>		<b>REPORT TO:</b>		<b>PROJECT INFORMATION:</b>	
Company Name: #25670 Golder Associates Ltd	Company Name:	Quotation #: B70916	Bottle Order #:		
Attention: Accounts Payable	Attention: Chris Pons	P.O. #:	636857		
Address: 215 Shields Court Unit # 1 Markham ON L3R 8V2	Address:	Project: 1778651	Project Manager:		
Tel: (905) 475-2625 x Fax: (905) 475-5257 x	Tel: (905) 431-3118 x Fax:	Site #:	Ena Gitej		
Email: AP_CustomerService@golder.com	Email: cpons@golder.com	Sampled By:	C#636857-03-01		

**MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY**

<b>Regulation 153 (2011)</b> <input type="checkbox"/> Table 1 <input type="checkbox"/> Res/Park <input type="checkbox"/> Medium/Fine <input type="checkbox"/> Table 2 <input checked="" type="checkbox"/> Ind/Comm <input type="checkbox"/> Coarse <input checked="" type="checkbox"/> Table 3 <input type="checkbox"/> Agri/Other <input checked="" type="checkbox"/> For RSC <input type="checkbox"/> Table		<b>Other Regulations</b> <input type="checkbox"/> CCME <input type="checkbox"/> Sanitary Sewer Bylaw <input type="checkbox"/> Reg 558 <input type="checkbox"/> Storm Sewer Bylaw <input type="checkbox"/> MISA <input type="checkbox"/> Municipality _____ <input type="checkbox"/> PWDO <input type="checkbox"/> Other _____	<b>Special Instructions</b>
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Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): (Metals Hg / Cr VI)	I Reg 153 VOCs by HS & F1-F4 (Water)	O Reg 153 PCBs (Water)	RCAP - Comprehensive NO2, NH4, ICPMSD	Mercury	Total Kjeldahl Nitrogen in Water	PHC F1-F2	BTEX	Turnaround Time (TAT) Required: Please provide advance notice for rush projects
1	MW17-1	Nov 2/17	4 PM	water	X	X	X	X	X	X	X	X	Regular (Standard) TAT: (will be applied if Rush TAT is not specified) Standard TAT = 5-7 Working days for most tests. Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details. <input checked="" type="checkbox"/>
2	MW17-2	↓	11 AM	↓	X	X	X	X	X	X	X	X	Job Specific Rush TAT (if applies to entire submission) Date Required: _____ Time Required: _____ Rush Confirmation Number: _____ (call lab for #)
3	MW17-3	↓	2 PM	↓	X	X	X	X	X	X	X	X	# of Bottles: _____ Comments: cannot enough water
4	MW17-4	↓	3 PM	↓	X	X	X	X	X	X	X	X	+ RCAP comprehensive = NO2, NH4, ICPMSD, TKN and Hg
5	DUP.1	↓	12 PM	↓	X	X	X	X	X	X	X	X	

<b>ACQUIRED BY:</b> (Signature/Print) Madre Deus	<b>Date:</b> (YY/MM/DD) Nov 3/17	<b>Time</b> 8:00 AM	<b>RECEIVED BY:</b> (Signature/Print) C. Gitej	<b>Date:</b> (YY/MM/DD) 2017/11/03	<b>Time</b> 14:55	<b># jars used and not submitted</b>	<b>Laboratory Use Only</b> Temperature (°C) on Recei: 7/9/9	<b>Yes</b> <input type="checkbox"/> <b>No</b> <input type="checkbox"/>
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WE AGREE TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

RELINQUISH TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

ATTENTION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WWP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

91  
MW #4086  
7/9/17

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

**Attention: Chris Pons**

Golder Associates Ltd  
215 Shields Court  
Unit # 1  
Markham, ON  
Canada L3R 8V2

**Report Date: 2018/11/06**  
Report #: R5472567  
Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B8S9942**

**Received: 2018/10/31, 12:20**

Sample Matrix: Water  
# Samples Received: 1

Analyses	Quantity	Date		Laboratory Method	Reference
		Extracted	Analyzed		
Alkalinity	1	N/A	2018/11/02	CAM SOP-00448	SM 23 2320 B m
Carbonate, Bicarbonate and Hydroxide	1	N/A	2018/11/02	CAM SOP-00102	APHA 4500-CO2 D
1,3-Dichloropropene Sum	1	N/A	2018/11/05		EPA 8260C m
Chloride by Automated Colourimetry	1	N/A	2018/11/02	CAM SOP-00463	EPA 325.2 m
Conductivity	1	N/A	2018/11/02	CAM SOP-00414	SM 23 2510 m
Dissolved Organic Carbon (DOC) (1)	1	N/A	2018/11/02	CAM SOP-00446	SM 23 5310 B m
Petroleum Hydrocarbons F2-F4 in Water (2)	1	2018/11/02	2018/11/04	CAM SOP-00316	CCME PHC-CWS m
Hardness (calculated as CaCO3)	1	N/A	2018/11/06	CAM SOP 00102/00408/00447	SM 2340 B
Mercury	1	2018/11/05	2018/11/05	CAM SOP-00453	EPA 7470A m
Lab Filtered Metals by ICPMS	1	2018/11/05	2018/11/06	CAM SOP-00447	EPA 6020B m
Ion Balance (% Difference)	1	N/A	2018/11/06		
Anion and Cation Sum	1	N/A	2018/11/06		
Total Ammonia-N	1	N/A	2018/11/02	CAM SOP-00441	EPA GS I-2522-90 m
Nitrate (NO3) and Nitrite (NO2) in Water (3)	1	N/A	2018/11/04	CAM SOP-00440	SM 23 4500-NO3I/NO2B
Polychlorinated Biphenyl in Water	1	2018/11/01	2018/11/02	CAM SOP-00309	EPA 8082A m
pH	1	N/A	2018/11/02	CAM SOP-00413	SM 4500H+ B m
Orthophosphate	1	N/A	2018/11/02	CAM SOP-00461	EPA 365.1 m
Sat. pH and Langelier Index (@ 20C)	1	N/A	2018/11/06		
Sat. pH and Langelier Index (@ 4C)	1	N/A	2018/11/06		
Sulphate by Automated Colourimetry	1	N/A	2018/11/02	CAM SOP-00464	EPA 375.4 m
Total Dissolved Solids (TDS calc)	1	N/A	2018/11/06		
Total Kjeldahl Nitrogen in Water	1	2018/11/01	2018/11/02	CAM SOP-00938	OMOE E3516 m
Volatile Organic Compounds and F1 PHCs	1	N/A	2018/11/03	CAM SOP-00230	EPA 8260C m

**Remarks:**

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using

Your Project #: 1778651 (5000)  
Your C.O.C. #: 689744-01-01

**Attention: Chris Pons**

Golder Associates Ltd  
215 Shields Court  
Unit # 1  
Markham, ON  
Canada L3R 8V2

**Report Date: 2018/11/06**  
Report #: R5472567  
Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B8S9942**

**Received: 2018/10/31, 12:20**

accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing. Maxxam is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Maxxam, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) Dissolved Organic Carbon (DOC) present in the sample should be considered as non-purgeable DOC.

(2) All CCME PHC results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Maxxam conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following "Alberta Environment's Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Validation of Performance-Based Alternative Methods September 2003". Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

(3) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

**Encryption Key**

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Ema Gitej, Senior Project Manager

Email: EGitej@maxxam.ca

Phone# (905)817-5829

=====

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

**RCAP - COMPREHENSIVE (LAB FILTERED)**

Maxxam ID		IEE416			IEE416		
Sampling Date		2018/10/26 08:35			2018/10/26 08:35		
COC Number		689744-01-01			689744-01-01		
	UNITS	4529 CON 7	RDL	QC Batch	4529 CON 7 Lab-Dup	RDL	QC Batch
<b>Calculated Parameters</b>							
Anion Sum	me/L	3.90	N/A	5814818			
Bicarb. Alkalinity (calc. as CaCO <sub>3</sub> )	mg/L	170	1.0	5814815			
Calculated TDS	mg/L	200	1.0	5814821			
Carb. Alkalinity (calc. as CaCO <sub>3</sub> )	mg/L	2.1	1.0	5814815			
Cation Sum	me/L	3.87	N/A	5814818			
Hardness (CaCO <sub>3</sub> )	mg/L	190	1.0	5814816			
Ion Balance (% Difference)	%	0.440	N/A	5814817			
Langelier Index (@ 20C)	N/A	0.710		5814819			
Langelier Index (@ 4C)	N/A	0.460		5814820			
Saturation pH (@ 20C)	N/A	7.40		5814819			
Saturation pH (@ 4C)	N/A	7.65		5814820			
<b>Inorganics</b>							
Total Ammonia-N	mg/L	<0.050	0.050	5815593			
Conductivity	umho/cm	350	1.0	5816106			
Dissolved Organic Carbon	mg/L	0.62	0.50	5815518	0.60	0.50	5815518
Orthophosphate (P)	mg/L	<0.010	0.010	5816568			
pH	pH	8.11		5816111			
Dissolved Sulphate (SO <sub>4</sub> )	mg/L	18	1.0	5816566			
Alkalinity (Total as CaCO <sub>3</sub> )	mg/L	170	1.0	5816097			
Dissolved Chloride (Cl <sup>-</sup> )	mg/L	2.4	1.0	5816562			
Nitrite (N)	mg/L	<0.010	0.010	5815792			
Nitrate (N)	mg/L	0.15	0.10	5815792			
Nitrate + Nitrite (N)	mg/L	0.15	0.10	5815792			
<b>Metals</b>							
Dissolved Aluminum (Al)	ug/L	12	5.0	5820679			
Dissolved Antimony (Sb)	ug/L	<0.50	0.50	5820679			
Dissolved Arsenic (As)	ug/L	<1.0	1.0	5820679			
Dissolved Barium (Ba)	ug/L	21	2.0	5820679			
Dissolved Beryllium (Be)	ug/L	<0.50	0.50	5820679			
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate N/A = Not Applicable							

**RCAP - COMPREHENSIVE (LAB FILTERED)**

Maxxam ID		IEE416			IEE416		
Sampling Date		2018/10/26 08:35			2018/10/26 08:35		
COC Number		689744-01-01			689744-01-01		
	UNITS	4529 CON 7	RDL	QC Batch	4529 CON 7 Lab-Dup	RDL	QC Batch
Dissolved Boron (B)	ug/L	10	10	5820679			
Dissolved Cadmium (Cd)	ug/L	<0.10	0.10	5820679			
Dissolved Calcium (Ca)	ug/L	56000	200	5820679			
Dissolved Chromium (Cr)	ug/L	<5.0	5.0	5820679			
Dissolved Cobalt (Co)	ug/L	<0.50	0.50	5820679			
Dissolved Copper (Cu)	ug/L	10	1.0	5820679			
Dissolved Iron (Fe)	ug/L	<100	100	5820679			
Dissolved Lead (Pb)	ug/L	<0.50	0.50	5820679			
Dissolved Magnesium (Mg)	ug/L	12000	50	5820679			
Dissolved Manganese (Mn)	ug/L	<2.0	2.0	5820679			
Dissolved Molybdenum (Mo)	ug/L	<0.50	0.50	5820679			
Dissolved Nickel (Ni)	ug/L	<1.0	1.0	5820679			
Dissolved Phosphorus (P)	ug/L	<100	100	5820679			
Dissolved Potassium (K)	ug/L	620	200	5820679			
Dissolved Selenium (Se)	ug/L	<2.0	2.0	5820679			
Dissolved Silicon (Si)	ug/L	4400	50	5820679			
Dissolved Silver (Ag)	ug/L	<0.10	0.10	5820679			
Dissolved Sodium (Na)	ug/L	2000	100	5820679			
Dissolved Strontium (Sr)	ug/L	110	1.0	5820679			
Dissolved Thallium (Tl)	ug/L	<0.050	0.050	5820679			
Dissolved Titanium (Ti)	ug/L	<5.0	5.0	5820679			
Dissolved Uranium (U)	ug/L	4.3	0.10	5820679			
Dissolved Vanadium (V)	ug/L	<0.50	0.50	5820679			
Dissolved Zinc (Zn)	ug/L	190	5.0	5820679			
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate							

**RESULTS OF ANALYSES OF WATER**

<b>Maxxam ID</b>		IEE416		
<b>Sampling Date</b>		2018/10/26 08:35		
<b>COC Number</b>		689744-01-01		
	<b>UNITS</b>	<b>4529 CON 7</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Inorganics</b>				
Total Kjeldahl Nitrogen (TKN)	mg/L	<0.10	0.10	5815633
RDL = Reportable Detection Limit				
QC Batch = Quality Control Batch				

**ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)**

<b>Maxxam ID</b>		IEE416		
<b>Sampling Date</b>		2018/10/26 08:35		
<b>COC Number</b>		689744-01-01		
	<b>UNITS</b>	<b>4529 CON 7</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Metals</b>				
Mercury (Hg)	ug/L	<0.1	0.1	5820146
RDL = Reportable Detection Limit				
QC Batch = Quality Control Batch				



**O.REG 153 PCBS (WATER)**

<b>Maxxam ID</b>		IEE416		
<b>Sampling Date</b>		2018/10/26 08:35		
<b>COC Number</b>		689744-01-01		
	<b>UNITS</b>	<b>4529 CON 7</b>	<b>RDL</b>	<b>QC Batch</b>
<b>PCBs</b>				
Aroclor 1242	ug/L	<0.05	0.05	5816767
Aroclor 1248	ug/L	<0.05	0.05	5816767
Aroclor 1254	ug/L	<0.05	0.05	5816767
Aroclor 1260	ug/L	<0.05	0.05	5816767
Total PCB	ug/L	<0.05	0.05	5816767
<b>Surrogate Recovery (%)</b>				
Decachlorobiphenyl	%	91		5816767
RDL = Reportable Detection Limit QC Batch = Quality Control Batch				

**O.REG 153 VOCs BY HS & F1-F4 (WATER)**

<b>Maxxam ID</b>		IEE416		
<b>Sampling Date</b>		2018/10/26 08:35		
<b>COC Number</b>		689744-01-01		
	<b>UNITS</b>	<b>4529 CON 7</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Calculated Parameters</b>				
1,3-Dichloropropene (cis+trans)	ug/L	<0.50	0.50	5817439
<b>Volatile Organics</b>				
Acetone (2-Propanone)	ug/L	<10	10	5817433
Benzene	ug/L	<0.20	0.20	5817433
Bromodichloromethane	ug/L	<0.50	0.50	5817433
Bromoform	ug/L	<1.0	1.0	5817433
Bromomethane	ug/L	<0.50	0.50	5817433
Carbon Tetrachloride	ug/L	<0.20	0.20	5817433
Chlorobenzene	ug/L	<0.20	0.20	5817433
Chloroform	ug/L	<0.20	0.20	5817433
Dibromochloromethane	ug/L	<0.50	0.50	5817433
1,2-Dichlorobenzene	ug/L	<0.50	0.50	5817433
1,3-Dichlorobenzene	ug/L	<0.50	0.50	5817433
1,4-Dichlorobenzene	ug/L	<0.50	0.50	5817433
Dichlorodifluoromethane (FREON 12)	ug/L	<1.0	1.0	5817433
1,1-Dichloroethane	ug/L	<0.20	0.20	5817433
1,2-Dichloroethane	ug/L	<0.50	0.50	5817433
1,1-Dichloroethylene	ug/L	<0.20	0.20	5817433
cis-1,2-Dichloroethylene	ug/L	<0.50	0.50	5817433
trans-1,2-Dichloroethylene	ug/L	<0.50	0.50	5817433
1,2-Dichloropropane	ug/L	<0.20	0.20	5817433
cis-1,3-Dichloropropene	ug/L	<0.30	0.30	5817433
trans-1,3-Dichloropropene	ug/L	<0.40	0.40	5817433
Ethylbenzene	ug/L	<0.20	0.20	5817433
Ethylene Dibromide	ug/L	<0.20	0.20	5817433
Hexane	ug/L	<1.0	1.0	5817433
Methylene Chloride(Dichloromethane)	ug/L	<2.0	2.0	5817433
Methyl Ethyl Ketone (2-Butanone)	ug/L	<10	10	5817433
Methyl Isobutyl Ketone	ug/L	<5.0	5.0	5817433
Methyl t-butyl ether (MTBE)	ug/L	<0.50	0.50	5817433
Styrene	ug/L	<0.50	0.50	5817433
RDL = Reportable Detection Limit QC Batch = Quality Control Batch				

**O.REG 153 VOCs BY HS & F1-F4 (WATER)**

Maxxam ID		IEE416		
Sampling Date		2018/10/26 08:35		
COC Number		689744-01-01		
	UNITS	4529 CON 7	RDL	QC Batch
1,1,1,2-Tetrachloroethane	ug/L	<0.50	0.50	5817433
1,1,2,2-Tetrachloroethane	ug/L	<0.50	0.50	5817433
Tetrachloroethylene	ug/L	<0.20	0.20	5817433
Toluene	ug/L	<0.20	0.20	5817433
1,1,1-Trichloroethane	ug/L	<0.20	0.20	5817433
1,1,2-Trichloroethane	ug/L	<0.50	0.50	5817433
Trichloroethylene	ug/L	<0.20	0.20	5817433
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	0.50	5817433
Vinyl Chloride	ug/L	<0.20	0.20	5817433
p+m-Xylene	ug/L	<0.20	0.20	5817433
o-Xylene	ug/L	<0.20	0.20	5817433
Total Xylenes	ug/L	<0.20	0.20	5817433
F1 (C6-C10)	ug/L	<25	25	5817433
F1 (C6-C10) - BTEX	ug/L	<25	25	5817433
<b>F2-F4 Hydrocarbons</b>				
F2 (C10-C16 Hydrocarbons)	ug/L	<100	100	5817806
F3 (C16-C34 Hydrocarbons)	ug/L	<200	200	5817806
F4 (C34-C50 Hydrocarbons)	ug/L	<200	200	5817806
Reached Baseline at C50	ug/L	Yes		5817806
<b>Surrogate Recovery (%)</b>				
o-Terphenyl	%	97		5817806
4-Bromofluorobenzene	%	86		5817433
D4-1,2-Dichloroethane	%	108		5817433
D8-Toluene	%	95		5817433
RDL = Reportable Detection Limit QC Batch = Quality Control Batch				

### TEST SUMMARY

**Maxxam ID:** IEE416  
**Sample ID:** 4529 CON 7  
**Matrix:** Water

**Collected:** 2018/10/26  
**Shipped:**  
**Received:** 2018/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	5816097	N/A	2018/11/02	Neil Dassanayake
Carbonate, Bicarbonate and Hydroxide	CALC	5814815	N/A	2018/11/02	Automated Statchk
1,3-Dichloropropene Sum	CALC	5814749	N/A	2018/11/05	Automated Statchk
Chloride by Automated Colourimetry	KONE	5816562	N/A	2018/11/02	Alina Dobreanu
Conductivity	AT	5816106	N/A	2018/11/02	Neil Dassanayake
Dissolved Organic Carbon (DOC)	TOCV/NDIR	5815518	N/A	2018/11/02	Nimarta Singh
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	5817806	2018/11/02	2018/11/04	Zhiyue (Frank) Zhu
Hardness (calculated as CaCO3)		5814816	N/A	2018/11/06	Automated Statchk
Mercury	CV/AA	5820146	2018/11/05	2018/11/05	Ron Morrison
Lab Filtered Metals by ICPMS	ICP/MS	5820679	2018/11/05	2018/11/06	Thao Nguyen
Ion Balance (% Difference)	CALC	5814817	N/A	2018/11/06	Automated Statchk
Anion and Cation Sum	CALC	5814818	N/A	2018/11/06	Automated Statchk
Total Ammonia-N	LACH/NH4	5815593	N/A	2018/11/02	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	5815792	N/A	2018/11/04	Amanpreet Sappal
Polychlorinated Biphenyl in Water	GC/ECD	5816767	2018/11/01	2018/11/02	Sarah Huang
pH	AT	5816111	N/A	2018/11/02	Neil Dassanayake
Orthophosphate	KONE	5816568	N/A	2018/11/02	Alina Dobreanu
Sat. pH and Langelier Index (@ 20C)	CALC	5814819	N/A	2018/11/06	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	5814820	N/A	2018/11/06	Automated Statchk
Sulphate by Automated Colourimetry	KONE	5816566	N/A	2018/11/02	Alina Dobreanu
Total Dissolved Solids (TDS calc)	CALC	5814821	N/A	2018/11/06	Automated Statchk
Total Kjeldahl Nitrogen in Water	SKAL	5815633	2018/11/01	2018/11/02	Shivani Shivani
Volatile Organic Compounds and F1 PHCs	GC/MSFD	5817433	N/A	2018/11/03	Denis Reid

**Maxxam ID:** IEE416 Dup  
**Sample ID:** 4529 CON 7  
**Matrix:** Water

**Collected:** 2018/10/26  
**Shipped:**  
**Received:** 2018/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Organic Carbon (DOC)	TOCV/NDIR	5815518	N/A	2018/11/02	Nimarta Singh

**GENERAL COMMENTS**

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	7.0°C
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**Results relate only to the items tested.**

**QUALITY ASSURANCE REPORT**

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
5816767	Decachlorobiphenyl	2018/11/02	88	60 - 130	101	60 - 130	87	%				
5817433	4-Bromofluorobenzene	2018/11/02	101	70 - 130	100	70 - 130	88	%				
5817433	D4-1,2-Dichloroethane	2018/11/02	105	70 - 130	106	70 - 130	112	%				
5817433	D8-Toluene	2018/11/02	106	70 - 130	104	70 - 130	90	%				
5817806	o-Terphenyl	2018/11/03	103	60 - 130	101	60 - 130	98	%				
5815518	Dissolved Organic Carbon	2018/11/02	94	80 - 120	97	80 - 120	<0.50	mg/L	3.3	20		
5815593	Total Ammonia-N	2018/11/02	99	75 - 125	98	80 - 120	<0.050	mg/L	NC	20		
5815633	Total Kjeldahl Nitrogen (TKN)	2018/11/02	89	80 - 120	100	80 - 120	<0.10	mg/L	15	20	92	80 - 120
5815792	Nitrate (N)	2018/11/04	92	80 - 120	100	80 - 120	<0.10	mg/L	NC	20		
5815792	Nitrite (N)	2018/11/04	99	80 - 120	104	80 - 120	<0.010	mg/L	NC	20		
5816097	Alkalinity (Total as CaCO3)	2018/11/02			94	85 - 115	<1.0	mg/L	1.8	20		
5816106	Conductivity	2018/11/02			100	85 - 115	<1.0	umho/cm	0.46	25		
5816111	pH	2018/11/02			101	98 - 103			1.3	N/A		
5816562	Dissolved Chloride (Cl-)	2018/11/02	152 (1)	80 - 120	103	80 - 120	<1.0	mg/L	1.6	20		
5816566	Dissolved Sulphate (SO4)	2018/11/02	98	75 - 125	105	80 - 120	<1.0	mg/L	0.13	20		
5816568	Orthophosphate (P)	2018/11/02	109	75 - 125	99	80 - 120	<0.010	mg/L	NC	25		
5816767	Aroclor 1242	2018/11/02					<0.05	ug/L				
5816767	Aroclor 1248	2018/11/02					<0.05	ug/L				
5816767	Aroclor 1254	2018/11/02					<0.05	ug/L				
5816767	Aroclor 1260	2018/11/02	64	60 - 130	80	60 - 130	<0.05	ug/L				
5816767	Total PCB	2018/11/02	64	60 - 130	80	60 - 130	<0.05	ug/L	NC	40		
5817433	1,1,1,2-Tetrachloroethane	2018/11/03	96	70 - 130	97	70 - 130	<0.50	ug/L	NC	30		
5817433	1,1,1-Trichloroethane	2018/11/03	98	70 - 130	99	70 - 130	<0.20	ug/L	NC	30		
5817433	1,1,2,2-Tetrachloroethane	2018/11/03	96	70 - 130	100	70 - 130	<0.50	ug/L	NC	30		
5817433	1,1,2-Trichloroethane	2018/11/03	97	70 - 130	99	70 - 130	<0.50	ug/L	NC	30		
5817433	1,1-Dichloroethane	2018/11/03	99	70 - 130	101	70 - 130	<0.20	ug/L	NC	30		
5817433	1,1-Dichloroethylene	2018/11/03	96	70 - 130	95	70 - 130	<0.20	ug/L	NC	30		
5817433	1,2-Dichlorobenzene	2018/11/03	93	70 - 130	94	70 - 130	<0.50	ug/L	NC	30		
5817433	1,2-Dichloroethane	2018/11/03	99	70 - 130	102	70 - 130	<0.50	ug/L	NC	30		
5817433	1,2-Dichloropropane	2018/11/03	98	70 - 130	100	70 - 130	<0.20	ug/L	NC	30		

**QUALITY ASSURANCE REPORT(CONT'D)**

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
5817433	1,3-Dichlorobenzene	2018/11/03	97	70 - 130	99	70 - 130	<0.50	ug/L	NC	30		
5817433	1,4-Dichlorobenzene	2018/11/03	92	70 - 130	93	70 - 130	<0.50	ug/L	NC	30		
5817433	Acetone (2-Propanone)	2018/11/03	85	60 - 140	73	60 - 140	<10	ug/L	NC	30		
5817433	Benzene	2018/11/03	95	70 - 130	96	70 - 130	<0.20	ug/L	NC	30		
5817433	Bromodichloromethane	2018/11/03	98	70 - 130	102	70 - 130	<0.50	ug/L	NC	30		
5817433	Bromoform	2018/11/03	95	70 - 130	98	70 - 130	<1.0	ug/L	NC	30		
5817433	Bromomethane	2018/11/03	101	60 - 140	96	60 - 140	<0.50	ug/L	NC	30		
5817433	Carbon Tetrachloride	2018/11/03	96	70 - 130	98	70 - 130	<0.20	ug/L	NC	30		
5817433	Chlorobenzene	2018/11/03	93	70 - 130	93	70 - 130	<0.20	ug/L	NC	30		
5817433	Chloroform	2018/11/03	100	70 - 130	102	70 - 130	<0.20	ug/L	NC	30		
5817433	cis-1,2-Dichloroethylene	2018/11/03	98	70 - 130	100	70 - 130	<0.50	ug/L	NC	30		
5817433	cis-1,3-Dichloropropene	2018/11/03	99	70 - 130	89	70 - 130	<0.30	ug/L	NC	30		
5817433	Dibromochloromethane	2018/11/03	96	70 - 130	98	70 - 130	<0.50	ug/L	NC	30		
5817433	Dichlorodifluoromethane (FREON 12)	2018/11/03	88	60 - 140	85	60 - 140	<1.0	ug/L	NC	30		
5817433	Ethylbenzene	2018/11/03	93	70 - 130	91	70 - 130	<0.20	ug/L	NC	30		
5817433	Ethylene Dibromide	2018/11/03	97	70 - 130	98	70 - 130	<0.20	ug/L	NC	30		
5817433	F1 (C6-C10) - BTEX	2018/11/03					<25	ug/L	NC	30		
5817433	F1 (C6-C10)	2018/11/03	104	60 - 140	97	60 - 140	<25	ug/L	NC	30		
5817433	Hexane	2018/11/03	99	70 - 130	96	70 - 130	<1.0	ug/L	NC	30		
5817433	Methyl Ethyl Ketone (2-Butanone)	2018/11/03	90	60 - 140	82	60 - 140	<10	ug/L	NC	30		
5817433	Methyl Isobutyl Ketone	2018/11/03	82	70 - 130	83	70 - 130	<5.0	ug/L	NC	30		
5817433	Methyl t-butyl ether (MTBE)	2018/11/03	94	70 - 130	92	70 - 130	<0.50	ug/L	NC	30		
5817433	Methylene Chloride(Dichloromethane)	2018/11/03	93	70 - 130	95	70 - 130	<2.0	ug/L	NC	30		
5817433	o-Xylene	2018/11/03	95	70 - 130	93	70 - 130	<0.20	ug/L	NC	30		
5817433	p+m-Xylene	2018/11/03	93	70 - 130	91	70 - 130	<0.20	ug/L	NC	30		
5817433	Styrene	2018/11/03	98	70 - 130	98	70 - 130	<0.50	ug/L	NC	30		
5817433	Tetrachloroethylene	2018/11/03	94	70 - 130	96	70 - 130	<0.20	ug/L	NC	30		
5817433	Toluene	2018/11/03	95	70 - 130	95	70 - 130	<0.20	ug/L	NC	30		
5817433	Total Xylenes	2018/11/03					<0.20	ug/L	NC	30		
5817433	trans-1,2-Dichloroethylene	2018/11/03	93	70 - 130	96	70 - 130	<0.50	ug/L	NC	30		
5817433	trans-1,3-Dichloropropene	2018/11/03	110	70 - 130	93	70 - 130	<0.40	ug/L	NC	30		



**QUALITY ASSURANCE REPORT(CONT'D)**

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
5817433	Trichloroethylene	2018/11/03	95	70 - 130	97	70 - 130	<0.20	ug/L	NC	30		
5817433	Trichlorofluoromethane (FREON 11)	2018/11/03	100	70 - 130	100	70 - 130	<0.50	ug/L	NC	30		
5817433	Vinyl Chloride	2018/11/03	96	70 - 130	98	70 - 130	<0.20	ug/L	NC	30		
5817806	F2 (C10-C16 Hydrocarbons)	2018/11/04	105	50 - 130	102	60 - 130	<100	ug/L	NC	30		
5817806	F3 (C16-C34 Hydrocarbons)	2018/11/04	NC	50 - 130	101	60 - 130	<200	ug/L	NC	30		
5817806	F4 (C34-C50 Hydrocarbons)	2018/11/04	103	50 - 130	100	60 - 130	<200	ug/L	NC	30		
5820146	Mercury (Hg)	2018/11/05	108	75 - 125	104	80 - 120	<0.1	ug/L	NC	20		
5820679	Dissolved Aluminum (Al)	2018/11/06	105	80 - 120	101	80 - 120	<5.0	ug/L	0.28	20		
5820679	Dissolved Antimony (Sb)	2018/11/06	111	80 - 120	103	80 - 120	<0.50	ug/L	5.8	20		
5820679	Dissolved Arsenic (As)	2018/11/06	NC	80 - 120	100	80 - 120	<1.0	ug/L	0.037	20		
5820679	Dissolved Barium (Ba)	2018/11/06	104	80 - 120	99	80 - 120	<2.0	ug/L	1.8	20		
5820679	Dissolved Beryllium (Be)	2018/11/06	105	80 - 120	101	80 - 120	<0.50	ug/L	NC	20		
5820679	Dissolved Boron (B)	2018/11/06	104	80 - 120	103	80 - 120	<10	ug/L	1.1	20		
5820679	Dissolved Cadmium (Cd)	2018/11/06	104	80 - 120	101	80 - 120	<0.10	ug/L	NC	20		
5820679	Dissolved Calcium (Ca)	2018/11/06	NC	80 - 120	99	80 - 120	<200	ug/L	1.4	20		
5820679	Dissolved Chromium (Cr)	2018/11/06	102	80 - 120	99	80 - 120	<5.0	ug/L	NC	20		
5820679	Dissolved Cobalt (Co)	2018/11/06	102	80 - 120	99	80 - 120	<0.50	ug/L	3.2	20		
5820679	Dissolved Copper (Cu)	2018/11/06	106	80 - 120	101	80 - 120	<1.0	ug/L	4.0	20		
5820679	Dissolved Iron (Fe)	2018/11/06	105	80 - 120	101	80 - 120	<100	ug/L	NC	20		
5820679	Dissolved Lead (Pb)	2018/11/06	97	80 - 120	97	80 - 120	<0.50	ug/L	2.5	20		
5820679	Dissolved Magnesium (Mg)	2018/11/06	NC	80 - 120	100	80 - 120	<50	ug/L	1.4	20		
5820679	Dissolved Manganese (Mn)	2018/11/06	103	80 - 120	99	80 - 120	<2.0	ug/L	4.5	20		
5820679	Dissolved Molybdenum (Mo)	2018/11/06	NC	80 - 120	103	80 - 120	<0.50	ug/L	0.76	20		
5820679	Dissolved Nickel (Ni)	2018/11/06	100	80 - 120	99	80 - 120	<1.0	ug/L	6.2	20		
5820679	Dissolved Phosphorus (P)	2018/11/06	NC	80 - 120	115	80 - 120	<100	ug/L				
5820679	Dissolved Potassium (K)	2018/11/06	NC	80 - 120	99	80 - 120	<200	ug/L	2.2	20		
5820679	Dissolved Selenium (Se)	2018/11/06	103	80 - 120	101	80 - 120	<2.0	ug/L	6.0	20		
5820679	Dissolved Silicon (Si)	2018/11/06	99	80 - 120	100	80 - 120	<50	ug/L	0.75	20		
5820679	Dissolved Silver (Ag)	2018/11/06	101	80 - 120	100	80 - 120	<0.10	ug/L	NC	20		
5820679	Dissolved Sodium (Na)	2018/11/06	NC	80 - 120	100	80 - 120	<100	ug/L	0.51	20		
5820679	Dissolved Strontium (Sr)	2018/11/06	NC	80 - 120	98	80 - 120	<1.0	ug/L	1.4	20		

**QUALITY ASSURANCE REPORT(CONT'D)**

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
5820679	Dissolved Thallium (Tl)	2018/11/06	96	80 - 120	97	80 - 120	<0.050	ug/L	1.2	20		
5820679	Dissolved Titanium (Ti)	2018/11/06	103	80 - 120	99	80 - 120	<5.0	ug/L	NC	20		
5820679	Dissolved Uranium (U)	2018/11/06	NC	80 - 120	101	80 - 120	<0.10	ug/L	0.40	20		
5820679	Dissolved Vanadium (V)	2018/11/06	105	80 - 120	99	80 - 120	<0.50	ug/L	1.2	20		
5820679	Dissolved Zinc (Zn)	2018/11/06	98	80 - 120	101	80 - 120	<5.0	ug/L	1.3	20		

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

**VALIDATION SIGNATURE PAGE**

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



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Anastassia Hamanov, Scientific Specialist

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

<b>INVOICE TO:</b>		<b>REPORT TO:</b>		<b>PROJECT INFORMATION:</b>		<b>Laboratory Use Only:</b>	
Company Name: #25670 Golder Associates Ltd	Company Name: Chris Pons	Quotation #: B80683	Maxxam Job #:	Bottle Order #:	689744		
Attention: Accounts Payable	Attention: Chris Pons	P.O. #:	COC #:	Project Manager:			
Address: 215 Shields Court Unit # 1 Markham ON L3R 8V2	Address:	Project: 1778651 (5000)	Project Manager: Ema Gitej				
Tel: (905) 475-2625 Fax: (905) 475-5257	Tel: (905) 431-3118 Fax:	Site #:	C689744-01-01				
Email: AP_CustomerService@golder.com	Email: cpons@golder.com	Sampled By: C. Pons					

**MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY**

<b>Regulation 153 (2011)</b>		<b>Other Regulations</b>		<b>Special Instructions</b>
<input type="checkbox"/> Table 1	<input checked="" type="checkbox"/> Res/Park	<input type="checkbox"/> CCME	<input type="checkbox"/> Sanitary Sewer Bylaw	
<input checked="" type="checkbox"/> Table 2	<input type="checkbox"/> Ind/Comm	<input type="checkbox"/> Reg 558	<input type="checkbox"/> Storm Sewer Bylaw	
<input type="checkbox"/> Table 3	<input type="checkbox"/> Agri/Other	<input type="checkbox"/> MISA	Municipality _____	
<input type="checkbox"/> Table _____	<input type="checkbox"/> For RSC	<input type="checkbox"/> PWQG		
		<input type="checkbox"/> Other _____		

Include Criteria on Certificate of Analysis (Y/N)?

Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr / VI	O Reg 153 VOCs by HS & F1-F4 (Water)	O Reg 153 PCBs (Water)	RCAP - Comprehensive	Mercury	Total Kjeldahl Nitrogen in Water
	4529 Con 7	26-Oct-18	0835	GW	NO	/	/	/	/	/
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										

**Turnaround Time (TAT) Required:**  
Please provide advance notice for rush projects

**Regular (Standard) TAT:**  
(will be applied if Rush TAT is not specified)  
Standard TAT = 5-7 Working days for most tests.  
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

**Job Specific Rush TAT (if applies to entire submission)**  
Date Required: \_\_\_\_\_ Time Required: \_\_\_\_\_  
Rush Confirmation Number: \_\_\_\_\_ (call lab for #)

# of Bottles	Comments
12	Do not use dissolved metals sample bottle. Please use Solids bottle for dissolved metals analysis. Please filter and preserve.

31-Oct-18 12:20  
Ema Gitej  
B8S9942  
KVG ENV-667

<b>RELINQUISHED BY:</b> (Signature/Print) <i>Chris Pons</i>	<b>Date:</b> (YY/MM/DD) 18/10/18	<b>Time</b> 0900	<b>RECEIVED BY:</b> (Signature/Print) <i>[Signature]</i>	<b>Date:</b> (YY/MM/DD) 2018/10/31	<b>Time</b> 12:20	<b># jars used and not submitted</b>	<b>Laboratory Use Only</b>
							Time Sensitive: <input type="checkbox"/> Temperature (C) on Receipt: 17.7
							Custody Seal Present: <input type="checkbox"/> Intact: <input type="checkbox"/>

\* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

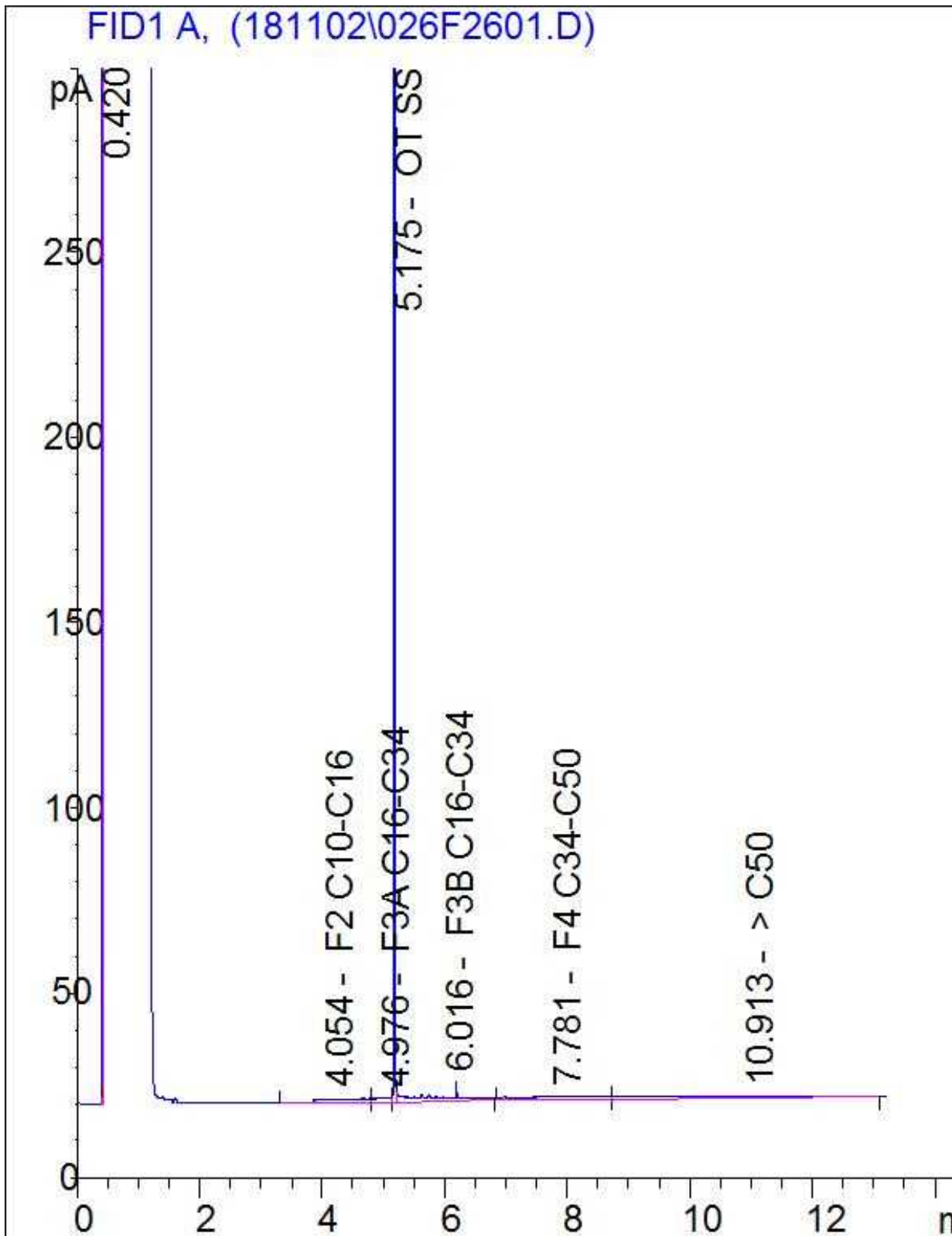
\* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

\* SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

White: Maxxa Yellow: Client

*mw* 35437

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Your Project #: 1778651 (5000)  
Your C.O.C. #: 691358-02-01

**Attention: Chris Pons**

Golder Associates Ltd  
215 Shields Court  
Unit # 1  
Markham, ON  
Canada L3R 8V2

**Report Date: 2018/11/21**  
Report #: R5493268  
Version: 2 - Revision

**CERTIFICATE OF ANALYSIS – REVISED REPORT**

**MAXXAM JOB #: B8T8844**

**Received: 2018/11/08, 11:49**

Sample Matrix: Water  
# Samples Received: 1

Analyses	Quantity	Date		Laboratory Method	Reference
		Extracted	Analyzed		
1,3-Dichloropropene Sum	1	N/A	2018/11/13		EPA 8260C m
Petroleum Hydrocarbons F2-F4 in Water (1)	1	2018/11/12	2018/11/13	CAM SOP-00316	CCME PHC-CWS m
Volatile Organic Compounds and F1 PHCs	1	N/A	2018/11/12	CAM SOP-00230	EPA 8260C m

**Remarks:**

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing. Maxxam is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Maxxam, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) All CCME PHC results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Maxxam conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following "Alberta Environment's Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Validation of Performance-Based Alternative Methods September 2003". Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

Your Project #: 1778651 (5000)  
Your C.O.C. #: 691358-02-01

**Attention: Chris Pons**

Golder Associates Ltd  
215 Shields Court  
Unit # 1  
Markham, ON  
Canada L3R 8V2

**Report Date: 2018/11/21**  
Report #: R5493268  
Version: 2 - Revision

**CERTIFICATE OF ANALYSIS – REVISED REPORT**

**MAXXAM JOB #: B8T8844**  
**Received: 2018/11/08, 11:49**

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.  
Ema Gitej, Senior Project Manager  
Email: EGitej@maxxam.ca  
Phone# (905)817-5829

=====  
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Maxxam Job #: B8T8844  
Report Date: 2018/11/21

Golder Associates Ltd  
Client Project #: 1778651 (5000)  
Sampler Initials: AVR

**O.REG 153 VOCs BY HS & F1-F4 (WATER)**

Maxxam ID		IGC504		
Sampling Date		2018/11/07 11:30		
COC Number		691358-02-01		
	UNITS	MW18-1	RDL	QC Batch
<b>Calculated Parameters</b>				
1,3-Dichloropropene (cis+trans)	ug/L	<0.50	0.50	5830249
<b>Volatile Organics</b>				
Acetone (2-Propanone)	ug/L	<10	10	5830249
Benzene	ug/L	<0.20	0.20	5830249
Bromodichloromethane	ug/L	4.5	0.50	5830249
Bromoform	ug/L	<1.0	1.0	5830249
Bromomethane	ug/L	<0.50	0.50	5830249
Carbon Tetrachloride	ug/L	<0.20	0.20	5830249
Chlorobenzene	ug/L	<0.20	0.20	5830249
Chloroform	ug/L	5.4	0.20	5830249
Dibromochloromethane	ug/L	3.1	0.50	5830249
1,2-Dichlorobenzene	ug/L	<0.50	0.50	5830249
1,3-Dichlorobenzene	ug/L	<0.50	0.50	5830249
1,4-Dichlorobenzene	ug/L	<0.50	0.50	5830249
Dichlorodifluoromethane (FREON 12)	ug/L	<1.0	1.0	5830249
1,1-Dichloroethane	ug/L	<0.20	0.20	5830249
1,2-Dichloroethane	ug/L	<0.50	0.50	5830249
1,1-Dichloroethylene	ug/L	<0.20	0.20	5830249
cis-1,2-Dichloroethylene	ug/L	<0.50	0.50	5830249
trans-1,2-Dichloroethylene	ug/L	<0.50	0.50	5830249
1,2-Dichloropropane	ug/L	<0.20	0.20	5830249
cis-1,3-Dichloropropene	ug/L	<0.30	0.30	5830249
trans-1,3-Dichloropropene	ug/L	<0.40	0.40	5830249
Ethylbenzene	ug/L	<0.20	0.20	5830249
Ethylene Dibromide	ug/L	<0.20	0.20	5830249
Hexane	ug/L	<1.0	1.0	5830249
Methylene Chloride(Dichloromethane)	ug/L	<2.0	2.0	5830249
Methyl Ethyl Ketone (2-Butanone)	ug/L	<10	10	5830249
Methyl Isobutyl Ketone	ug/L	<5.0	5.0	5830249
Methyl t-butyl ether (MTBE)	ug/L	<0.50	0.50	5830249
Styrene	ug/L	<0.50	0.50	5830249
RDL = Reportable Detection Limit QC Batch = Quality Control Batch				

Maxxam Job #: B8T8844  
Report Date: 2018/11/21

Golder Associates Ltd  
Client Project #: 1778651 (5000)  
Sampler Initials: AVR

**O.REG 153 VOCs BY HS & F1-F4 (WATER)**

Maxxam ID		IGC504		
Sampling Date		2018/11/07 11:30		
COC Number		691358-02-01		
	UNITS	MW18-1	RDL	QC Batch
1,1,1,2-Tetrachloroethane	ug/L	<0.50	0.50	5830249
1,1,2,2-Tetrachloroethane	ug/L	<0.50	0.50	5830249
Tetrachloroethylene	ug/L	<0.20	0.20	5830249
Toluene	ug/L	0.32	0.20	5830249
1,1,1-Trichloroethane	ug/L	<0.20	0.20	5830249
1,1,2-Trichloroethane	ug/L	<0.50	0.50	5830249
Trichloroethylene	ug/L	<0.20	0.20	5830249
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	0.50	5830249
Vinyl Chloride	ug/L	<0.20	0.20	5830249
p+m-Xylene	ug/L	<0.20	0.20	5830249
o-Xylene	ug/L	<0.20	0.20	5830249
Total Xylenes	ug/L	<0.20	0.20	5830249
F1 (C6-C10)	ug/L	<25	25	5830249
F1 (C6-C10) - BTEX	ug/L	<25	25	5830249
<b>F2-F4 Hydrocarbons</b>				
F2 (C10-C16 Hydrocarbons)	ug/L	<100	100	5832824
F3 (C16-C34 Hydrocarbons)	ug/L	<200	200	5832824
F4 (C34-C50 Hydrocarbons)	ug/L	<200	200	5832824
Reached Baseline at C50	ug/L	Yes		5832824
<b>Surrogate Recovery (%)</b>				
o-Terphenyl	%	93		5832824
4-Bromofluorobenzene	%	89		5830249
D4-1,2-Dichloroethane	%	105		5830249
D8-Toluene	%	96		5830249
RDL = Reportable Detection Limit QC Batch = Quality Control Batch				

Maxxam Job #: B8T8844  
Report Date: 2018/11/21

Golder Associates Ltd  
Client Project #: 1778651 (5000)  
Sampler Initials: AVR

### TEST SUMMARY

**Maxxam ID:** IGC504  
**Sample ID:** MW18-1  
**Matrix:** Water

**Collected:** 2018/11/07  
**Shipped:**  
**Received:** 2018/11/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	5827178	N/A	2018/11/13	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	5832824	2018/11/12	2018/11/13	(Kent) Maolin Li
Volatile Organic Compounds and F1 PHCs	GC/MSFD	5830249	N/A	2018/11/12	Xueming Jiang

Maxxam Job #: B8T8844  
Report Date: 2018/11/21

Golder Associates Ltd  
Client Project #: 1778651 (5000)  
Sampler Initials: AVR

### GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	1.3°C
Package 2	1.0°C

Revised report (2018/11/21): Split report as per client request .

**Results relate only to the items tested.**

Maxxam Job #: B8T8844  
Report Date: 2018/11/21

**QUALITY ASSURANCE REPORT**

Golder Associates Ltd  
Client Project #: 1778651 (5000)  
Sampler Initials: AVR

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5830249	4-Bromofluorobenzene	2018/11/12	98	70 - 130	99	70 - 130	91	%		
5830249	D4-1,2-Dichloroethane	2018/11/12	100	70 - 130	101	70 - 130	100	%		
5830249	D8-Toluene	2018/11/12	105	70 - 130	105	70 - 130	97	%		
5832824	o-Terphenyl	2018/11/13	98	60 - 130	94	60 - 130	95	%		
5830249	1,1,1,2-Tetrachloroethane	2018/11/12	103	70 - 130	98	70 - 130	<0.50	ug/L	NC	30
5830249	1,1,1-Trichloroethane	2018/11/12	103	70 - 130	96	70 - 130	<0.20	ug/L	NC	30
5830249	1,1,2,2-Tetrachloroethane	2018/11/12	99	70 - 130	98	70 - 130	<0.50	ug/L	NC	30
5830249	1,1,2-Trichloroethane	2018/11/12	100	70 - 130	97	70 - 130	<0.50	ug/L	NC	30
5830249	1,1-Dichloroethane	2018/11/12	102	70 - 130	96	70 - 130	<0.20	ug/L	NC	30
5830249	1,1-Dichloroethylene	2018/11/12	102	70 - 130	96	70 - 130	<0.20	ug/L	NC	30
5830249	1,2-Dichlorobenzene	2018/11/12	101	70 - 130	96	70 - 130	<0.50	ug/L	NC	30
5830249	1,2-Dichloroethane	2018/11/12	99	70 - 130	96	70 - 130	<0.50	ug/L	NC	30
5830249	1,2-Dichloropropane	2018/11/12	100	70 - 130	95	70 - 130	<0.20	ug/L	NC	30
5830249	1,3-Dichlorobenzene	2018/11/12	103	70 - 130	97	70 - 130	<0.50	ug/L	NC	30
5830249	1,4-Dichlorobenzene	2018/11/12	101	70 - 130	96	70 - 130	<0.50	ug/L	NC	30
5830249	Acetone (2-Propanone)	2018/11/12	94	60 - 140	93	60 - 140	<10	ug/L	NC	30
5830249	Benzene	2018/11/12	99	70 - 130	94	70 - 130	<0.20	ug/L	NC	30
5830249	Bromodichloromethane	2018/11/12	101	70 - 130	96	70 - 130	<0.50	ug/L	NC	30
5830249	Bromoform	2018/11/12	97	70 - 130	95	70 - 130	<1.0	ug/L	NC	30
5830249	Bromomethane	2018/11/12	103	60 - 140	97	60 - 140	<0.50	ug/L	NC	30
5830249	Carbon Tetrachloride	2018/11/12	103	70 - 130	96	70 - 130	<0.20	ug/L	NC	30
5830249	Chlorobenzene	2018/11/12	99	70 - 130	95	70 - 130	<0.20	ug/L	NC	30
5830249	Chloroform	2018/11/12	99	70 - 130	94	70 - 130	<0.20	ug/L	NC	30
5830249	cis-1,2-Dichloroethylene	2018/11/12	101	70 - 130	95	70 - 130	<0.50	ug/L	NC	30
5830249	cis-1,3-Dichloropropene	2018/11/12	90	70 - 130	88	70 - 130	<0.30	ug/L	NC	30
5830249	Dibromochloromethane	2018/11/12	99	70 - 130	97	70 - 130	<0.50	ug/L	NC	30
5830249	Dichlorodifluoromethane (FREON 12)	2018/11/12	120	60 - 140	113	60 - 140	<1.0	ug/L	NC	30
5830249	Ethylbenzene	2018/11/12	98	70 - 130	93	70 - 130	<0.20	ug/L	NC	30
5830249	Ethylene Dibromide	2018/11/12	97	70 - 130	96	70 - 130	<0.20	ug/L	NC	30
5830249	F1 (C6-C10) - BTEX	2018/11/12					<25	ug/L	NC	30
5830249	F1 (C6-C10)	2018/11/12	101	60 - 140	103	60 - 140	<25	ug/L	NC	30

Maxxam Job #: B8T8844  
Report Date: 2018/11/21

**QUALITY ASSURANCE REPORT(CONT'D)**

Golder Associates Ltd  
Client Project #: 1778651 (5000)  
Sampler Initials: AVR

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5830249	Hexane	2018/11/12	102	70 - 130	95	70 - 130	<1.0	ug/L	NC	30
5830249	Methyl Ethyl Ketone (2-Butanone)	2018/11/12	91	60 - 140	92	60 - 140	<10	ug/L	NC	30
5830249	Methyl Isobutyl Ketone	2018/11/12	90	70 - 130	90	70 - 130	<5.0	ug/L	NC	30
5830249	Methyl t-butyl ether (MTBE)	2018/11/12	93	70 - 130	89	70 - 130	<0.50	ug/L	NC	30
5830249	Methylene Chloride(Dichloromethane)	2018/11/12	92	70 - 130	88	70 - 130	<2.0	ug/L	NC	30
5830249	o-Xylene	2018/11/12	98	70 - 130	94	70 - 130	<0.20	ug/L	NC	30
5830249	p+m-Xylene	2018/11/12	94	70 - 130	90	70 - 130	<0.20	ug/L	NC	30
5830249	Styrene	2018/11/12	99	70 - 130	96	70 - 130	<0.50	ug/L	NC	30
5830249	Tetrachloroethylene	2018/11/12	106	70 - 130	100	70 - 130	<0.20	ug/L	NC	30
5830249	Toluene	2018/11/12	100	70 - 130	96	70 - 130	<0.20	ug/L	7.7	30
5830249	Total Xylenes	2018/11/12					<0.20	ug/L	NC	30
5830249	trans-1,2-Dichloroethylene	2018/11/12	103	70 - 130	96	70 - 130	<0.50	ug/L	NC	30
5830249	trans-1,3-Dichloropropene	2018/11/12	97	70 - 130	96	70 - 130	<0.40	ug/L	NC	30
5830249	Trichloroethylene	2018/11/12	101	70 - 130	94	70 - 130	<0.20	ug/L	NC	30
5830249	Trichlorofluoromethane (FREON 11)	2018/11/12	108	70 - 130	101	70 - 130	<0.50	ug/L	NC	30
5830249	Vinyl Chloride	2018/11/12	111	70 - 130	104	70 - 130	<0.20	ug/L	NC	30
5832824	F2 (C10-C16 Hydrocarbons)	2018/11/13	93	50 - 130	87	60 - 130	<100	ug/L	NC	30
5832824	F3 (C16-C34 Hydrocarbons)	2018/11/13	96	50 - 130	89	60 - 130	<200	ug/L	25	30
5832824	F4 (C34-C50 Hydrocarbons)	2018/11/13	98	50 - 130	91	60 - 130	<200	ug/L	23	30

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.



NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

Maxxam Job #: B8T8844  
Report Date: 2018/11/21

Golder Associates Ltd  
Client Project #: 1778651 (5000)  
Sampler Initials: AVR

### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

---

Ewa Pranjic, M.Sc., C.Chem, Scientific Specialist

---

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



<b>INVOICE TO:</b>		<b>REPORT TO:</b>		<b>PROJECT INFORMATION:</b>	
Company Name: #25670 Golder Associates Ltd	Company Name: Chris Pons	Quotation #: B80683	Ema Gitej		
Attention: Accounts Payable	Attention: Chris Pons	P.O. #:	B8T8844		
Address: 215 Shields Court Unit # 1	Address:	Project: 1778651 (5000)	MAF ENV-1415		
Address: Markham ON L3R 8V2		Project Name:	Project Manager: Ema Gitej		
Tel: (905) 475-2625 Fax: (905) 475-5257	Tel: (905) 431-3118 Fax:	Site #:	691358		
Email: AP_CustomerService@golder.com	Email: cpons@golder.com	Sampled By: <i>AVL</i>	C#691358-02-01		

**MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY**

<b>Regulation 153 (2011)</b> <input type="checkbox"/> Table 1 <input type="checkbox"/> Res/Park <input type="checkbox"/> Medium/Fine <input checked="" type="checkbox"/> Table 2 <input checked="" type="checkbox"/> Ind/Comm <input checked="" type="checkbox"/> Coarse <input type="checkbox"/> Table 3 <input type="checkbox"/> Agri/Other <input type="checkbox"/> For RSC <input type="checkbox"/> Table	<b>Other Regulations</b> <input type="checkbox"/> CCME <input type="checkbox"/> Sanitary Sewer Bylaw <input type="checkbox"/> Reg 558 <input type="checkbox"/> Storm Sewer Bylaw <input type="checkbox"/> MISA Municipality _____ <input type="checkbox"/> PWDO <input type="checkbox"/> Other _____	<b>Special Instructions</b> Include Criteria on Certificate of Analysis (Y/N)? <u>N</u>
---	---	--

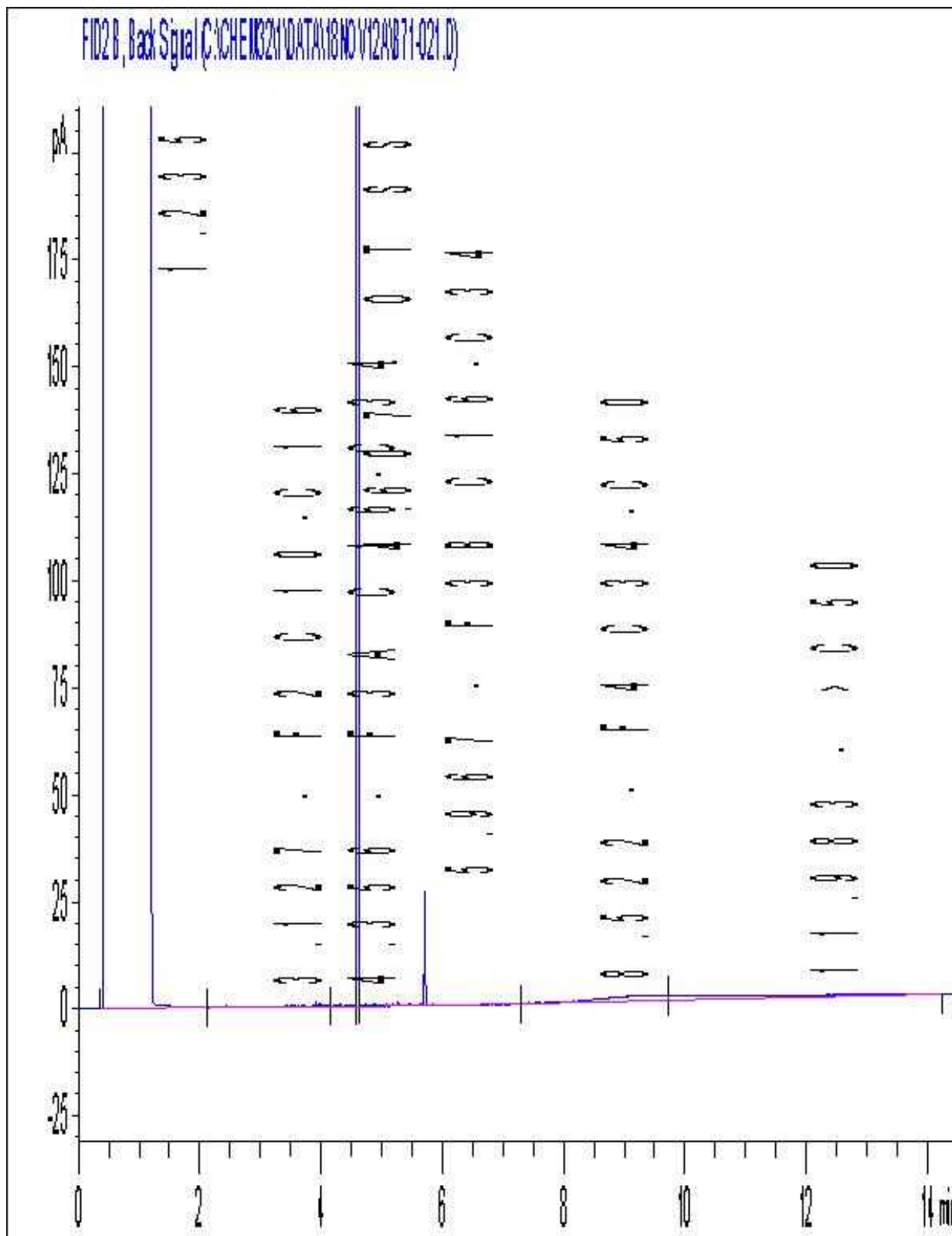
Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr / VI	O Reg 153 PCBs (Water)	RCAP - Comprehensive	Mercury	Total Kjeldahl Nitrogen in Water	O Reg 153 VOCs by HS & F1 F4 (Water)	Turnaround Time (TAT) Required: Please provide advance notice for rush projects
1	MW18-1	Nov 7/18	11:30am	GW	Y					X	Regular (Standard) TAT: (will be applied if Rush TAT is not specified). Standard TAT = 5-7 Working days for most tests. Please note: Standard TAT for certain tests such as BOD and Cloxins/Furanis are > 5 days - contact your Project Manager for details. Job Specific Rush TAT (if applies to entire submission) Date Required: _____ Time Required: _____ Rush Confirmation Number: _____ (call lab for #)
2	MW18-2	"	12pm	GW	Y	X	X	X	X	X	5
3											12
4											
5											
6											
7											
8											
9											
10											

RELINQUISHED BY: (Signature/Print) <i>[Signature]</i>	Date: (YY/MM/DD) 18/11/07	Time 5pm	RECEIVED BY: (Signature/Print) <i>[Signature]</i>	Date: (YY/MM/DD) 2028/11/08	Time 11:49	# jars used and not submitted 0	Laboratory Use Only Time Sensitive	Temperature (°C) on Receipt 2/1	Custody Seal Present Intact	Yes No
--	------------------------------	-------------	--	--------------------------------	---------------	------------------------------------	---------------------------------------	------------------------------------	--------------------------------	-----------

\* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.  
 \*\* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.  
 \*\*\* SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM  
 White: Maxxa Yellow: Client

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Your Project #: 1778651 (5000)  
Your C.O.C. #: 691358-02-01

**Attention: Chris Pons**

Golder Associates Ltd  
215 Shields Court  
Unit # 1  
Markham, ON  
Canada L3R 8V2

**Report Date: 2018/11/21**  
Report #: R5493273  
Version: 3 - Revision

**CERTIFICATE OF ANALYSIS – REVISED REPORT**

**MAXXAM JOB #: B8T8844**

**Received: 2018/11/08, 11:49**

Sample Matrix: Water  
# Samples Received: 1

<b>Analyses</b>	<b>Quantity</b>	<b>Date Extracted</b>	<b>Date Analyzed</b>	<b>Laboratory Method</b>	<b>Reference</b>
Alkalinity	1	N/A	2018/11/09	CAM SOP-00448	SM 23 2320 B m
Carbonate, Bicarbonate and Hydroxide	1	N/A	2018/11/12	CAM SOP-00102	APHA 4500-CO2 D
1,3-Dichloropropene Sum	1	N/A	2018/11/13		EPA 8260C m
Chloride by Automated Colourimetry	1	N/A	2018/11/12	CAM SOP-00463	EPA 325.2 m
Conductivity	1	N/A	2018/11/09	CAM SOP-00414	SM 23 2510 m
Dissolved Organic Carbon (DOC) (1)	1	N/A	2018/11/12	CAM SOP-00446	SM 23 5310 B m
Petroleum Hydrocarbons F2-F4 in Water (2)	1	2018/11/12	2018/11/13	CAM SOP-00316	CCME PHC-CWS m
Hardness (calculated as CaCO3)	1	N/A	2018/11/14	CAM SOP 00102/00408/00447	SM 2340 B
Mercury	1	2018/11/13	2018/11/13	CAM SOP-00453	EPA 7470A m
Dissolved Metals by ICPMS	1	N/A	2018/11/14	CAM SOP-00447	EPA 6020B m
Ion Balance (% Difference)	1	N/A	2018/11/14		
Anion and Cation Sum	1	N/A	2018/11/14		
Total Ammonia-N	1	N/A	2018/11/14	CAM SOP-00441	EPA GS I-2522-90 m
Nitrate (NO3) and Nitrite (NO2) in Water (3)	1	N/A	2018/11/13	CAM SOP-00440	SM 23 4500-NO3I/NO2B
Polychlorinated Biphenyl in Water	1	2018/11/12	2018/11/12	CAM SOP-00309	EPA 8082A m
pH	1	N/A	2018/11/09	CAM SOP-00413	SM 4500H+ B m
Orthophosphate	1	N/A	2018/11/12	CAM SOP-00461	EPA 365.1 m
Sat. pH and Langelier Index (@ 20C)	1	N/A	2018/11/14		
Sat. pH and Langelier Index (@ 4C)	1	N/A	2018/11/14		
Sulphate by Automated Colourimetry	1	N/A	2018/11/12	CAM SOP-00464	EPA 375.4 m
Total Dissolved Solids (TDS calc)	1	N/A	2018/11/14		
Total Kjeldahl Nitrogen in Water	1	2018/11/12	2018/11/12	CAM SOP-00938	OMOE E3516 m
Volatile Organic Compounds and F1 PHCs	1	N/A	2018/11/12	CAM SOP-00230	EPA 8260C m

**Remarks:**

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using

Your Project #: 1778651 (5000)  
Your C.O.C. #: 691358-02-01

**Attention: Chris Pons**

Golder Associates Ltd  
215 Shields Court  
Unit # 1  
Markham, ON  
Canada L3R 8V2

**Report Date: 2018/11/21**  
Report #: R5493273  
Version: 3 - Revision

**CERTIFICATE OF ANALYSIS – REVISED REPORT**

**MAXXAM JOB #: B8T8844**

**Received: 2018/11/08, 11:49**

accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing. Maxxam is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Maxxam, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) Dissolved Organic Carbon (DOC) present in the sample should be considered as non-purgeable DOC.

(2) All CCME PHC results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Maxxam conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following "Alberta Environment's Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Validation of Performance-Based Alternative Methods September 2003". Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

(3) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

**Encryption Key**

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Ema Gitej, Senior Project Manager

Email: EGitej@maxxam.ca

Phone# (905)817-5829

=====

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B8T8844  
Report Date: 2018/11/21

Golder Associates Ltd  
Client Project #: 1778651 (5000)  
Sampler Initials: AVR

**RCAP - COMPREHENSIVE (WATER)**

Maxxam ID		IGC505		
Sampling Date		2018/11/07 12:00		
COC Number		691358-02-01		
	UNITS	MW18-2	RDL	QC Batch
<b>Calculated Parameters</b>				
Anion Sum	me/L	4.76	N/A	5827281
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	180	1.0	5827280
Calculated TDS	mg/L	250	1.0	5827284
Carb. Alkalinity (calc. as CaCO3)	mg/L	1.3	1.0	5827280
Cation Sum	me/L	4.66	N/A	5827281
Hardness (CaCO3)	mg/L	200	1.0	5827179
Ion Balance (% Difference)	%	1.02	N/A	5827180
Langelier Index (@ 20C)	N/A	0.518		5827282
Langelier Index (@ 4C)	N/A	0.269		5827283
Saturation pH (@ 20C)	N/A	7.37		5827282
Saturation pH (@ 4C)	N/A	7.62		5827283
<b>Inorganics</b>				
Total Ammonia-N	mg/L	0.29	0.050	5832984
Conductivity	umho/cm	440	1.0	5830552
Dissolved Organic Carbon	mg/L	1.4	0.50	5830640
Orthophosphate (P)	mg/L	<0.010	0.010	5830606
pH	pH	7.88		5830556
Dissolved Sulphate (SO4)	mg/L	17	1.0	5830605
Alkalinity (Total as CaCO3)	mg/L	180	1.0	5830538
Dissolved Chloride (Cl-)	mg/L	26	1.0	5830597
Nitrite (N)	mg/L	0.212	0.010	5830573
Nitrate (N)	mg/L	0.44	0.10	5830573
Nitrate + Nitrite (N)	mg/L	0.66	0.10	5830573
<b>Metals</b>				
Dissolved Aluminum (Al)	ug/L	5.3	5.0	5831272
Dissolved Antimony (Sb)	ug/L	<0.50	0.50	5831272
Dissolved Arsenic (As)	ug/L	<1.0	1.0	5831272
Dissolved Barium (Ba)	ug/L	46	2.0	5831272
Dissolved Beryllium (Be)	ug/L	<0.50	0.50	5831272
Dissolved Boron (B)	ug/L	53	10	5831272
Dissolved Cadmium (Cd)	ug/L	<0.10	0.10	5831272
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable				

Maxxam Job #: B8T8844  
Report Date: 2018/11/21

Golder Associates Ltd  
Client Project #: 1778651 (5000)  
Sampler Initials: AVR

**RCAP - COMPREHENSIVE (WATER)**

Maxxam ID		IGC505		
Sampling Date		2018/11/07 12:00		
COC Number		691358-02-01		
	UNITS	MW18-2	RDL	QC Batch
Dissolved Calcium (Ca)	ug/L	60000	200	5831272
Dissolved Chromium (Cr)	ug/L	<5.0	5.0	5831272
Dissolved Cobalt (Co)	ug/L	1.0	0.50	5831272
Dissolved Copper (Cu)	ug/L	<1.0	1.0	5831272
Dissolved Iron (Fe)	ug/L	<100	100	5831272
Dissolved Lead (Pb)	ug/L	<0.50	0.50	5831272
Dissolved Magnesium (Mg)	ug/L	13000	50	5831272
Dissolved Manganese (Mn)	ug/L	110	2.0	5831272
Dissolved Molybdenum (Mo)	ug/L	6.9	0.50	5831272
Dissolved Nickel (Ni)	ug/L	1.6	1.0	5831272
Dissolved Phosphorus (P)	ug/L	<100	100	5831272
Dissolved Potassium (K)	ug/L	3400	200	5831272
Dissolved Selenium (Se)	ug/L	<2.0	2.0	5831272
Dissolved Silicon (Si)	ug/L	4200	50	5831272
Dissolved Silver (Ag)	ug/L	<0.10	0.10	5831272
Dissolved Sodium (Na)	ug/L	12000	100	5831272
Dissolved Strontium (Sr)	ug/L	190	1.0	5831272
Dissolved Thallium (Tl)	ug/L	<0.050	0.050	5831272
Dissolved Titanium (Ti)	ug/L	<5.0	5.0	5831272
Dissolved Uranium (U)	ug/L	0.18	0.10	5831272
Dissolved Vanadium (V)	ug/L	<0.50	0.50	5831272
Dissolved Zinc (Zn)	ug/L	<5.0	5.0	5831272
RDL = Reportable Detection Limit				
QC Batch = Quality Control Batch				

Maxxam Job #: B8T8844  
Report Date: 2018/11/21

Golder Associates Ltd  
Client Project #: 1778651 (5000)  
Sampler Initials: AVR

**RESULTS OF ANALYSES OF WATER**

<b>Maxxam ID</b>		IGC505		
<b>Sampling Date</b>		2018/11/07 12:00		
<b>COC Number</b>		691358-02-01		
	<b>UNITS</b>	<b>MW18-2</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Inorganics</b>				
Total Kjeldahl Nitrogen (TKN)	mg/L	0.46	0.10	5832889
RDL = Reportable Detection Limit				
QC Batch = Quality Control Batch				



Maxxam Job #: B8T8844  
Report Date: 2018/11/21

Golder Associates Ltd  
Client Project #: 1778651 (5000)  
Sampler Initials: AVR

**ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)**

Maxxam ID		IGC505	IGC505		
Sampling Date		2018/11/07 12:00	2018/11/07 12:00		
COC Number		691358-02-01	691358-02-01		
	<b>UNITS</b>	<b>MW18-2</b>	<b>MW18-2 Lab-Dup</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Metals</b>					
Mercury (Hg)	ug/L	<0.1	<0.1	0.1	5833908
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate					

Maxxam Job #: B8T8844  
Report Date: 2018/11/21

Golder Associates Ltd  
Client Project #: 1778651 (5000)  
Sampler Initials: AVR

**O.REG 153 PCBS (WATER)**

<b>Maxxam ID</b>		IGC505		
<b>Sampling Date</b>		2018/11/07 12:00		
<b>COC Number</b>		691358-02-01		
	<b>UNITS</b>	<b>MW18-2</b>	<b>RDL</b>	<b>QC Batch</b>
<b>PCBs</b>				
Aroclor 1242	ug/L	<0.05	0.05	5832145
Aroclor 1248	ug/L	<0.05	0.05	5832145
Aroclor 1254	ug/L	<0.05	0.05	5832145
Aroclor 1260	ug/L	<0.05	0.05	5832145
Total PCB	ug/L	<0.05	0.05	5832145
<b>Surrogate Recovery (%)</b>				
Decachlorobiphenyl	%	63		5832145
RDL = Reportable Detection Limit QC Batch = Quality Control Batch				

Maxxam Job #: B8T8844  
Report Date: 2018/11/21

Golder Associates Ltd  
Client Project #: 1778651 (5000)  
Sampler Initials: AVR

**O.REG 153 VOCs BY HS & F1-F4 (WATER)**

Maxxam ID		IGC505		
Sampling Date		2018/11/07 12:00		
COC Number		691358-02-01		
	UNITS	MW18-2	RDL	QC Batch
<b>Calculated Parameters</b>				
1,3-Dichloropropene (cis+trans)	ug/L	<0.50	0.50	5832178
<b>Volatile Organics</b>				
Acetone (2-Propanone)	ug/L	<10	10	5830249
Benzene	ug/L	0.34	0.20	5830249
Bromodichloromethane	ug/L	<0.50	0.50	5830249
Bromoform	ug/L	<1.0	1.0	5830249
Bromomethane	ug/L	<0.50	0.50	5830249
Carbon Tetrachloride	ug/L	<0.20	0.20	5830249
Chlorobenzene	ug/L	<0.20	0.20	5830249
Chloroform	ug/L	<0.20	0.20	5830249
Dibromochloromethane	ug/L	<0.50	0.50	5830249
1,2-Dichlorobenzene	ug/L	<0.50	0.50	5830249
1,3-Dichlorobenzene	ug/L	<0.50	0.50	5830249
1,4-Dichlorobenzene	ug/L	<0.50	0.50	5830249
Dichlorodifluoromethane (FREON 12)	ug/L	<1.0	1.0	5830249
1,1-Dichloroethane	ug/L	<0.20	0.20	5830249
1,2-Dichloroethane	ug/L	<0.50	0.50	5830249
1,1-Dichloroethylene	ug/L	<0.20	0.20	5830249
cis-1,2-Dichloroethylene	ug/L	<0.50	0.50	5830249
trans-1,2-Dichloroethylene	ug/L	<0.50	0.50	5830249
1,2-Dichloropropane	ug/L	<0.20	0.20	5830249
cis-1,3-Dichloropropene	ug/L	<0.30	0.30	5830249
trans-1,3-Dichloropropene	ug/L	<0.40	0.40	5830249
Ethylbenzene	ug/L	<0.20	0.20	5830249
Ethylene Dibromide	ug/L	<0.20	0.20	5830249
Hexane	ug/L	<1.0	1.0	5830249
Methylene Chloride(Dichloromethane)	ug/L	<2.0	2.0	5830249
Methyl Ethyl Ketone (2-Butanone)	ug/L	<10	10	5830249
Methyl Isobutyl Ketone	ug/L	<5.0	5.0	5830249
Methyl t-butyl ether (MTBE)	ug/L	<0.50	0.50	5830249
Styrene	ug/L	<0.50	0.50	5830249
RDL = Reportable Detection Limit QC Batch = Quality Control Batch				

Maxxam Job #: B8T8844  
Report Date: 2018/11/21

Golder Associates Ltd  
Client Project #: 1778651 (5000)  
Sampler Initials: AVR

**O.REG 153 VOCs BY HS & F1-F4 (WATER)**

Maxxam ID		IGC505		
Sampling Date		2018/11/07 12:00		
COC Number		691358-02-01		
	UNITS	MW18-2	RDL	QC Batch
1,1,1,2-Tetrachloroethane	ug/L	<0.50	0.50	5830249
1,1,2,2-Tetrachloroethane	ug/L	<0.50	0.50	5830249
Tetrachloroethylene	ug/L	<0.20	0.20	5830249
Toluene	ug/L	0.69	0.20	5830249
1,1,1-Trichloroethane	ug/L	<0.20	0.20	5830249
1,1,2-Trichloroethane	ug/L	<0.50	0.50	5830249
Trichloroethylene	ug/L	<0.20	0.20	5830249
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	0.50	5830249
Vinyl Chloride	ug/L	<0.20	0.20	5830249
p+m-Xylene	ug/L	0.28	0.20	5830249
o-Xylene	ug/L	<0.20	0.20	5830249
Total Xylenes	ug/L	0.28	0.20	5830249
F1 (C6-C10)	ug/L	<25	25	5830249
F1 (C6-C10) - BTEX	ug/L	<25	25	5830249
<b>F2-F4 Hydrocarbons</b>				
F2 (C10-C16 Hydrocarbons)	ug/L	<100	100	5832824
F3 (C16-C34 Hydrocarbons)	ug/L	<200	200	5832824
F4 (C34-C50 Hydrocarbons)	ug/L	<200	200	5832824
Reached Baseline at C50	ug/L	Yes		5832824
<b>Surrogate Recovery (%)</b>				
o-Terphenyl	%	88		5832824
4-Bromofluorobenzene	%	90		5830249
D4-1,2-Dichloroethane	%	105		5830249
D8-Toluene	%	96		5830249
RDL = Reportable Detection Limit QC Batch = Quality Control Batch				

Maxxam Job #: B8T8844  
Report Date: 2018/11/21

Golder Associates Ltd  
Client Project #: 1778651 (5000)  
Sampler Initials: AVR

### TEST SUMMARY

**Maxxam ID:** IGC505  
**Sample ID:** MW18-2  
**Matrix:** Water

**Collected:** 2018/11/07  
**Shipped:**  
**Received:** 2018/11/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	5830538	N/A	2018/11/09	Neil Dassanayake
Carbonate, Bicarbonate and Hydroxide	CALC	5827280	N/A	2018/11/12	Automated Statchk
1,3-Dichloropropene Sum	CALC	5827178	N/A	2018/11/13	Automated Statchk
Chloride by Automated Colourimetry	KONE	5830597	N/A	2018/11/12	Deonarine Ramnarine
Conductivity	AT	5830552	N/A	2018/11/09	Neil Dassanayake
Dissolved Organic Carbon (DOC)	TOCV/NDIR	5830640	N/A	2018/11/12	Nimarta Singh
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	5832824	2018/11/12	2018/11/13	(Kent) Maolin Li
Hardness (calculated as CaCO3)		5827179	N/A	2018/11/14	Automated Statchk
Mercury	CV/AA	5833908	2018/11/13	2018/11/13	Ron Morrison
Dissolved Metals by ICPMS	ICP/MS	5831272	N/A	2018/11/14	Thao Nguyen
Ion Balance (% Difference)	CALC	5827180	N/A	2018/11/14	Automated Statchk
Anion and Cation Sum	CALC	5827281	N/A	2018/11/14	Automated Statchk
Total Ammonia-N	LACH/NH4	5832984	N/A	2018/11/14	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	5830573	N/A	2018/11/13	Chandra Nandlal
Polychlorinated Biphenyl in Water	GC/ECD	5832145	2018/11/12	2018/11/12	Svitlana Shaula
pH	AT	5830556	N/A	2018/11/09	Neil Dassanayake
Orthophosphate	KONE	5830606	N/A	2018/11/12	Alina Dobreanu
Sat. pH and Langelier Index (@ 20C)	CALC	5827282	N/A	2018/11/14	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	5827283	N/A	2018/11/14	Automated Statchk
Sulphate by Automated Colourimetry	KONE	5830605	N/A	2018/11/12	Alina Dobreanu
Total Dissolved Solids (TDS calc)	CALC	5827284	N/A	2018/11/14	Automated Statchk
Total Kjeldahl Nitrogen in Water	SKAL	5832889	2018/11/12	2018/11/12	Rajni Tyagi
Volatile Organic Compounds and F1 PHCs	GC/MSFD	5830249	N/A	2018/11/12	Xueming Jiang

**Maxxam ID:** IGC505 Dup  
**Sample ID:** MW18-2  
**Matrix:** Water

**Collected:** 2018/11/07  
**Shipped:**  
**Received:** 2018/11/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury	CV/AA	5833908	2018/11/13	2018/11/13	Ron Morrison

Maxxam Job #: B8T8844  
Report Date: 2018/11/21

Golder Associates Ltd  
Client Project #: 1778651 (5000)  
Sampler Initials: AVR

### GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	1.3°C
Package 2	1.0°C

Revised report (2018/11/21): Split report as per client request .

**Results relate only to the items tested.**

Maxxam Job #: B8T8844  
Report Date: 2018/11/21

**QUALITY ASSURANCE REPORT**

Golder Associates Ltd  
Client Project #: 1778651 (5000)  
Sampler Initials: AVR

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
5830249	4-Bromofluorobenzene	2018/11/12	98	70 - 130	99	70 - 130	91	%				
5830249	D4-1,2-Dichloroethane	2018/11/12	100	70 - 130	101	70 - 130	100	%				
5830249	D8-Toluene	2018/11/12	105	70 - 130	105	70 - 130	97	%				
5832145	Decachlorobiphenyl	2018/11/12	65	60 - 130	65	60 - 130	68	%				
5832824	o-Terphenyl	2018/11/13	98	60 - 130	94	60 - 130	95	%				
5830249	1,1,1,2-Tetrachloroethane	2018/11/12	103	70 - 130	98	70 - 130	<0.50	ug/L	NC	30		
5830249	1,1,1-Trichloroethane	2018/11/12	103	70 - 130	96	70 - 130	<0.20	ug/L	NC	30		
5830249	1,1,2,2-Tetrachloroethane	2018/11/12	99	70 - 130	98	70 - 130	<0.50	ug/L	NC	30		
5830249	1,1,2-Trichloroethane	2018/11/12	100	70 - 130	97	70 - 130	<0.50	ug/L	NC	30		
5830249	1,1-Dichloroethane	2018/11/12	102	70 - 130	96	70 - 130	<0.20	ug/L	NC	30		
5830249	1,1-Dichloroethylene	2018/11/12	102	70 - 130	96	70 - 130	<0.20	ug/L	NC	30		
5830249	1,2-Dichlorobenzene	2018/11/12	101	70 - 130	96	70 - 130	<0.50	ug/L	NC	30		
5830249	1,2-Dichloroethane	2018/11/12	99	70 - 130	96	70 - 130	<0.50	ug/L	NC	30		
5830249	1,2-Dichloropropane	2018/11/12	100	70 - 130	95	70 - 130	<0.20	ug/L	NC	30		
5830249	1,3-Dichlorobenzene	2018/11/12	103	70 - 130	97	70 - 130	<0.50	ug/L	NC	30		
5830249	1,4-Dichlorobenzene	2018/11/12	101	70 - 130	96	70 - 130	<0.50	ug/L	NC	30		
5830249	Acetone (2-Propanone)	2018/11/12	94	60 - 140	93	60 - 140	<10	ug/L	NC	30		
5830249	Benzene	2018/11/12	99	70 - 130	94	70 - 130	<0.20	ug/L	NC	30		
5830249	Bromodichloromethane	2018/11/12	101	70 - 130	96	70 - 130	<0.50	ug/L	NC	30		
5830249	Bromoform	2018/11/12	97	70 - 130	95	70 - 130	<1.0	ug/L	NC	30		
5830249	Bromomethane	2018/11/12	103	60 - 140	97	60 - 140	<0.50	ug/L	NC	30		
5830249	Carbon Tetrachloride	2018/11/12	103	70 - 130	96	70 - 130	<0.20	ug/L	NC	30		
5830249	Chlorobenzene	2018/11/12	99	70 - 130	95	70 - 130	<0.20	ug/L	NC	30		
5830249	Chloroform	2018/11/12	99	70 - 130	94	70 - 130	<0.20	ug/L	NC	30		
5830249	cis-1,2-Dichloroethylene	2018/11/12	101	70 - 130	95	70 - 130	<0.50	ug/L	NC	30		
5830249	cis-1,3-Dichloropropene	2018/11/12	90	70 - 130	88	70 - 130	<0.30	ug/L	NC	30		
5830249	Dibromochloromethane	2018/11/12	99	70 - 130	97	70 - 130	<0.50	ug/L	NC	30		
5830249	Dichlorodifluoromethane (FREON 12)	2018/11/12	120	60 - 140	113	60 - 140	<1.0	ug/L	NC	30		
5830249	Ethylbenzene	2018/11/12	98	70 - 130	93	70 - 130	<0.20	ug/L	NC	30		
5830249	Ethylene Dibromide	2018/11/12	97	70 - 130	96	70 - 130	<0.20	ug/L	NC	30		
5830249	F1 (C6-C10) - BTEX	2018/11/12					<25	ug/L	NC	30		



Maxxam Job #: B8T8844  
Report Date: 2018/11/21

**QUALITY ASSURANCE REPORT(CONT'D)**

Golder Associates Ltd  
Client Project #: 1778651 (5000)  
Sampler Initials: AVR

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
5830249	F1 (C6-C10)	2018/11/12	101	60 - 140	103	60 - 140	<25	ug/L	NC	30		
5830249	Hexane	2018/11/12	102	70 - 130	95	70 - 130	<1.0	ug/L	NC	30		
5830249	Methyl Ethyl Ketone (2-Butanone)	2018/11/12	91	60 - 140	92	60 - 140	<10	ug/L	NC	30		
5830249	Methyl Isobutyl Ketone	2018/11/12	90	70 - 130	90	70 - 130	<5.0	ug/L	NC	30		
5830249	Methyl t-butyl ether (MTBE)	2018/11/12	93	70 - 130	89	70 - 130	<0.50	ug/L	NC	30		
5830249	Methylene Chloride(Dichloromethane)	2018/11/12	92	70 - 130	88	70 - 130	<2.0	ug/L	NC	30		
5830249	o-Xylene	2018/11/12	98	70 - 130	94	70 - 130	<0.20	ug/L	NC	30		
5830249	p+m-Xylene	2018/11/12	94	70 - 130	90	70 - 130	<0.20	ug/L	NC	30		
5830249	Styrene	2018/11/12	99	70 - 130	96	70 - 130	<0.50	ug/L	NC	30		
5830249	Tetrachloroethylene	2018/11/12	106	70 - 130	100	70 - 130	<0.20	ug/L	NC	30		
5830249	Toluene	2018/11/12	100	70 - 130	96	70 - 130	<0.20	ug/L	7.7	30		
5830249	Total Xylenes	2018/11/12					<0.20	ug/L	NC	30		
5830249	trans-1,2-Dichloroethylene	2018/11/12	103	70 - 130	96	70 - 130	<0.50	ug/L	NC	30		
5830249	trans-1,3-Dichloropropene	2018/11/12	97	70 - 130	96	70 - 130	<0.40	ug/L	NC	30		
5830249	Trichloroethylene	2018/11/12	101	70 - 130	94	70 - 130	<0.20	ug/L	NC	30		
5830249	Trichlorofluoromethane (FREON 11)	2018/11/12	108	70 - 130	101	70 - 130	<0.50	ug/L	NC	30		
5830249	Vinyl Chloride	2018/11/12	111	70 - 130	104	70 - 130	<0.20	ug/L	NC	30		
5830538	Alkalinity (Total as CaCO3)	2018/11/09			94	85 - 115	<1.0	mg/L	1.2	20		
5830552	Conductivity	2018/11/09			100	85 - 115	<1.0	umho/cm	0.43	25		
5830556	pH	2018/11/09			101	98 - 103			1.5	N/A		
5830573	Nitrate (N)	2018/11/13	90	80 - 120	98	80 - 120	<0.10	mg/L	0.38	20		
5830573	Nitrite (N)	2018/11/13	103	80 - 120	103	80 - 120	<0.010	mg/L	NC	20		
5830597	Dissolved Chloride (Cl-)	2018/11/12	115	80 - 120	104	80 - 120	<1.0	mg/L	1.3	20		
5830605	Dissolved Sulphate (SO4)	2018/11/12	NC	75 - 125	105	80 - 120	<1.0	mg/L	0.99	20		
5830606	Orthophosphate (P)	2018/11/12	113	75 - 125	100	80 - 120	<0.010	mg/L	NC	25		
5830640	Dissolved Organic Carbon	2018/11/12	95	80 - 120	98	80 - 120	<0.50	mg/L	0.55	20		
5831272	Dissolved Aluminum (Al)	2018/11/14	108	80 - 120	100	80 - 120	<5.0	ug/L				
5831272	Dissolved Antimony (Sb)	2018/11/14	113	80 - 120	105	80 - 120	<0.50	ug/L	NC	20		
5831272	Dissolved Arsenic (As)	2018/11/14	104	80 - 120	101	80 - 120	<1.0	ug/L	NC	20		
5831272	Dissolved Barium (Ba)	2018/11/14	NC	80 - 120	101	80 - 120	<2.0	ug/L	0.62	20		

Maxxam Job #: B8T8844  
Report Date: 2018/11/21

**QUALITY ASSURANCE REPORT(CONT'D)**

Golder Associates Ltd  
Client Project #: 1778651 (5000)  
Sampler Initials: AVR

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
5831272	Dissolved Beryllium (Be)	2018/11/14	105	80 - 120	101	80 - 120	<0.50	ug/L	NC	20		
5831272	Dissolved Boron (B)	2018/11/14	105	80 - 120	102	80 - 120	<10	ug/L	5.2	20		
5831272	Dissolved Cadmium (Cd)	2018/11/14	103	80 - 120	102	80 - 120	<0.10	ug/L	NC	20		
5831272	Dissolved Calcium (Ca)	2018/11/14	NC	80 - 120	101	80 - 120	<200	ug/L				
5831272	Dissolved Chromium (Cr)	2018/11/14	102	80 - 120	98	80 - 120	<5.0	ug/L	NC	20		
5831272	Dissolved Cobalt (Co)	2018/11/14	101	80 - 120	98	80 - 120	<0.50	ug/L	NC	20		
5831272	Dissolved Copper (Cu)	2018/11/14	108	80 - 120	101	80 - 120	<1.0	ug/L	2.3	20		
5831272	Dissolved Iron (Fe)	2018/11/14	105	80 - 120	103	80 - 120	<100	ug/L				
5831272	Dissolved Lead (Pb)	2018/11/14	98	80 - 120	98	80 - 120	<0.50	ug/L	NC	20		
5831272	Dissolved Magnesium (Mg)	2018/11/14	NC	80 - 120	102	80 - 120	<50	ug/L				
5831272	Dissolved Manganese (Mn)	2018/11/14	102	80 - 120	98	80 - 120	<2.0	ug/L				
5831272	Dissolved Molybdenum (Mo)	2018/11/14	110	80 - 120	103	80 - 120	<0.50	ug/L	NC	20		
5831272	Dissolved Nickel (Ni)	2018/11/14	100	80 - 120	97	80 - 120	<1.0	ug/L	NC	20		
5831272	Dissolved Phosphorus (P)	2018/11/14	114	80 - 120	113	80 - 120	<100	ug/L				
5831272	Dissolved Potassium (K)	2018/11/14	106	80 - 120	102	80 - 120	<200	ug/L				
5831272	Dissolved Selenium (Se)	2018/11/14	104	80 - 120	104	80 - 120	<2.0	ug/L	NC	20		
5831272	Dissolved Silicon (Si)	2018/11/14	108	80 - 120	101	80 - 120	<50	ug/L				
5831272	Dissolved Silver (Ag)	2018/11/14	99	80 - 120	101	80 - 120	<0.10	ug/L	NC	20		
5831272	Dissolved Sodium (Na)	2018/11/14	NC	80 - 120	99	80 - 120	<100	ug/L	0.025	20		
5831272	Dissolved Strontium (Sr)	2018/11/14	NC	80 - 120	97	80 - 120	<1.0	ug/L				
5831272	Dissolved Thallium (Tl)	2018/11/14	96	80 - 120	97	80 - 120	<0.050	ug/L	NC	20		
5831272	Dissolved Titanium (Ti)	2018/11/14	107	80 - 120	101	80 - 120	<5.0	ug/L				
5831272	Dissolved Uranium (U)	2018/11/14	94	80 - 120	96	80 - 120	<0.10	ug/L	4.1	20		
5831272	Dissolved Vanadium (V)	2018/11/14	106	80 - 120	98	80 - 120	<0.50	ug/L	NC	20		
5831272	Dissolved Zinc (Zn)	2018/11/14	99	80 - 120	96	80 - 120	<5.0	ug/L	NC	20		
5832145	Aroclor 1242	2018/11/12					<0.05	ug/L	NC	30		
5832145	Aroclor 1248	2018/11/12					<0.05	ug/L	NC	30		
5832145	Aroclor 1254	2018/11/12					<0.05	ug/L	NC	30		
5832145	Aroclor 1260	2018/11/12	80	60 - 130	75	60 - 130	<0.05	ug/L	NC	30		
5832145	Total PCB	2018/11/12	80	60 - 130	75	60 - 130	<0.05	ug/L	NC	40		
5832824	F2 (C10-C16 Hydrocarbons)	2018/11/13	93	50 - 130	87	60 - 130	<100	ug/L	NC	30		

Maxxam Job #: B8T8844  
Report Date: 2018/11/21

**QUALITY ASSURANCE REPORT(CONT'D)**

Golder Associates Ltd  
Client Project #: 1778651 (5000)  
Sampler Initials: AVR

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
5832824	F3 (C16-C34 Hydrocarbons)	2018/11/13	96	50 - 130	89	60 - 130	<200	ug/L	25	30		
5832824	F4 (C34-C50 Hydrocarbons)	2018/11/13	98	50 - 130	91	60 - 130	<200	ug/L	23	30		
5832889	Total Kjeldahl Nitrogen (TKN)	2018/11/12	106	80 - 120	103	80 - 120	<0.10	mg/L	18	20	102	80 - 120
5832984	Total Ammonia-N	2018/11/14	103	75 - 125	103	80 - 120	<0.050	mg/L	5.7	20		
5833908	Mercury (Hg)	2018/11/13	90	75 - 125	101	80 - 120	<0.1	ug/L	NC	20		

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)



NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

Maxxam Job #: B8T8844  
Report Date: 2018/11/21

Golder Associates Ltd  
Client Project #: 1778651 (5000)  
Sampler Initials: AVR

### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

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Ewa Pranjic, M.Sc., C.Chem, Scientific Specialist

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

<b>INVOICE TO:</b>		<b>REPORT TO:</b>		<b>PROJECT INFORMATION:</b>	
Company Name: #25670 Golder Associates Ltd	Company Name: Chris Pons	Quotation #: B80683	Ema Gitej		
Attention: Accounts Payable	Attention: Chris Pons	P.O. #:	B8T8844		
Address: 215 Shields Court Unit # 1	Address:	Project: 1778651 (5000)	MAF ENV-1415		
Address: Markham ON L3R 8V2	Address:	Project Name:	Project Manager: Ema Gitej		
Tel: (905) 475-2625 Fax: (905) 475-5257	Tel: (905) 431-3118 Fax:	Site #:	691358		
Email: AP_CustomerService@golder.com	Email: cpons@golder.com	Sampled By: <i>AVL</i>	C#691358-02-01		

**MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY**

<b>Regulation 153 (2011)</b> <input type="checkbox"/> Table 1 <input type="checkbox"/> Res/Park <input type="checkbox"/> Medium/Fine <input checked="" type="checkbox"/> Table 2 <input checked="" type="checkbox"/> Ind/Comm <input checked="" type="checkbox"/> Coarse <input type="checkbox"/> Table 3 <input type="checkbox"/> Agri/Other <input type="checkbox"/> For RSC <input type="checkbox"/> Table	<b>Other Regulations</b> <input type="checkbox"/> CCME <input type="checkbox"/> Sanitary Sewer Bylaw <input type="checkbox"/> Reg 558 <input type="checkbox"/> Storm Sewer Bylaw <input type="checkbox"/> MISA Municipality _____ <input type="checkbox"/> PWDO <input type="checkbox"/> Other _____	<b>Special Instructions</b> Include Criteria on Certificate of Analysis (Y/N)? <u>N</u>
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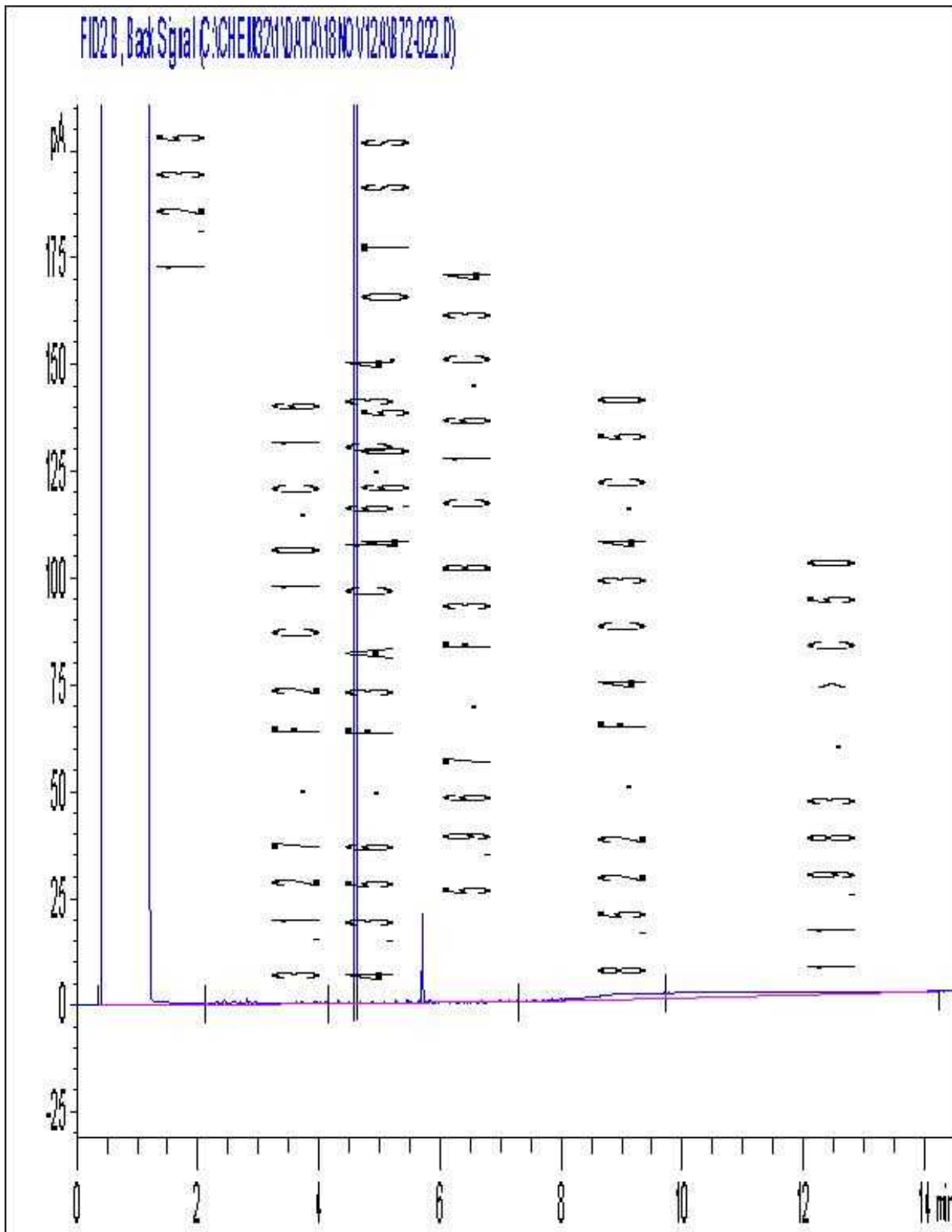
Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Ig / Cr / VI	I/O Reg 153 PCBs (Water)	RCAP - Comprehensive	Mercury	Total Kjeldahl Nitrogen in Water	I/O Reg 153 VOCs by HS & F1 F4 (Water)	Turnaround Time (TAT) Required: Please provide advance notice for rush projects
1	MW18-1	Nov 7/18	11:30am	GW	Y					X	Regular (Standard) TAT: (will be applied if Rush TAT is not specified). Standard TAT = 5-7 Working days for most tests. Please note: Standard TAT for certain tests such as BOD and Cloxins/Furanis are > 5 days - contact your Project Manager for details. Job Specific Rush TAT (if applies to entire submission) Date Required: _____ Time Required: _____ Rush Confirmation Number: _____ (call lab for #)
2	MW18-2	"	12pm	GW	Y	X	X	X	X	X	5
3											12
4											
5											
6											
7											
8											
9											
10											

RELINQUISHED BY: (Signature/Print) <i>[Signature]</i>	Date: (YY/MM/DD) 18/11/07	Time 5pm	RECEIVED BY: (Signature/Print) <i>[Signature]</i>	Date: (YY/MM/DD) 2028/11/08	Time 11:49	# jars used and not submitted 0	Laboratory Use Only Time Sensitive	Temperature (°C) on Receipt 2/1	Custody Seal Present Intact	Yes No
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\* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.  
 \*\* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.  
 \*\*\* SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM  
 White: Maxxa Yellow: Client

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Your Project #: 1778651 (5000)  
 Site Location: UXBRIDGE  
 Your C.O.C. #: 695496-01-01

**Attention: Chris Pons**

Golder Associates Ltd  
 215 Shields Court  
 Unit # 1  
 Markham, ON  
 Canada L3R 8V2

**Report Date: 2018/12/11**  
 Report #: R5520566  
 Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B8W6529**  
**Received: 2018/12/06, 11:45**

Sample Matrix: Water  
 # Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
1,3-Dichloropropene Sum	1	N/A	2018/12/11		EPA 8260C m
Volatile Organic Compounds in Water	1	N/A	2018/12/10	CAM SOP-00228	EPA 8260C m

**Remarks:**

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing. Maxxam is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Maxxam, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

**Encryption Key**

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Ema Gitej, Senior Project Manager

Email: EGitej@maxxam.ca

Phone# (905)817-5829

=====

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E),

Your Project #: 1778651 (5000)  
Site Location: UXBRIDGE  
Your C.O.C. #: 695496-01-01

**Attention: Chris Pons**

Golder Associates Ltd  
215 Shields Court  
Unit # 1  
Markham, ON  
Canada L3R 8V2

**Report Date: 2018/12/11**  
Report #: R5520566  
Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B8W6529**

**Received: 2018/12/06, 11:45**

signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



**O.REG 153 VOCS BY HS (WATER)**

Maxxam ID		IME640		
Sampling Date		2018/12/05 02:30		
COC Number		695496-01-01		
	UNITS	MW18-1	RDL	QC Batch
<b>Calculated Parameters</b>				
1,3-Dichloropropene (cis+trans)	ug/L	<0.50	0.50	5875632
<b>Volatile Organics</b>				
Acetone (2-Propanone)	ug/L	<10	10	5876733
Benzene	ug/L	<0.20	0.20	5876733
Bromodichloromethane	ug/L	1.6	0.50	5876733
Bromoform	ug/L	<1.0	1.0	5876733
Bromomethane	ug/L	<0.50	0.50	5876733
Carbon Tetrachloride	ug/L	<0.20	0.20	5876733
Chlorobenzene	ug/L	<0.20	0.20	5876733
Chloroform	ug/L	2.0	0.20	5876733
Dibromochloromethane	ug/L	1.2	0.50	5876733
1,2-Dichlorobenzene	ug/L	<0.50	0.50	5876733
1,3-Dichlorobenzene	ug/L	<0.50	0.50	5876733
1,4-Dichlorobenzene	ug/L	<0.50	0.50	5876733
Dichlorodifluoromethane (FREON 12)	ug/L	<1.0	1.0	5876733
1,1-Dichloroethane	ug/L	<0.20	0.20	5876733
1,2-Dichloroethane	ug/L	<0.50	0.50	5876733
1,1-Dichloroethylene	ug/L	<0.20	0.20	5876733
cis-1,2-Dichloroethylene	ug/L	<0.50	0.50	5876733
trans-1,2-Dichloroethylene	ug/L	<0.50	0.50	5876733
1,2-Dichloropropane	ug/L	<0.20	0.20	5876733
cis-1,3-Dichloropropene	ug/L	<0.30	0.30	5876733
trans-1,3-Dichloropropene	ug/L	<0.40	0.40	5876733
Ethylbenzene	ug/L	<0.20	0.20	5876733
Ethylene Dibromide	ug/L	<0.20	0.20	5876733
Hexane	ug/L	<1.0	1.0	5876733
Methylene Chloride(Dichloromethane)	ug/L	<2.0	2.0	5876733
Methyl Ethyl Ketone (2-Butanone)	ug/L	<10	10	5876733
Methyl Isobutyl Ketone	ug/L	<5.0	5.0	5876733
Methyl t-butyl ether (MTBE)	ug/L	<0.50	0.50	5876733
Styrene	ug/L	<0.50	0.50	5876733
RDL = Reportable Detection Limit QC Batch = Quality Control Batch				

**O.REG 153 VOCS BY HS (WATER)**

Maxxam ID		IME640		
Sampling Date		2018/12/05 02:30		
COC Number		695496-01-01		
	UNITS	MW18-1	RDL	QC Batch
1,1,1,2-Tetrachloroethane	ug/L	<0.50	0.50	5876733
1,1,2,2-Tetrachloroethane	ug/L	<0.50	0.50	5876733
Tetrachloroethylene	ug/L	<0.20	0.20	5876733
Toluene	ug/L	<0.20	0.20	5876733
1,1,1-Trichloroethane	ug/L	<0.20	0.20	5876733
1,1,2-Trichloroethane	ug/L	<0.50	0.50	5876733
Trichloroethylene	ug/L	<0.20	0.20	5876733
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	0.50	5876733
Vinyl Chloride	ug/L	<0.20	0.20	5876733
p+m-Xylene	ug/L	<0.20	0.20	5876733
o-Xylene	ug/L	<0.20	0.20	5876733
Total Xylenes	ug/L	<0.20	0.20	5876733
<b>Surrogate Recovery (%)</b>				
4-Bromofluorobenzene	%	95		5876733
D4-1,2-Dichloroethane	%	108		5876733
D8-Toluene	%	111		5876733
RDL = Reportable Detection Limit QC Batch = Quality Control Batch				

**TEST SUMMARY**

**Maxxam ID:** IME640  
**Sample ID:** MW18-1  
**Matrix:** Water

**Collected:** 2018/12/05  
**Shipped:**  
**Received:** 2018/12/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	5875632	N/A	2018/12/11	Automated Statchk
Volatile Organic Compounds in Water	GC/MS	5876733	N/A	2018/12/10	Rebecca McClean

**GENERAL COMMENTS**

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	3.0°C
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**Results relate only to the items tested.**

**QUALITY ASSURANCE REPORT**

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5876733	4-Bromofluorobenzene	2018/12/10	100	70 - 130	100	70 - 130	97	%		
5876733	D4-1,2-Dichloroethane	2018/12/10	104	70 - 130	98	70 - 130	101	%		
5876733	D8-Toluene	2018/12/10	120	70 - 130	122	70 - 130	112	%		
5876733	1,1,1,2-Tetrachloroethane	2018/12/10	99	70 - 130	99	70 - 130	<0.50	ug/L		
5876733	1,1,1-Trichloroethane	2018/12/10	96	70 - 130	98	70 - 130	<0.20	ug/L		
5876733	1,1,2,2-Tetrachloroethane	2018/12/10	106	70 - 130	100	70 - 130	<0.50	ug/L		
5876733	1,1,2-Trichloroethane	2018/12/10	103	70 - 130	98	70 - 130	<0.50	ug/L		
5876733	1,1-Dichloroethane	2018/12/10	99	70 - 130	97	70 - 130	<0.20	ug/L		
5876733	1,1-Dichloroethylene	2018/12/10	96	70 - 130	96	70 - 130	<0.20	ug/L		
5876733	1,2-Dichlorobenzene	2018/12/10	97	70 - 130	97	70 - 130	<0.50	ug/L		
5876733	1,2-Dichloroethane	2018/12/10	102	70 - 130	96	70 - 130	<0.50	ug/L		
5876733	1,2-Dichloropropane	2018/12/10	102	70 - 130	99	70 - 130	<0.20	ug/L		
5876733	1,3-Dichlorobenzene	2018/12/10	96	70 - 130	97	70 - 130	<0.50	ug/L		
5876733	1,4-Dichlorobenzene	2018/12/10	98	70 - 130	98	70 - 130	<0.50	ug/L		
5876733	Acetone (2-Propanone)	2018/12/10	111	60 - 140	93	60 - 140	<10	ug/L	4.1	30
5876733	Benzene	2018/12/10	97	70 - 130	96	70 - 130	<0.20	ug/L		
5876733	Bromodichloromethane	2018/12/10	100	70 - 130	96	70 - 130	<0.50	ug/L		
5876733	Bromoform	2018/12/10	102	70 - 130	97	70 - 130	<1.0	ug/L		
5876733	Bromomethane	2018/12/10	102	60 - 140	95	60 - 140	<0.50	ug/L		
5876733	Carbon Tetrachloride	2018/12/10	96	70 - 130	99	70 - 130	<0.20	ug/L		
5876733	Chlorobenzene	2018/12/10	98	70 - 130	97	70 - 130	<0.20	ug/L		
5876733	Chloroform	2018/12/10	97	70 - 130	96	70 - 130	<0.20	ug/L		
5876733	cis-1,2-Dichloroethylene	2018/12/10	100	70 - 130	98	70 - 130	<0.50	ug/L		
5876733	cis-1,3-Dichloropropene	2018/12/10	107	70 - 130	96	70 - 130	<0.30	ug/L		
5876733	Dibromochloromethane	2018/12/10	102	70 - 130	98	70 - 130	<0.50	ug/L		
5876733	Dichlorodifluoromethane (FREON 12)	2018/12/10	98	60 - 140	101	60 - 140	<1.0	ug/L		
5876733	Ethylbenzene	2018/12/10	96	70 - 130	98	70 - 130	<0.20	ug/L		
5876733	Ethylene Dibromide	2018/12/10	105	70 - 130	98	70 - 130	<0.20	ug/L		
5876733	Hexane	2018/12/10	117	70 - 130	105	70 - 130	<1.0	ug/L		
5876733	Methyl Ethyl Ketone (2-Butanone)	2018/12/10	119	60 - 140	101	60 - 140	<10	ug/L		
5876733	Methyl Isobutyl Ketone	2018/12/10	120	70 - 130	107	70 - 130	<5.0	ug/L		
5876733	Methyl t-butyl ether (MTBE)	2018/12/10	100	70 - 130	98	70 - 130	<0.50	ug/L		

**QUALITY ASSURANCE REPORT(CONT'D)**

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5876733	Methylene Chloride(Dichloromethane)	2018/12/10	105	70 - 130	100	70 - 130	<2.0	ug/L		
5876733	o-Xylene	2018/12/10	94	70 - 130	99	70 - 130	<0.20	ug/L		
5876733	p+m-Xylene	2018/12/10	96	70 - 130	98	70 - 130	<0.20	ug/L		
5876733	Styrene	2018/12/10	79	70 - 130	81	70 - 130	<0.50	ug/L		
5876733	Tetrachloroethylene	2018/12/10	95	70 - 130	98	70 - 130	<0.20	ug/L		
5876733	Toluene	2018/12/10	94	70 - 130	96	70 - 130	<0.20	ug/L		
5876733	Total Xylenes	2018/12/10					<0.20	ug/L		
5876733	trans-1,2-Dichloroethylene	2018/12/10	97	70 - 130	97	70 - 130	<0.50	ug/L		
5876733	trans-1,3-Dichloropropene	2018/12/10	113	70 - 130	97	70 - 130	<0.40	ug/L		
5876733	Trichloroethylene	2018/12/10	96	70 - 130	97	70 - 130	<0.20	ug/L		
5876733	Trichlorofluoromethane (FREON 11)	2018/12/10	97	70 - 130	99	70 - 130	<0.50	ug/L		
5876733	Vinyl Chloride	2018/12/10	97	70 - 130	97	70 - 130	<0.20	ug/L		

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

**VALIDATION SIGNATURE PAGE**

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



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Anastassia Hamanov, Scientific Specialist

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

06-Dec-18 11:45

Ema Gitej  
  
**B8W6529**

Page 1 of 1  
 nly:  
 Bottle Order #:  
  
 695496  
 Project Manager:  
 Ema Gitej

<b>INVOICE TO:</b>		<b>REPORT TO:</b>		<b>PROJECT INFORMATION:</b>	
Company Name: #25670 Golder Associates Ltd	Company Name:	Quotation #: B70916			
Attention: Accounts Payable	Attention: Chris Pons	Q.O.#:			
Address: 215 Shields Court Unit # 1 Markham ON L3R 8V2	Address:	Project: 1778651 (5000)			
Tel: (905) 475-2625 Fax: (905) 475-5257	Tel: (905) 431-3118 Fax:	Project Name: <i>Vybridge</i>			
Email: AP_CustomerService@golder.com	Email: cpons@golder.com	Site #:			
		Sampled By: <i>Amreen Majid</i>			

JCC ENV-647  
 COC #:  
  
 C#695496-01-01

**MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY**

<b>Regulation 153 (2011)</b> <input type="checkbox"/> Table 1 <input type="checkbox"/> Res/Park <input type="checkbox"/> Medium/Fine <input checked="" type="checkbox"/> Table 2 <input type="checkbox"/> Ind/Comm <input type="checkbox"/> Coarse <input type="checkbox"/> Table 3 <input type="checkbox"/> Agri/Other <input type="checkbox"/> For RSC <input type="checkbox"/> Table _____		<b>Other Regulations</b> <input type="checkbox"/> CCME <input type="checkbox"/> Sanitary Sewer Bylaw <input type="checkbox"/> Reg 558 <input type="checkbox"/> Storm Sewer Bylaw <input type="checkbox"/> MISA Municipality _____ <input type="checkbox"/> P/WOO <input type="checkbox"/> Other _____	<b>Special Instructions</b>
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**Turnaround Time (TAT) Required:**  
 Please provide advance notice for rush projects

**Regular (Standard) TAT:**  
 (will be applied if Rush TAT is not specified)  
 Standard TAT = 5-7 Working days for most tests.  
 Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

**Job Specific Rush TAT (if applies to entire submission)**  
 Date Required: \_\_\_\_\_ Time Required: \_\_\_\_\_  
 Rush Confirmation Number: \_\_\_\_\_ (call lab for #)

Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr / VI	0 Reg 153 VOCs by H/S	ANALYSIS REQUESTED (PLEASE BE SPECIFIC)	# of Bottles	Comments
MW18-1		12/5/18	2:30	GW	X			3	

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Laboratory Use Only				
<i>[Signature]</i>	12/12/18	3:00	<i>[Signature]</i>	12/12/18	11:45		Time Sensitive	Temperature (°C) on Receipt	Custody Seal Present	Yes	No
								3/3/3	Intact		<input checked="" type="checkbox"/>

\* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

\* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

\*\* SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT HTTP://MAXXAM.CA/WP-CONTENT/UPLOADS/ONTARIO-COC.PDF.

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

MW # 45127





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