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A REPORT TO

2596843 ONTARIO INC.

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
PROPOSED 3-STOREY BUILDING WITH 1-LEVEL UNDERGROUND PARKING AND AMENITY AREA

224 ARDAGH ROAD
CITY OF BARRIE

Reference No. 1802-E072

July 24, 2018

DISTRIBUTION

2 Copies - Schaeffers Consulting Engineers
1 Copy - 2696843 Ontario Inc.

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It should be noted that the information supplied in this report may not be sufficient to obtain approval for disposal of excess soil or materials generated during construction.

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1.0 EXECUTIVE SUMMARY

Soil Engineers Ltd. (SEL) was retained by 2596843 Ontario Inc. to conduct a Phase Two Environmental Site Assessment (Phase Two ESA), as defined by Ontario Regulation (O. Reg.) 153/04, as amended. The Phase Two Property is located at 224 Ardagh Road, in the City of Barrie (hereinafter referred to as "subject site").

The purpose of the Phase Two ESA was to determine the soil and groundwater quality at the subject site, as related to the environmental concerns identified in our Phase One Environmental Site Assessment (Phase One ESA) for the subject site.

The field work was performed at selected locations on the subject site. Soil and groundwater samples were collected and submitted for chemical analysis in accordance with the Ministry of the Environment and Climate Change (MOECC) Table 2, Full Depth Generic Site Condition Standards for residential/parkland/institutional property use and coarse textured soil (Table 2 Standards). as published in the "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act" (EPA), dated April 15, 2011

A review of the analytical results of the soil and groundwater samples indicates the tested parameters at the test locations meet the Table 2 Standards. Consequently, there are no contaminants identified at the subject site at concentrations above the applicable site condition standards (Table 2 Standards) during the Phase Two ESA.

Based on the findings of the Phase Two ESA, it is our opinion that the property is suitable for the proposed development. No further environmental investigation is recommended at this time.

2.0 INTRODUCTION

Soil Engineers Ltd. (SEL) was retained by 2596843 Ontario Inc. to carry out a Phase Two Environmental Site Assessment (Phase Two ESA), as defined by the Ontario Regulation (O. Reg.) 153/04, as amended by O. Regs. 366/05, 66/08, 511/09, 245/10, 179/11, 269/11 and 333/13, herein referred to as O. Reg. 153/04. The Phase Two property is located at 224 Ardagh Road, in the City of Barrie (hereinafter referred to as "subject site").

The purpose of the Phase Two ESA is to determine the soil and groundwater quality at the subject site, as related to the environmental concerns identified in our Phase One ESA.

2.1 Site Description

The subject site, roughly rectangular in shape and approximately 0.86 ha (2.12 ac) in area, is located on the north side of Ardagh Road and on the west side of Ferndale Drive South, in the City of Barrie. The location of the subject site is shown on the Drawing No. 1. The Property Identification Number (PIN) , the property description from the parcel register and the UTM coordinates obtained from Google Earth database, associated with the subject site are listed in the table below:

PIN	Property Description from Parcel Register	UTM Coordinates (1983 NAD)
58763-0309 (LT)	PT BLK 264 PL 51M371 BEING PTS 1, 2 & 3 PL 51R33187 & PTS 4 & 15 PL 51R28750, S/T EASEMENT OVER PT 2 ON PL 51R33187 AS IN SC279094 @ S/T EASE OVER PT 3 PL 51R33187 AS IN LT11218; BARRIE; SUBJECT TO AN EASEMENT IN GROSS OVER PT 2 PL 51R33187 AS IN SC1064991	17T 602,342 m East 4,912,122 m North

Through the years, the subject site was a vacant land. Currently, the subject site is used as a parking lot.

The neighbouring properties consist mainly of a residential subdivision to the north, a fire station building to the west, a commercial plaza beyond Ferndale Drive South to the east and residential properties beyond Ardagh Road to the south of the subject site. A gas station is located to the southeast of the subject site.

2.2 Property Ownership

This Phase Two ESA was commissioned to address the environmental concerns in accordance with our proposal dated March 26, 2018. The investigation was approved on March 28, 2018 by Mr. John Stante of 2696843 Ontario Inc.

Our client and current owner of the subject site can be contacted at:

2696843 Ontario Inc.
P.O. Box 849
Nobelton, Ontario
L0G 1N0

Attention: Mr. John Stante

Based on the most recent parcel register, the current owner of the subject site is:

Concord Ontario Developments Limited
20 Carmichael Crescent
King City
L7B 1B4

2.3 Current and Proposed Future Uses

Through the years, the subject site was a vacant land. Currently, the subject site is used as a parking lot. A three storey building with one level underground parking and amenity area is being proposed for the subject site. It is anticipated that the new development will be provided with municipal services meeting urban standards.

2.4 Applicable Site Condition Standard

SEL has selected the applicable regulatory criteria from Ontario Regulation 153/04, as amended, made under the Environmental Protection Act, June 1, 2004, to assess the analytical data from the submitted soil and groundwater samples. The following information was used to select the appropriate criteria:

- The subject site is not considered to be sensitive based on the definition set forth in the Ontario Regulation 153/04, as amended, as the property is not within/adjacent/part of an area of natural significance and the analytical testing indicated the pH of the tested soil samples is between 5 and 9.
- The property is not a shallow soil property, as bedrock was not encountered within 2.0 m below ground surface (mbgs) during the investigation.
- No water body is located at the subject site or within 30 m from the subject site boundaries.
- Full depth generic site condition criteria is to be used in this assessment.
- The intended property use of the subject site is residential.
- Based on the information obtained from the Phase One ESA, there is a record of one (1) water well for the subject site.
- No grain size analysis has been performed as part of the Phase Two ESA.

Based on the above considerations, the Ministry of the Environment and Climate Change (MOECC) Table 2, Full Depth Generic Site Condition Standards in a Potable Groundwater Condition for residential/parkland/institutional property use and coarse textured soil (Table 2 Standards), as published in the "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act" (EPA), dated April 15, 2011, has been selected for evaluating the environmental conditions at the subject site.

3.0 BACKGROUND

3.1 Physical Setting

Based on the information obtained from our Phase One ESA, the general physical setting of the subject site is summarized below.

The subject site is located within a residential and commercial area in the City of Barrie. At the time of the assessment, the neighbouring properties consist mainly of a residential subdivision to the north, a fire station building to the west, a commercial plaza beyond Ferndale Drive South to the east and residential properties beyond Ardagh Road to the south of the subject site. A gas station is located to the southeast of the subject site.

A review of a Geological Map of the area, located at the Ontario Geological Survey indicates that the subject site is situated at the Glaciolacustrine deposit material such as sand, gravelly sand, nearshore and beach deposits. Bedrock in the area of the subject site consists of Ottawa Group, Simcoe Group, Shadow Lake Formation, and rock description is shale, limestone, arkose, dolostone and siltstone. According to the Bedrock Cross Section Viewer, a depth to bedrock in the general vicinity of the subject site is approximately 143 mbgs.

The overall grade of the subject site generally descends towards the west. A Watershed Map provided by Lake Simcoe Region Conservation Authority (LSRCA) shows that the subject site is located within the Lake Simcoe Watershed.

Based on the review of the Ontario Ministry of Natural Resources and Forestry Natural Heritage Information Centre for listings of the various classes of natural areas located within the vicinity of the subject site, there is no Area of Natural Significance or water body located at the subject site or at the neighbouring properties within 30 m of the subject site boundaries.

3.2 Past Investigations

The following previous investigation reports for the subject site were reviewed as part of this Phase Two ESA:

- Phase One Environmental Site Assessment (Phase One ESA), Reference No. 1802-E072, dated April 2, 2018.
- Geotechnical Investigation Report, Reference No. 1802-S072, dated May 2018.

Phase One ESA

The Phase One ESA identified the following Potentially Contaminating Activities (PCAs) that may contribute to Areas of Potential Environmental Concern (APECs) at the subject site, based on records review, interviews and site reconnaissance.

- A stockpile of fill material of unknown quality is on the southern portion of the subject site.
- A gas station is located to the southeast of the subject site.
- Fill material of unknown quality is in the eastern portion of the subject site.

Geotechnical Investigation Report

Based on the geotechnical investigation completed for the subject site, earth fill material of unknown quality was encountered at locations of the borehole BH2 and BH5 in the eastern portion of the subject site.

4.0 SCOPE OF INVESTIGATION

4.1 Overview of Site Investigation

The purpose of this investigation (Phase Two ESA) is to assess the soil and groundwater quality at the subject site, as related to the environmental concern raised in the findings of our Phase One ESA. This Phase Two ESA was conducted in general conformance with the CSA Standard Z769-00 and O. Reg. 153/04 as amended.

The scope of work for this investigation includes:

- Conduct eleven (11) boreholes to depths ranging from 1.5 m below ground surface (mbgs) to 16.8 mbgs.
- Collect representative soil samples from the selected boreholes.
- Undertake field examination of the retrieved soil samples for visual and olfactory evidence of potential contamination.
- Undertake soil vapour measurements for the retrieved soil samples using a combustible gas detector (RKI Eagle) in methane elimination mode, calibrated with hexane and having a minimum detection level of 2 ppm (parts per million by volume).
- Carry out analytical testing program on selected soil samples (including QA/QC samples) for analysis of volatile organic compounds (VOCs), petroleum hydrocarbons (PHCs), and metals and/or inorganics.
- Install a monitoring well in the selected boreholes for groundwater sampling testing and monitoring.
- Conduct one groundwater monitoring round and collect groundwater samples for chemical testing.
- Carry out analytical testing program on selected groundwater samples including quality assurance/quality control (QA/QC samples) for one or more of the following parameters: volatile organic compounds (VOCs) and petroleum hydrocarbons (PHCs).
- Review the analytical results for the submitted soil and groundwater samples using the applicable Site Condition Standards.
- Prepare a Phase Two ESA report presenting the findings of the investigation.

The rationale behind the selection of sample locations is presented in the Sampling and Analysis Plan, Appendix 'A'.

4.2 Media Investigated

Based on the findings of the Phase One ESA, soil and groundwater media were investigated during the Phase Two ESA in accordance with the Sampling and Analysis Plan provided in Appendix 'A'. No sediment sampling was conducted, as there is no surface water at the subject site.

Boreholes were advanced using a track mount drilling system. Soil samples were logged in the field and head space vapour screening was conducted for the retrieved soil samples using a combustible gas detector (RKI Eagle).

Groundwater monitoring wells were installed in the selected boreholes. The monitoring wells were constructed using 50 mm diameter flush-joint threaded PVC monitoring well supplies. They were completed with 3.0 m in length intake screen. Groundwater sampling was conducted using dedicated low-density polyethylene tubing and laboratory-supplied containers (prepared with preservative for the analysis being conducted).

4.3 Phase One Conceptual Site Model

A plan, illustrating the features of the subject site and surrounding areas within 250 m from the subject site boundaries including the locations of the potentially contaminating activities (PCAs), is presented in Drawing No. 1.

4.4 Deviations From Sampling and Analysis Plan

No deviations from the sampling and analysis plan were encountered.

4.5 **Impediments**

No impediments were encountered during the investigation for the Phase Two ESA.

5.0 INVESTIGATION METHOD

5.1 General

The Phase Two ESA was carried out in accordance with the Sampling and Analysis Plans provided in Appendix 'A' and in accordance with the SEL Standard Operating Procedures.

The Phase Two ESA consisted of drilling eleven (11) boreholes, installation of monitoring wells in the selected boreholes, field measurements and collection of soil and groundwater samples from the selected boreholes and monitoring wells for chemical analysis. The soil and groundwater samples were assessed for the potential contamination with respect to the APECs identified by the Phase One ESA.

The sampling and decontamination procedures were conducted in accordance with the "Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario", May 1996, revised December 1996, as amended by O. Reg. 511/09.

Laboratory analytical methods, protocols and procedures were carried out in accordance with the "Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act", dated March 9, 2004, amended as of July 1, 2011, in accordance with O. Reg. 511/09 and O. Reg. 269/11.

5.2 Drilling and Excavating

Prior to the field work, the underground utilities were located and marked out in the field by representatives of the major utility companies and a private locator (CL. Underground Locates Inc.).

The field work of the investigation was conducted on March 28, 2018, April 10, 2018 and May 15, 2018, and consisted of drilling eleven (11) boreholes (designated as BH1 to BH11) to depths ranging from 1.5 mbgs to 16.8 mbgs., and installing four (4) monitoring wells at the selected boreholes. The sample locations are shown on Drawing No. 2.

The boreholes were advanced using a drilling rig (Track D56), equipped with continuous flight augers and sampling rods, supplied by drilling contractors, Walker Drilling Ltd. and a direct push rig (Probe), supplied by Profile Drilling Inc. Soil samples from the boreholes were recovered at regular intervals, using split spoon sampling equipment or a direct push soil sampler. The retrieved soil samples were examined for visual and olfactory evidence of potential contamination and for soil classification. A small amount of soil sample was retrieved by a disposable 'T' shaped Terracore sampler and the soil samples from the Terracore sampler were stored in methanol vials for F1/VOCs analyses

Drilling equipment such as drill rigs, augers, drill pipes, drilling rods and split-spoons are decontaminated prior to initial use, between borehole locations and at the completion of drilling activities. The drilling equipment is manually scrubbed with a brush using a phosphate-free solution and power washed to remove any adhered soils, foreign material and potential contaminants.

The field work was supervised by a Soil Engineers Ltd. environmental technician who recorded the findings and observations.

5.3 Soil Sampling

Soil samples from the boreholes were retrieved at regular intervals, using a stainless steel split spoon sampler or plastic tubes in conjunction with Standard Penetration Tests. Prior to recovering a sample, the sampling equipment was brushed clean using a solution of phosphate-free detergent and distilled water, and each discrete sample was handled with new disposable gloves in order to avoid the risk of cross-contamination between the samples. Each soil sample was split with part of the sample sealed in a laboratory-prepared glass jar and stored in a cooler with ice, and the remainder of the sample sealed in a double sealable bag for vapour measurement and soil classification.

The subsoil condition at the boreholes locations indicate a layer of topsoil or asphalt and gravel on the ground surface followed by earth fill, sand fill or sand. The subject site is underlain by strata of sand, silt and silty clay at various depths and locations. Detailed descriptions of the encountered subsurface conditions are present on the Borehole Logs provided in Appendix 'B'.

Based on the soil vapour measurements and visual and olfactory observations, representative worst case soil samples from the sampling locations were submitted to the laboratory for chemical analyses.

5.4 Field Screening Measurements

The headspace vapour concentrations were measured using a portable RKI Eagle gas detector, TYPE 101 (Serial Number: E091011) set to include flammable gases with the exception of methane (methane elimination mode), and having a minimum detection level of 2 ppm (parts per million by volume). Prior to taking the measurements, the instrument was calibrated to hexane standards for both ppm and Lower Explosive Limit (LEL) scales according to the instruction manual for the instrument. Our technician was trained by the supplier for the proper calibration procedure. The instrument is calibrated or tuned up by the supplier (Pine Environmental Service Inc.) seasonally.

The results of the soil vapour measurement is presented in Borehole Logs, Appendix 'B'. The representative "worst case" soil samples based on the soil vapour measurements and visual and olfactory observations were selected from each borehole and submitted to the laboratory for chemical analyses.

5.5 Groundwater: Monitoring Well Installation

Total of four (4) monitoring wells were installed at the subject site by Walker Drilling Ltd. and Profile Drilling Inc. The monitoring wells were constructed using 50 mm diameter PVC-screen, and 3.0 m in length. A PVC riser, capped at the top, was installed from the

screen section above the top grade. A sand pack, consisting of clean silica sand, was placed around the screened zone with a bentonite seal placed above the sand pack. The top of each well was sealed with concrete to approximately 0.3 mbgs. At each monitoring well location, the above ground risers were protected by flushmount and monument casings that have been sealed into ground with concrete. The monitoring well construction details are provided on the Borehole Logs in Appendix 'B' and in Table I.

The monitoring wells were instrumented with dedicated low-density polyethylene tubing to facilitate well development, purging and sampling requirements.

Groundwater development was performed on May 15, 2018. The monitoring wells have been developed to remove any fluids that may have been introduced into the wells during the drilling; and to remove particles that may have become entrained into the wells and filter packs (three well casing volumes of groundwater in each well). Purged water was contained and stored at the subject site for future disposal.

5.6 Groundwater: Field Measurement of Water Quality Parameters

Groundwater monitoring and purging were conducted at the subject site on April 10, 2018, May 15, 2018 and May 30, 2018. Water level measurements data were taken using a water level meter (Dipper-T) equipped with a thermometer. Groundwater observations were recorded for colour, clarity, the presence or absence of any free petroleum product/surface sheen and any odours present during purging the wells. The water level measuring device was cleaned after each measurement using Alconox solution and water, followed by a distilled water rinse and a methanol rinse, in order to prevent cross-contamination between monitoring wells.

The records of water level measurement are presented in Table II.

5.7 Groundwater Sampling

Groundwater sampling was conducted on May 15, May 30 and July 10, 2018. Prior to groundwater sampling, minimum 3 well casing volumes of groundwater from each well was purged to ensure that stagnant water is removed from the monitoring wells. Purged water was contained and stored on site for future disposal. The groundwater purging and sampling activities were carried out using dedicated low-density polyethylene tubing. Groundwater samples were collected into laboratory-supplied containers, prepared with preservative for the analyses being conducted. The samples scheduled for the analysis of metals were passed through a 0.45 micron filter as part of the sampling process.

5.8 Sediment Sampling

Sediment was not assessed as part of this investigation.

5.9 Analytical Testing

The soil and groundwater samples were analysed by Maxxam Analytics in Mississauga, Ontario. Maxxam is accredited by the Canadian Association for Laboratory Accreditation accordance with ISO/IEC 17025:2005 – "General Requirements for the Competence of Testing and Calibration Laboratories" for all the parameters analyzed during this investigation.

5.10 Residue Management Procedures

Excess soil generated from the drilling program for the site investigation was stored at the subject site in metal barrels. Groundwater purged from the monitoring wells was stored in containers, using a separate container for each well. The metal barrels and containers are clearly marked and stored temporarily on the subject site for subsequent disposal.

5.11 Elevation Surveying

The ground elevation at each of the borehole locations was surveyed using a grade laser surveying equipment. The equipment is capable of having vertical and horizontal accuracy of ±0.1 m. The elevation of BH/MW1 as a benchmark is 263 masl surveyed using a hand-held (Trimble Geoexplorer 6000 series) Global Navigation Satellite System measurement equipment. The equipment is capable of having vertical and horizontal accuracy of 0.1± m.

The elevations at the borehole and monitoring well locations are presented in the Table II and borehole/monitoring well logs provided in Appendix 'B'.

5.12 Quality Assurance and Quality Control Measures

The soil and groundwater Sampling and Analysis Plan provided in Appendix 'A' was prepared and executed using based on the findings of our Phase One ESA.

The Phase Two ESA was carried out in accordance with the Sampling and Analysis Plan and in accordance with the SEL Standard Operating Procedures.

The sampling and decontamination procedures were conducted in accordance with the "Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario", May 1996, revised December 1996, as amended by O. Reg. 511/09.

Laboratory analytical methods, protocols and procedures were carried out in accordance with the "Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act", dated March 9, 2004, amended as of July 1, 2011, in accordance with O. Regs. 511/09 and 269/11.

Field observations were made and documented in a field book in accordance with generally accepted practices and with the procedures developed and utilized by SEL.

SEL field sampling Quality Assurance/Quality Control (QA/QC) protocols applied to the investigation are summarized as follows:

- The collection of at least one field duplicate sample per site for every sampling media (where three or more such samples are collected).

- Where volatile organic chemical analysis is required, the collection of discrete soil samples directly into laboratory-prepared sample vials and immediate placement into a cooler with ice to maintain the temperature at less than 10 °C for transport to the laboratory.

- The use of dedicated equipment (bailers, Waterra tubing, etc.) for groundwater sampling at different monitors and thorough cleaning of soil sampling equipment between sample sites.
- If trace organics in the collected samples are anticipated (organic chemicals with a concentration of less than 1 µg/g), precautions are made to avoid any possible cross-contamination (eliminating bare hand or latex glove contacts with the soil or water; soil sampling equipment used for the collection of samples with trace organics is cleaned using a phosphate-free detergent, followed by a distilled water rinse and a methanol rinse between sampling sites.

- The inclusion of one trip blank for groundwater samples per site (where three or more samples are collected) for VOC parameters; the bottles containing the trip blank are prepared by the laboratory; QA/QC samples are kept in the cooler on ice for the duration of the sampling event, and returned to the laboratory for analyses.

The results of the field duplicate sample are discussed later in Section 6.0 of this report.

6.0 REVIEW AND EVALUATION

6.1 Geology

Detailed descriptions of the encountered subsurface conditions are presented on the Borehole Logs provided in Appendix 'B'. The subsoil condition at the boreholes locations indicate a layer of topsoil or asphalt and gravel on the ground surface followed by earth fill, sand fill or sand. The subject site is underlain by strata of sand, silt and silty clay at various depths and locations. No bedrock was encountered during the Phase Two ESA.

The descriptions of the strata, encountered at the borehole locations, are briefly discussed below.

Topsoil/Asphalt

At the borehole locations a layer of topsoil or asphalt is encountered on the ground surface. The thickness of this layer is between 0.05 to 0.21 m.

Earth Fill

At the BH1, BH2, BH5 and BH6 locations, a layer of earth fill consisting of fine sand was encountered below the topsoil/asphalt layer, extending to depths of 1.0 mbgs to 5.0 mbgs.

Sand

At the borehole locations, a sand deposit was encountered at depths ranging from 0.16 mbgs to 6.5 mbgs below topsoil or earth fill layer. At the BH1 location, there is a sand deposit below silt deposit at 4.4 mbgs and at BH 4, at 4.8 mbgs.

Silt

At the BH1, BH2, BH4 and BH5 locations, a silt deposit was encountered at depths ranging from 2.5 mbgs to 4.9 mbgs below sand deposit, extending to depths of 4.4 mbgs to 16.8 mbgs.

Silty Clay

At the BH3 location, silty clay deposit was encountered below the sand deposit at a depth of 4.8 mbgs, and the borehole was terminated at a depth of 6.5 mbgs.

Hydrogeology

On completion of drilling activities on April 10, 2018, no free water was detected in the borehole locations. Based on the field observation and groundwater monitoring records (as indicated in the section below), shallow groundwater is present in the sand and silty fine sand deposit.

6.2 Groundwater: Elevations and Flow Direction

Four (4) monitoring wells were installed at the selected borehole locations during the field investigation for the Phase Two ESA on March 28, 2018, April 10 and May 15, 2018. The monitoring wells were installed at the depths of 6.0 mbgs, 6.5 mbgs and 16.8 mbgs, within earth fill layer, sand and silt deposit. Groundwater records were documented during the drilling of boreholes and during the groundwater sampling rounds on the dates indicated above in Sections 5.5 and 5.6.

On April 10, 2018 and May 30, 2018, water levels were recorded at depths of 4.4 mbgs, 3.36 mbgs and 16.02 mbgs in the monitoring wells MW2, MW3 and MW5, respectively. Please note that the monitoring well MW 4 was dry on these dates. The corresponding water table elevations are 256.01 masl, 275.88 masl and 247.06 masl, in MW2, MW3 and MW5, respectively.

The ground elevations of the monitoring wells were surveyed using a grade laser surveying equipment. Water level measurements and water temperature were taken using a water level meter (Dipper-T). Top surface of each well casing was used as a reference point to determine the groundwater table. The measurements were reduced to static elevations based on the monitoring well survey data. Shallow groundwater levels, recorded on May 30, 2018, were used to determine the flow direction. Based on the groundwater monitoring records, the groundwater flow direction appears to be to the southeast. No free product or surface sheen was observed in any of the monitoring wells.

The groundwater elevations measured in the monitoring wells are summarized in Table II. The shallow groundwater contours and the interpreted ground water flow direction are shown on Drawing No. 5.

6.3 Groundwater: Hydraulic Gradients

Based on the groundwater records of May 30, 2018, the horizontal hydraulic gradient for the investigated aquifer within the earth fill layer, sand and silt deposits at the subject site ranges from 0.16 m/m to 0.22 m/m (average 0.19 m/m).

6.4 Fine-Medium Soil Texture

No grain size analysis was performed as part of this investigation. However, based on the findings of our geotechnical investigation, site condition standards for coarse textured soils were used in the assessment.

6.5 Soil: Field Screening

Head space vapour screening was conducted for all retrieved soil samples using a combustible gas detector (RKI Eagle).

Soil vapour measurements of non-detected to 40 ppm were recorded for the soil samples, indicating insignificant combustible gases in all of the soil samples retrieved from the sampling locations.

6.6 Soil Quality

Representative "worst case" soil samples from the boreholes were selected based on the soil vapour measurements and visual and olfactory observations. The selected soil samples were submitted to the laboratory for chemical analyses of VOCs, PHCs, and metals and/or inorganics.

The soil test results were reviewed using the Table 2 Standards as published in the "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act" (EPA), dated April 15, 2011.

Soil quality data containing results of the chemical analyses for the tested soil samples is presented in Table III. Maximum concentrations of the tested parameters in soil are presented in Table IV.

The Certificate of Analysis for the soil samples is presented in Appendix 'C'. The findings of the soil test results are summarized below:

Metals and/or Inorganics

Eight (8) original soil samples and one (1) field duplicate sample were submitted for analysis of metals and/or inorganics. The results indicate that the concentrations of metals and inorganic parameters in the samples meet the Table 2 Standards.

Petroleum Hydrocarbons (PHCs)

One (1) original soil sample was submitted for analyses of PHCs. The results indicate that the concentrations of PHC parameters in the sample meet the Table 2 Standards.

Volatile Organic Compounds (VOCs)

One (1) original soil sample was submitted for analyses of VOCs. The results indicate that the concentrations of VOC parameters in the sample meet the Table 2 Standards.

6.7 Groundwater Quality

During the investigation, groundwater sampling and testing program was conducted at the subject site for analyses of Petroleum Hydrocarbons (PHCs) and Volatile Organic Compounds (VOCs).

The groundwater test results were reviewed using the Table 2 Standards.

Groundwater quality data containing results of chemical analyses for the tested groundwater samples are presented in Table IV. Maximum concentrations of the tested parameters in the groundwater are presented in Table VI.

Copies of the Certificates of Analysis for the groundwater samples are presented in Appendix 'D'.

The findings of the groundwater test results are summarized below.

Petroleum Hydrocarbons (PHCs)

One (1) original groundwater sample for PHCs and one (1) field duplicate sample for benzene, toluene, ethylbenzene and xylene (BTEX) were submitted for analysis. The results indicate that the concentrations of PHC parameters in the samples meet the Table 2 Standards.

Volatile Organic Compounds (VOCs)

One (1) original groundwater sample and a trip blank sample were submitted for analysis of VOCs. The results indicate that the concentrations of VOC parameters in the samples and the trip blank sample meet the Table 2 Standards, with the exception of Chloroform in the groundwater sample (MW5) with the concentration of 9.8 ug/L in comparison with the Table 2 Standards of 2.4 ug/L. MW5 is located in the southeastern portion of the subject site.

Subsequently, two rounds of groundwater sampling and testing were conducted to verify the concentration of Chloroform in MW5.

A review of the additional groundwater testing at MW5 location indicates the concentration of Chloroform meet the Table 2 Standards.

6.8 Sediment Quality

Sediment was not assessed as part of this investigation.

6.9 Quality Assurance and Quality Control Results

The Phase Two ESA was carried out in accordance with the Sampling and Analysis Plan and in accordance with the SEL Standard Operating Procedures.

The sampling and decontamination procedures were conducted in accordance with the "Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario", May 1996, revised December 1996, as amended by O. Reg. 511/09.

Laboratory analytical methods, protocols and procedures were carried out in accordance with the "Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act", dated March 9, 2004, amended as of July 1, 2011, in accordance with O. Reg. 511/09 and O. Reg. 269/11 (herein referred to as Analytical Protocol).

6.9.1 Field Quality Assurance/Quality Control Samples

As part of the QA/QC program for the Phase Two ESA, QC samples in the form of field duplicate and trip blank samples were analysed. Field duplicate samples were collected in the field for metals in soil and BTEX for groundwater. One (1) trip blank for VOCs was shipped with the batch of the groundwater samples submitted for analysis.

Field Duplicate

A total of one (1) field duplicate soil sample and one (1) field duplicate groundwater sample were collected and submitted for chemical analysis. Details of duplicate sampling and analysis are presented in the table below:

Duplicate Sample ID	Original Sample ID	Media	Test Conducted
DUP S1	BH6/1	Soil	Metals
DUP W1	MW5	Groundwater	BTEX

The results of the analysis of the field duplicate samples are similar to the results for the original samples and relative percent differences (RPD) for the detectable tested parameters are within the acceptable range. However, the relative percent differences could not be calculated between the original and duplicate samples in the situation where the original and/or duplicate samples were below five (5) times of the reported laboratory detection limits.

Trip Blank

One trip blank sample was submitted to the laboratory for analyses of VOCs. Tested parameters in the trip blank sample was found to be below the RDLs. There was no issue with the trip blank that was shipped with the batch of the groundwater samples submitted for analysis.

6.9.2 Sample Handling in Accordance with the Analytical Protocol

The samples analyzed as part of the Phase Two ESA were handled in accordance with the tested parameters in the analytical protocol with respect to holding time, preservation method, storage requirement and sample container type.

6.9.3 Certification of Results

Based on the review of the QA/QC sample results for the soil and groundwater samples collected in this investigation, the Chain of Custody forms and the laboratory Certificate of Analysis, it is certified that:

- All Certificates of Analysis or Analytical Reports received pursuant to Section 47(2) of O. Reg. 153/04, as amended, comply with Section 47(3) of O. Reg. 153/04, as amended.
- A Certificate of Analysis or Analytical Report was received for each sample submitted for analysis.

Copies of all Certificates of Analysis are included in Appendix 'C' and 'D'.

6.9.4 Data Validation

The Analytical Protocol establishes Acceptance Limits for use when assessing the reliability of data reported by analytical laboratories including maximum holding times for the storage of samples/sample extracts between collection and analysis, analytical methods, field and/or laboratory quality assurance samples, recovery ranges for spiked samples and surrogates, Reporting Detection Limits (RDLs), mandatory maximum method detection limits and precision required when analyzing laboratory replicate and spiked samples.

The review of the data in the Certificates of Analysis indicates:

- All samples/sample extracts were analyzed within their applicable holding times using approved analytical methods.
- No tested parameters were detected in any laboratory blank samples.
- The Reported Detection Limits were met for all tested parameters.
- The results of the laboratory duplicate samples are similar to the results for the original samples, and relative percent differences for the detectable tested parameters are within the acceptable range or non-detectable.

6.9.5 Data Quality Objectives

In conclusion, the overall quality of field data did not affect the decision making, and the overall objectives of the investigation were met.

6.10 Phase Two Conceptual Site Model

The Phase Two Conceptual Site Model is prepared based on the findings of the Phase One ESA and this Phase Two ESA.

6.10.1 Description and Assessment

The subject site, roughly rectangular in shape and approximately 0.86 ha (2.12 ac) in area, is located on the north side of Ardagh Road and on the west side of Ferndale Drive South, in the City of Barrie. The location of the subject site is shown on the Drawing No. 1. The Property Identification Number (PIN) , the property description from the parcel register and the UTM coordinates obtained from Google Earth database, associated with the subject site are listed in the table below:

PIN	Property Description from Parcel Register	UTM Coordinates (1983 NAD)
58763-0309 (LT)	PT BLK 264 PL 51M371 BEING PTS 1, 2 & 3 PL 51R33187 & PTS 4 & 15 PL 51R28750, S/T EASEMENT OVER PT 2 ON PL 51R33187 AS IN SC279094 @ S/T EASE OVER PT 3 PL 51R33187 AS IN LT11218; BARRIE; SUBJECT TO AN EASEMENT IN GROSS OVER PT 2 PL 51R33187 AS IN SC1064991	17T 602,342 m East 4,912,122 m North

Through the years, the subject site was a vacant land. Currently, the subject site is used as a parking lot.

The neighbouring properties consist mainly of a residential subdivision to the north, a fire station building to the west, a commercial plaza beyond Ferndale Drive South to the east and residential properties beyond Ardagh Road to the south of the subject site. A gas station is located to the southeast of the subject site.

6.10.1.1 Areas where Potentially Contaminating Activity Has Occurred

The Phase One ESA determined the Potentially Contaminating Activities (PCAs) at the subject site and in the Phase One Study Area based on the records review, interviews and site reconnaissance. The area of PCAs along with the corresponding list in Table 2 Schedule D of O. Reg. 153/04 is summarized below:

On-site PCAs:

- Unknown soil quality of stockpiled material on the southern portion of the subject site. #30. Importation of fill material of unknown quality.
- Unknown quality of fill material on the eastern portion of the subject site. #30. Importation of fill material of unknown quality.

Off-site PCA:

- A gas station is located to the southeast of the subject site. #28- Gasoline and associated products storage in fixed tanks.

The on-site and off-site PCAs are considered to have contributed to the Areas of Potential Environmental Concerns at the subject site.

The PCAs are shown in Drawing No. 1.

6.10.1.2 Areas of Potential Environmental Concern

The following Areas of Potential Environmental Concern (APECs) at the subject site were identified:

APEC 1: Potential soil impacts due to unknown soil quality of a stockpile on the southern portion of the subject site.

APEC 2: Potential soil and groundwater impact due to the gas station to the southeast of the subject site.

APEC 3: Potential soil impacts due to unknown quality of fill materials in the eastern portion of the subject site.

The PCAs and APECs are shown on Drawing Nos. 1 and 2, respectively.

6.10.1.3 Subsurface Structures and Utilities

At the time of the assessment, the eastern portion of the subject site is a parking lot. The subsurface structures and utilities are located in the vicinity of the building at the subject site. Since no contaminants are identified at the subject site at concentrations above the applicable site condition standards, no subsurface structures or utilities with potential to affect contaminants distribution or transport are identified at the subject site.

6.10.2 **Physical Setting**

6.10.2.1 Stratigraphy

A review of the Geological Map of the area, located at the Ontario Geological Survey indicates that the subject site is situated at the Glaciolacustrine deposit material such as sand, gravelly sand, nearshore and beach deposits. Bedrock in the area of the subject site consists of Ottawa Group, Simcoe Group, Shadow Lake Formation, and rock description is shale, limestone, arkose, dolostone and siltstone. According to the Bedrock Cross Section Viewer, a depth of bedrock in the general vicinity of the subject site is approximately 143 mbgs.

The field investigation for the Phase Two ESA consisted of drilling eleven (11) boreholes to the depths ranging from 1.5 mbgs to 16.8 mbgs and installing monitoring wells at the selected borehole locations. The subsoil condition at the boreholes locations indicate a layer of topsoil or asphalt and gravel on the ground surface followed by earth fill, sand fill or sand. The subject site is underlain by strata of sand, silt and silty clay at various depths and locations. No bedrock was encountered during the Phase Two ESA. According to the Bedrock Cross Section Viewer, the depth of bedrock in the general vicinity of the subject site is approximately 143 mbgs.

The cross sections to show the soil stratigraphy of the subject site are presented in Drawing Nos. 3 and 4.

6.10.2.2 Hydrogeological Characteristics

A Watershed Map provided by the Lake Simcoe Region Conservation Authority (LSRCA) Watershed shows that the subject site is located within the Lake Simcoe Watershed. Based on the inferred topography of the area from topographic maps, precipitation runoff is expected to flow in the north/northwest direction.

Four (4) monitoring wells were installed at the selected borehole locations during the field investigation for this Phase Two ESA. The monitoring wells were installed at the depths ranging from 6.0 mbgs to 16.8 mbgs, within the sand and silty fine sand deposit. Based on the groundwater records and our investigation in this Phase Two ESA, the groundwater flow direction appears to be to the southeast. The shallow groundwater contours and the interpreted groundwater flow direction are shown on Drawing No. 5.

Based on the groundwater records of the site investigation for the Phase Two ESA, the horizontal hydraulic gradient for the investigated aquifer at the subject site ranges from 0.16 m/m to 0.22 m/m (average 0.19 m/m).

6.10.2.3 Approximate Depth to Bedrock

Bedrock was not encountered at the subject site during the field investigation within the maximum drilling depth of 16.8 mbgs. According to the Ontario Geological Survey Bedrock Cross Section Viewer, the depth to bedrock in the general vicinity of the subject site is approximately 143 mbgs.

6.10.2.4 Approximate Depth to Water Table

Based on the groundwater monitoring records for this investigation, a depth to the groundwater table at the subject site ranges from 3.36 mbgs to 16.02 mbgs.

6.10.2.5 Section 41 or 43.1 of the Regulation

The subject site is not within/adjacent/part of an area of natural significance, and the analytical testing indicated the pH of the tested soil samples is between 5 and 9. Therefore, Section 41 of the Regulation 153/04 (Site Condition Standards, Environmental Sensitive Areas) does not apply to the subject site.

The property is not a shallow soil property, as bedrock was not encountered within 2.0 mbgs during the investigation. In addition, there is no water body within the subject site or within 30 m from the subject site boundaries. Therefore, Section 43.1 of the Regulation (Site Condition Standards, Shallow Soil Property or Water Body) does not apply to the subject site.

6.10.2.6 Soils Placed On, In or Under the Phase Two Property

The findings of our Phase Two ESA indicated that fill material of unknown quality is located on the eastern and southern portion of the subject site. The fill material was assessed during this Phase Two ESA.

6.10.2.7 Proposed Building and Other Structures

A three storey building with one level underground parking and amenity area is proposed for the subject site. It is anticipated that the new development will be provided with municipal services meeting urban standards. The locations of the proposed building or any other structures were not known at the time of preparation of this Phase Two Conceptual Site Model.

6.10.3 **Contamination In or Under the Phase Two Property**

Based on the findings of the Phase One ESA, contaminants of potential concern in soil with respect to the identified Areas of Potential Environmental Concern (APEC) at the subject site were assessed during the Phase Two ESA.

Based on the information obtained from the Phase One ESA and Phase Two ESA, the Ministry of the Environment and Climate Change (MOECC) Table 2, Full Depth Generic Site Condition Standards in a Potable Groundwater Condition for residential/parkland/institutional property use and coarse textured soil (Table 2 Standards), as published in the "Soil, Ground Water and Sediment Standards for Use Under Part XV. 1 of the Environmental Protection Act" (EPA), April 15, 2011 has been selected for assessing the soil and groundwater condition at the subject site.

6.10.3.1 Area Where Contaminants are Present

Soil and groundwater samples were collected during the Phase Two ESA and submitted for chemical analysis of one or more of the following parameter: Petroleum Hydrocarbon (PHCs, Volatile Organic Compounds (VOCs) and metals and/or inorganics.

A review of the analytical test results of soil and groundwater samples indicates that the tested parameters at the test locations meet the Table 2 Standards.

Consequently, there are no contaminants identified at the subject site at concentrations above the applicable site condition standards (Table 2 Standards) during the Phase Two ESA.

6.10.3.2 Distribution of Contaminants

No contaminants are identified at the subject site at concentrations above applicable site condition standards.

6.10.3.3 Contaminant Medium

No contaminants are identified at the subject site at concentrations above applicable site condition standards.

6.10.3.4 Reasons for Discharge

No contaminants are identified at the subject site at concentrations above applicable site condition standards.

6.10.3.5 Migration of Contaminants

No contaminants are identified at the subject site at concentrations above applicable site condition standards.

6.10.4 Potential Exposure Pathways and Receptors

Since no contaminants are found at the subject site at concentrations above the applicable site condition standard (Table 2 Standards), no potential exposure pathways and receptors are identified.

7.0 CONCLUSIONS

The purpose of the Phase Two ESA was to determine the soil and groundwater quality at the subject site, as related to the following Area of Potential Environmental Concerns (APEC) identified in our Phase One ESA or the subject site:

APEC 1: Potential soil impacts due to unknown soil quality of a stockpile on the southern portion of the subject site.

APEC 2: Potential soil and groundwater impact due to the gas station to the southeast of the subject site.

APEC 3: Potential soil impacts due to unknown quality of fill material in the eastern portion of the subject site.

The findings of the field investigation and analytical results of the Phase Two ESA summarized below:

- The field investigation for this Phase Two ESA consisted of drilling eleven (11) boreholes to depths ranging from 1.5 m below ground surface (mbgs) to 16.8 mbgs.
- The subsoil condition at the boreholes locations indicate a layer of topsoil or asphalt and gravel on the ground surface followed by earth fill, sand fill or sand. The subject site is underlain by strata of sand, silt and silty clay at various depths and locations.
- Head space vapour screening was conducted for all retrieved soil samples using a combustible gas detector (RKI Eagle) in methane elimination mode, calibrated with hexane and having a minimum detection level of 2 ppm (parts per million by volume). Soil vapour measurements of non-detected to 40 ppm were recorded for the soil samples, indicating insignificant combustible gases in all of the soil samples retrieved from the sampling locations.
- Based on the soil vapour measurements and visual and olfactory observations, representative "worst case" soil samples were selected from the sampling locations for chemical analyses of PHCs, VOCs and metals and/or inorganics.

- Groundwater samples collected from the selected monitoring wells were submitted for analysis of PHCs and VOCs.
- As part of the QA/QC program for the Phase Two ESA, QC samples in the form of field duplicate and trip blank samples were analysed. Field duplicate samples were collected in the field for metals in soil and benzene, toluene, ethylbenzene and xylene (BTEX) for groundwater. One (1) trip blank for VOCs was shipped with the batche of the groundwater samples submitted for analysis.
- The analytical test results were reviewed using the Table 2, Full Depth Generic Site Condition Standards in a Potable Groundwater Condition for residential/parkland/ institutional property use and coarse textured soil (Table 2 Standards), as published in the "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act" (EPA), dated April 15, 2011.
- The test results indicate that the concentrations of the tested parameters in the soil and groundwater samples meet the Table 2 Standards.
- The results of the analysis of the duplicate samples are similar to the results for the original samples, and relative percent differences for the detectable tested parameters are within the acceptable range are non-detectable.
- The analytical results for the trip blank sample indicate that the tested parameters were below the reported laboratory detection limits. There was no issue with the trip blank that was shipped with the batch of the groundwater samples submitted for analysis.

A review of the analytical test results of soil and groundwater samples indicates the tested parameters at the test locations meet the Table 2 Standards. Consequently, there are no contaminants identified at the subject site at concentrations above the applicable site condition standards (Table 2 Standards) during the Phase Two ESA.

Based on the findings of the Phase Two ESA, it is our opinion that the property is suitable for the proposed development. No further environmental investigation is recommended at this time.

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LT/VK:lt

8.0 REFERENCES

Information in the Public Domain

Environmental Protection Act (EPA). Part VII of Ontario Regulation 511/09. The Ontario Ministry of the Environment (MOE). (Amended 2009)

MOE Guidance Manual (MOE). "Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario, May 1996" revised December 1996. MOE. (1996)

MOE. "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act" (EPA), March 9, 2004.

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TABLES

REFERENCE NO. 1802-E072

Table I – Monitoring Well Installation

Monitoring Well I.D.	Bottom of Monitoring Well (mbgs)	Screen Length (m)	Screen Interval (m)	Filter Pack (m)	Bentonite Plug (m)
BH/MW2	6.0	3.0	3.0-6.0	2.4-6.0	0.0-2.4
BH/MW3	6.5	3.0	3.5-6.5	2.9-6.5	0.0-2.9
BH/MW4	6.1	3.0	3.1-6.1	2.5-6.1	0.0-2.5
BH/MW5	16.8	3.0	13.8-16.8	13.2-16.8	0.0-13.2

Note: mbgs – meters below ground surface

Table II – Water Levels

Monitoring Well No.	Ground Elevation (masl)	Measured Groundwater Level		Field Observations		
		May 30, 2018				
		Depth (mbgs)	Elevation (m)	Odour	Colour	LNAPL
BH/MW2	260.42	4.4	256.02	None	Clear	None
BH/MW3	261.24	3.36	257.88	None	Clear	None
BH/MW4	262.14	Dry	-	None	Clear	None
BH/MW5	263.00	16.02	246.98	None	Clear	None

Note: mbgs = meters below ground surface
masl = meters above sea level
LNAPL= A light non-aqueous phase liquid

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Table III

SOIL CHEMICAL ANALYSIS - Metals and Inorganic Parameters

Project No. 1802-E072

Sample ID	RDL*	BH2/2	BH5/1	BH6/1	BH7/2	BH8/2	BH9/2	BH10/2	BH11/2	BH5/9	DUPS1	Ontario Regulation 153/04 Table 2 RPI Standards**
Sample Date		10-April-2018	10-April-2018	10-April-2018	10-April-2018	10-April-2018	10-April-2018	10-April-2018	10-April-2018	10-April-2018	10-April-2018	
Laboratory ID		GLA659	GLA656	GLA660	GLA661	GLA662	GLA663	GLA664	GLA665	GLA657	GLA666	
Bore Hole No.		BH2	BH5	BH6	BH7	BH8	BH9	BH10	BH11	BH5	BH6	
Depth (mbgs)		0.8-1.2	0.0-0.6	0.0-0.8	0.8-1.5	0.8-1.5	0.8-1.5	0.8-1.5	0.8-1.5	6.0-7.2	0.0-0.8	
Antimony	0.2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	-	<0.20	7.5
Arsenic	1	<1.0	<1.0	<1.0	1.5	2.2	1.3	1.4	1.6	-	<1.0	18
Barium	0.5	8	23	6.5	52	34	26	28	27	-	5.4	390
Beryllium	0.2	<0.20	<0.20	<0.20	0.22	0.21	<0.20	<0.20	<0.20	-	<0.20	4
Boron (Hot Water Soluble)	0.05	<0.050	0.1	<0.050	0.25	0.3	0.26	0.29	0.28	-	<0.050	1.5
Cadmium	0.1	<0.10	<0.10	<0.10	0.13	0.15	0.11	<0.10	0.14	-	<0.10	1.2
Chromium	1	6.7	8.2	4.1	13	11	9.1	13	10	-	7.6	160
Chromium VI	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	8
Cobalt	0.1	1.5	2.2	1.1	3.1	2.4	2	2.2	2.3	-	1.6	22
Copper	0.5	1.9	3.3	1.8	19	6.3	4.4	4.7	4.8	-	2.1	140
Lead	1	1.2	4.6	1	33	15	7.8	16	7.2	-	1.1	120
Mercury	0.05	<0.050	<0.050	<0.050	0.083	0.1	0.064	<0.050	0.053	-	<0.050	0.27
Molybdenum	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	6.9
Nickel	0.5	2.7	4	2.4	6.1	4.5	3.9	4.5	4.3	-	2.6	100
Selenium	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	2.4
Silver	0.2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	-	<0.20	20
Thallium	0.05	<0.050	<0.050	<0.050	0.065	<0.050	<0.050	<0.050	<0.050	-	<0.050	1
Vanadium	5	19	19	10	20	21	20	21	21	-	27	86
Zinc	5	6.3	17	5.2	56	34	23	22	24	-	7.1	340
pH (pH Units)		-	-	-	7.56	7.41	7.4	7.3	7.35	7.78	-	-
Electrical Conductivity	0.002	-	-	-	0.17	0.15	0.15	0.18	0.14	-	-	0.7
Sodium Adsorption Ratio		-	<0.050	-	0.23	0.24	0.24	0.23	0.24	-	-	5
Cyanide, Free	0.01	<0.01	<0.01	<0.01	<0.01	0.02	0.02	0.02	0.02	-	-	0.051
Boron (Total)	5	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	-	<5.0	120
Uranium	0.05	0.25	0.21	0.18	0.28	0.3	0.22	0.27	0.27	-	0.27	23

Analysis by Maxxam Analytics, all results in ppm (µg/g) unless otherwise stated

* Analytical Reportable Detection Limits (RDLs) are shown except as indicated in brackets.

** Standards shown are for Table 2 Full Depth Generic Site Condition Standards in a Potable Ground Water Condition for residential/parkland/institutional property use (coarse textured soils)

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Table III

SOIL CHEMICAL ANALYSIS - Petroleum Hydrocarbon (PHC) Parameters

Project No. 1802-E072

Sample ID	RDL*	BH5/7	Ontario Regulation 153/04 Table 2 RPI Standards**
Sample Date		10-April-2018	
Laboratory ID		GLA658	
Bore Hole No.		BH5	
Depth (mbgs)		4.5-5.1	
Benzene	0.02	<0.020	0.21
Toluene	0.02	<0.020	2.3
Ethylbenzene	0.02	<0.020	1.1
Total Xylenes	0.04	<0.040	3.1
F1 (C6-C10)	10	<10	55
F1 (C6-C10) - BTEX	10	<10	55
F2 (C10-C16)	10	<10	98
F3 (C16-C34)	50	<50	300
F4 (C34-C50)	50	<50	2800

Analysis by AGAT Laboratories, all results in ppm (µg/g) unless otherwise stated

* Analytical Reportable Detection Limits (RDLs) are shown except as indicated in brackets.

** Standards shown are for Table 2 Full Depth Generic Site Condition Standards in a Potable Ground Water Condition for residential/parkland/institutional property use

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SOIL CHEMICAL ANALYSIS - Volatile Organic Compound (VOC) Parameters

Project No. 1802-EU72

Sample ID	RDL*	BH5/9	Ontario Regulation 153/04 Table 2 RPI Standards**
Sample Date		10-April-2018	
Laboratory ID		GLA657	
Bore Hole No.		BH5	
Depth (mbgs)		6.0-7.2	
Acetone	0.5	<0.50	16
Benzene	0.02	<0.02	0.21
Bromodichloromethane	0.05	<0.05	1.5
Bromoform	0.05	<0.05	0.27
Bromomethane	0.05	<0.05	0.05
Carbon Tetrachloride	0.05	<0.05	0.05
Chlorobenzene	0.05	<0.05	2.4
Chloroform	0.05	<0.05	0.05
Dibromochloromethane	0.05	<0.05	2.3
1,2-Dichlorobenzene	0.05	<0.05	1.2
1,3-Dichlorobenzene	0.05	<0.05	4.8
1,4-Dichlorobenzene	0.05	<0.05	0.083
1,1-Dichloroethane	0.02	<0.02	0.47
1,2-Dichloroethane	0.03	<0.03	0.05
1,1-Dichloroethylene	0.05	<0.05	0.05
Cis-1,2-Dichloroethylene	0.05	<0.05	1.9
Trans-1,2-Dichloroethylene	0.05	<0.05	0.084
1,2-Dichloropropane	0.05	0.05	0.05
1,3-Dichloropropene	0.04	<0.030	0.05
Ethylbenzene	0.05	<0.020	1.1
Ethylene Dibromide	0.04	<0.05	0.05
Methyl Ethyl Ketone	0.5	<0.50	16
Methylene Chloride	0.05	<0.05	0.1
Methyl Isobutyl Ketone	0.5	<0.50	1.7
Methyl-tert-Butyl Ether	0.05	<0.05	0.75
Styrene	0.05	<0.05	0.7
1,1,1,2-Tetrachloroethane	0.05	<0.05	0.058
1,1,2,2-Tetrachloroethane	0.05	<0.05	0.05
Toluene	0.2	<0.02	2.3
Tetrachloroethylene	0.05	<0.05	0.28
1,1,1-Trichloroethane	0.05	<0.05	0.38
1,1,2-Trichloroethane	0.04	<0.04	0.05
Trichloroethylene	0.03	<0.03	0.061
Vinyl Chloride	0.02	<0.02	0.02
Xylenes Mixture	0.05	<0.02	3.1
Dichlorodifluoromethane	0.05	<0.05	16
Hexane(n)	0.05	<0.05	2.8
Trichlorofluoromethane	0.05	<0.05	4

Analysis by MAXXAM Laboratories, all results in ppm (µg/g) unless otherwise stated

* Analytical Reportable Detection Limits (RDLs) are shown except as indicated in brackets.

** Standards shown are for Table 2 Full Depth Generic Site Condition Standards in a Potable Ground Water Condition for residential/parkland/institutional property use (coarse textured soils)

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Table IV

GROUND WATER CHEMICAL ANALYSIS - Petroleum Hydrocarbon (PHC) Parameters

Project No. 1802-E072

Sample ID	RDL*	MW5	Ontario Regulation 153/04 Table 2 Standards**
Sample Date		15-May-2018	
Laboratory ID		GSF696	
Bore Hole No.		BH5	
F1 (C6 to C10)	25	<25	750
F1 (C6 to C10) minus BTEX	25	<25	750
F2 (C10 to C16)	100	<100	150
F3 (C16 to C34)	100	<100	500
F4 (C34 to C50)	100	<100	500

Analysis by MAXXAM Laboratories, all results in ppm (µg/L) unless otherwise stated

* Analytical Reportable Detection Limits (RDLs) are shown except as indicated in brackets.

** Standards shown are for Table 2 Full Depth Generic Site Condition Standards in a Potable Ground Water Condition

Soil Engineers Ltd

Table IV

GROUND WATER CHEMICAL ANALYSIS - Volatile Organic Compound (VOC) Parameters

Project No. 1802-E072

Sample ID	RDL*	MW5	MW5	MW5	DupW1	Trip Blank	Ontario Regulation 153/04 Table 2 Standards**
Sample Date		15-May-2018	30-May-2018	19-Jul-2018	15-May-2018	15-May-2018	
Laboratory ID		GSF696	GVT584	B8H3020	GSF697	GSF698	
Bore Hole No		BH5	BH5	BH5	BH5	-	
Acetone	10	<10	29	28	-	<10	2700
Benzene	0.2	<0.20	<0.20	<0.20	<0.20	<0.20	5
Bromodichloromethane	0.5	6.9	<0.50	<0.50	-	<0.50	16
Bromoform	1	<1.0	<1.0	<1.0	-	<1.0	25
Bromomethane	0.5	<0.50	<0.50	<0.50	-	<0.50	0.89
Carbon Tetrachloride	0.2	<0.20	<0.20	<0.20	-	<0.20	0.79
Chlorobenzene	0.2	<0.20	<0.20	<0.20	-	<0.20	30
Chloroform	0.2	9.8	<0.20	<0.20	-	<0.20	2.4
Dibromochloromethane	0.5	4.7	<0.50	<0.50	-	<0.50	25
1,2-Dichlorobenzene	0.5	<0.50	<0.50	<0.50	-	<0.50	3
1,3-Dichlorobenzene	0.5	<0.50	<0.50	<0.50	-	<0.50	59
1,4-Dichlorobenzene	0.5	<0.50	<0.50	<0.50	-	<0.50	1
1,1-Dichloroethane	0.2	<0.20	<0.20	<0.20	-	<0.20	5
1,2-Dichloroethane	0.5	<0.50	<0.50	<0.50	-	<0.50	1.6
1,1-Dichloroethylene	0.2	<0.20	<0.20	<0.20	-	<0.20	1.6
Cis-1,2-Dichloroethylene	0.5	<0.50	<0.50	<0.50	-	<0.50	1.6
Trans-1,2-Dichloroethylene	0.5	<0.50	<0.50	<0.50	-	<0.50	1.6
1,2-Dichloropropane	0.2	<0.20	<0.20	<0.20	-	<0.20	5
Cis-1,3-Dichloropropylene	0.3	<0.30	<0.30	<0.30	-	<0.30	NV
Trans-1,3-Dichloropropylene	0.4	<0.40	<0.40	<0.40	-	<0.40	NV
Ethylbenzene	0.2	<0.20	<0.20	<0.20	<0.20	<0.20	2.4
Ethylene Dibromide	0.2	<0.20	<0.20	<0.20	-	<0.20	0.2
Methyl Ethyl Ketone	10	<10	<10	<10	-	<10	1800
Methylene Chloride	2	<2.0	4	<2.0	-	<2.0	50
Methyl Isobutyl Ketone	5	<5.0	<5.0	<5.0	-	<5.0	640
Methyl-t-Butyl Ether	0.5	<0.50	<0.50	<0.50	-	<0.50	15
Styrene	0.5	<0.50	<0.50	<0.50	-	<0.50	5.4
1,1,1,2-Tetrachloroethane	0.5	<0.50	<0.50	<0.50	-	<0.50	1.1
1,1,2,2-Tetrachloroethane	0.5	<0.50	<0.50	<0.50	-	<0.50	1
Toluene	0.2	0.48	0.44	0.45	0.4	<0.20	24
Tetrachloroethylene	0.2	<0.20	<0.20	<0.20	-	<0.20	1.6
1,1,1-Trichloroethane	0.2	<0.20	<0.20	<0.20	-	<0.20	200
1,1,2-Trichloroethane	0.5	<0.50	<0.50	<0.50	-	<0.50	4.7
Trichloroethylene	0.2	<0.20	<0.20	<0.20	-	<0.20	1.6
Vinyl Chloride	0.2	<0.20	<0.20	<0.20	-	<0.20	0.5
m-Xylene & p-Xylene	0.2	0.23	<0.20	<0.20	-	<0.20	NV
o-Xylene	0.2	<0.20	<0.20	<0.20	<0.2	<0.20	NV
Total Xylenes	0.2	0.23	<0.20	<0.20	<0.4	<0.20	300
Dichlorodifluoromethane	1	<1.0	<1.0	<1.0	-	<1.0	590
Dioxane, 1,4-	-	-	-	-	-	-	50
Hexane(n)	1	<1.0	<1.0	<1.0	-	<1.0	51
Trichlorofluoromethane	0.5	<0.50	<0.50	<0.50	-	<0.50	150
1,3-Dichloropropene (cis + trans)	0.5	<0.50	<0.50	<0.50	-	<0.50	0.5

Analysis by MAXXAM Laboratories, all results in ppm (µg/L) unless otherwise stated

* Analytical Reportable Detection Limits (RDLs) are shown except as indicated in brackets.

** Standards shown are for Table 2 Full Depth Generic Site Condition Standards in a Potable Ground Water Condition for all types of property use (coarse textured soils)

Summary of Metals and Inorganics

Parameter	Unit	Maximum Concentration	Sample ID	Sampling Depth (m)
Antimony	ug/g	<0.2	-	-
Arsenic	ug/g	2.2	BH8/2	0.8-1.5
Barium	ug/g	52	BH7/2	0.8-1.5
Beryllium	ug/g	0.22	BH7/2	0.8-1.5
Boron (Hot Water Soluble)	ug/g	0.29	BH10/2	0.8-1.5
Cadmium	ug/g	0.15	BH8/2	0.8-1.5
Chromium	ug/g	13	-	-
Chromium VI	ug/g	<0.2	-	-
Cobalt	ug/g	3.1	BH7.2	0.8-1.5
Copper	ug/g	19	BH7/2	0.8-1.5
Lead	ug/g	33	BH7/2	0.8-1.5
Mercury	ug/g	0.083	BH7/2	0.8-1.5
Molybdenum	ug/g	<0.5	-	-
Nickel	ug/g	6.1	BH7/2	0.8-1.5
Selenium	ug/g	<0.5	-	-
Silver	ug/g	<0.2	-	-
Thallium	ug/g	<0.05	-	-
Vanadium	ug/g	21	-	-
Zinc	ug/g	56	BH7/2	0.8-1.5
pH (pH Units)	ug/g	7.56	BH7/2	0.8-1.5
Conductivity (ms/cm)	ug/g	0.18	BH10/2	0.8-1.5
Sodium Adsorption Ratio	ug/g	0.24	-	-
Cyanide, Free	ug/g	0.02	-	-
Boron (Total)	ug/g	<0.5	-	-
Uranium	ug/g	0.28	-	-

Summary of CCME F1-F4

Parameter	Unit	Maximum Concentration	Sample ID	Sampling Depth (m)
Benzene	ug/g	<0.02	-	-
Toluene	ug/g	<0.02	-	-
Ethylbenzene	ug/g	<0.02	-	-
Total Xylenes	ug/g	<0.02	-	-
F1 (C6-C10)	ug/g	<10	-	-
F1 (C6-C10) - BTEX	ug/g	<10	-	-
F2 (C10-C16)	ug/g	<10	-	-
F3 (C16-C34)	ug/g	<50	-	-
F4 (C34-C50)	ug/g	<50	-	-

Summary of VOCs

Parameter	Unit	Maximum Concentration	Sample ID	Sampling Depth (m)
Acetone	ug/g	<0.5	-	-
Benzene	ug/g	<0.02	-	-
Bromodichloromethane	ug/g	<0.05	-	-
Bromoform	ug/g	<0.05	-	-
Bromomethane	ug/g	<0.05	-	-
Carbon Tetrachloride	ug/g	<0.05	-	-
Chlorobenzene	ug/g	<0.05	-	-
Chloroform	ug/g	<0.05	-	-
Dibromochloromethane	ug/g	<0.05	-	-
1,2-Dichlorobenzene	ug/g	<0.05	-	-
1,3-Dichlorobenzene	ug/g	<0.05	-	-
1,4-Dichlorobenzene	ug/g	<0.05	-	-
1,1-Dichloroethane	ug/g	<0.05	-	-
1,2-Dichloroethane	ug/g	<0.05	-	-
1,1-Dichloroethylene	ug/g	<0.05	-	-
Cis-1,2-Dichloroethylene	ug/g	<0.05	-	-
Trans-1,2-Dichloroethylene	ug/g	<0.05	-	-
1,2-Dichloropropane	ug/g	<0.05	-	-
1,3-Dichloropropene	ug/g	<0.04	-	-
Ethylbenzene	ug/g	<0.05	-	-
Ethylene Dibromide	ug/g	<0.05	-	-

Summary of VOCs (Cont'd)

Parameter	Unit	Maximum Concentration	Sample ID	Sampling Depth (m)
Methyl Ethyl Ketone	ug/g	<0.50	-	-
Methylene Chloride	ug/g	<0.05	-	-
Methyl Isobutyl Ketone	ug/g	<0.50	-	-
Methyl-tert-Butyl Ether	ug/g	<0.05	-	-
Styrene	ug/g	<0.05	-	-
1,1,1,2-Tetrachloroethane	ug/g	<0.04	-	-
1,1,2,2-Tetrachloroethane	ug/g	<0.05	-	-
Toluene	ug/g	<0.02	-	-
Tetrachloroethylene	ug/g	<0.05	-	-
1,1,1-Trichloroethane	ug/g	<0.05	-	-
1,1,2-Trichloroethane	ug/g	<0.04	-	-
Trichloroethylene	ug/g	<0.02	-	-
Vinyl Chloride	ug/g	<0.02	-	-
Xylenes Mixture	ug/g	<0.05	-	-
Dichlorodifluoromethane	ug/g	<0.05	-	-
Hexane(n)	ug/g	<0.05	-	-
Trichlorofluoromethane	ug/g	<0.05	-	-

Summary of CCME F1-F4

Parameter	Unit	Maximum Concentration	Sample ID	Borehole No.
F1 (C6 to C10)	µg/L	<25	-	-
F1 (C6 to C10) minus BTEX	µg/L	<25	-	-
F2 (C10 to C16)	µg/L	<100	-	-
F3 (C16 to C34)	µg/L	<100	-	-
F4 (C34 to C50)	µg/L	<100	-	-

Summary of VOCs

Parameter	Unit	Maximum Concentration	Sample ID	Borehole No.
Acetone	µg/L	29	-	-
Benzene	µg/L	<0.20	-	-
Bromodichloromethane	µg/L	6.9	-	-
Bromoform	µg/L	<1.0	-	-
Bromomethane	µg/L	<0.50	-	-
Carbon Tetrachloride	µg/L	<0.20	-	-
Chlorobenzene	µg/L	<0.20	-	-
Chloroform	µg/L	<0.20	-	-
Dibromochloromethane	µg/L	<0.50	-	-
1,2-Dichlorobenzene	µg/L	<0.50	-	-
1,3-Dichlorobenzene	µg/L	<0.50	-	-
1,4-Dichlorobenzene	µg/L	<0.50	-	-
1,1-Dichloroethane	µg/L	<0.20	-	-
1,2-Dichloroethane	µg/L	<0.50	-	-
1,1-Dichloroethylene	µg/L	<0.20	-	-
Cis-1,2-Dichloroethylene	µg/L	<0.50	-	-
Trans-1,2-Dichloroethylene	µg/L	<0.50	-	-
1,2-Dichloropropane	µg/L	<0.20	-	-
Cis-1,3-Dichloropropylene	µg/L	<0.30	-	-
Trans-1,3-Dichloropropylene	µg/L	<0.40	-	-
Ethylbenzene	µg/L	<0.20	-	-
Ethylene Dibromide	µg/L	<0.20	-	-
Methyl Ethyl Ketone	µg/L	<10	-	-

Summary of VOCs (Cont'd)

Parameter	Unit	Maximum Concentration	Sample ID	Borehole No.
Methylene Chloride	µg/L	4	-	-
Methyl Isobutyl Ketone	µg/L	<5.0	-	-
Methyl-t-Butyl Ether	µg/L	<0.50	-	-
Styrene	µg/L	<0.50	-	-
1,1,1,2-Tetrachloroethane	µg/L	<0.50	-	-
1,1,2,2-Tetrachloroethane	µg/L	<0.50	-	-
Toluene	µg/L	0.48	-	-
Tetrachloroethylene	µg/L	<0.20	-	-
1,1,1-Trichloroethane	µg/L	<0.20	-	-
1,1,2-Trichloroethane	µg/L	<0.50	-	-
Trichloroethylene	µg/L	<0.20	-	-
Vinyl Chloride	µg/L	<0.20	-	-
m-Xylene & p-Xylene	µg/L	<0.23	-	-
o-Xylene	µg/L	<0.20	-	-

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APPENDIX 'A'

SAMPLING AND ANALYSIS PLAN

REFERENCE NO. 1802-E072

This Sampling and Analysis Plan is prepared for the Phase Two Environmental Site Assessment (Phase Two ESA), as defined by Ontario Regulation (O. Reg.) 153/04, as amended. The subject property is located at 224 Ardagh Road, in the City of Barrie (hereinafter referred to as "the subject site").

The Sampling and Analysis Plan is based on the findings of our Phase One Environmental Site Assessment (Phase One ESA, Reference No. 1802-E072, dated April 2, 2018).

1) OBJECTIVE

The objective of the Phase Two ESA is to determine the soil and groundwater quality at the subject site, as related to the following Areas of Potential Environmental Concerns (APECs), based on findings of our Phase One ESA.

APEC 1: Potential soil impacts due to unknown soil quality in a stockpile on the southern portion of the subject site.

APEC 2: Potential soil and groundwater impact due to a gas station to the southeast of the subject site.

APEC 3: Potential soil impacts due to unknown quality of fill material in the eastern portion of the subject site.

2) SCOPE OF WORK

The scope of work for the Phase Two ESA includes:

- Conduct eleven (11) boreholes to depths ranging from 1.5 m below ground surface (mbgs) to 16.8 mbgs.
- Collect representative soil samples from the selected boreholes.
- Undertake field examination of the retrieved soil samples for visual and olfactory evidence of potential contamination.
- Undertake soil vapour measurements for the retrieved soil samples using a combustible gas detector (RKI Eagle) in methane elimination mode, calibrated with hexane and having a minimum detection level of 2 ppm (parts per million by volume).
- Carry out analytical testing program on selected soil samples (including QA/QC samples) for analysis of volatile organic compounds (VOCs), petroleum hydrocarbons (PHCs), and metals and/or inorganics.
- Install a monitoring well in the selected boreholes for groundwater sampling testing and monitoring.
- Conduct one groundwater monitoring round and collect groundwater samples for chemical testing.
- Carry out analytical testing program on selected groundwater samples including quality assurance/quality control (QA/QC samples) for one or more of the following parameters: volatile organic compounds (VOCs) and petroleum hydrocarbons (PHCs).
- Review the analytical results for the submitted soil and groundwater samples using the applicable Site Condition Standards.
- Prepare a Phase Two ESA report presenting the findings of the investigation.

3) RATIONALE FOR BOREHOLE / MONITORING WELL LOCATIONS

The rationale for the selection of the borehole/ monitoring well locations is presented in the table below:

Areas of Potential Environmental Concerns (APECs)	Borehole and Monitoring well ID.
APEC 1: Potential soil impact due to unknown quality of a stockpile on the southern portion of the subject site.	BH7, BH8, BH9, BH10 and BH11
APEC 2: Potential soil impact due to unknown quality of fill material in the eastern portion of the subject site.	BH2, BH5 and BH6
APEC 3: Potential soil and groundwater impact due to a gas station to the southeast of the subject site.	BH/MW5

The location of the proposed boreholes/monitoring wells for the Phase Two ESA is shown in Drawing No. 2.

4) SOIL AND GROIUNDWATER SAMPLES (INCLUDING QA/QC SAMPLES) ANALYTICAL SCHEDULE

A summary of soil and groundwater samples (including QA/QC samples) to be submitted is presented in the table below:

Borehole / Monitoring Well	M &/or I	PHCs or BTEX	VOCs
Soil Sample (QA/QC samples)			
BH 2	1	-	-
BH 5	1	1	1
BH 6	1	-	-
BH 7	1	-	-
BH 8	1	-	-
BH 9	1	-	-
BH 10	1	-	-
BH 11	1	-	-
Duplicate Soil Sample	1	-	-
Groundwater Sample (QA/QC samples)			
MW5	-	1	1
Duplicate GW Sample	-	1	-
Trip Blank	-	-	1

It should be noted that based on the analytical results of the submitted soil and groundwater samples, if further activities of Phase Two ESA such as re-sampling and testing is required, additional samples from the area of interest will be submitted for analysis of contaminants of concern.

5) SOIL AND GROUNDWATER SAMPLING PROCEDURES

Soil Engineers Ltd.'s (SEL) Standard Operation Procedures (SOPs) will be followed throughout the field investigation (sampling, decontamination of equipment, observation and documentation) including the field QA/QC program. SEL SOPs are presented in Section 7 of this sampling and analysis plan.

6) DATA QUALITY OBJECTIVES

Sampling and decontamination procedures including QA/QC program should be carried out in accordance with:

- SEL SOPs, as presented in Section 7.
- The "Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario", May 1996, revised December 1996, as amended by O. Reg. 511/09.

Laboratory analytical methods, protocols and procedures should be carried out in accordance with the "Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act", dated March 9, 2004, amended as of July 1, 2011, in accordance with O. Reg. 511/09 and O. Reg. 269/11.

7) STANDARD OPERATING PROCEDURES (SOPs)

7.1) Borehole Drilling

The purpose of borehole drilling is to provide access to subsurface soils at specified locations and depths. Soil borings also allow for installation of groundwater monitoring wells.

7.1.1) Underground Utilities

Prior to drilling, the public utility service (One Call) and private utility services are contacted. The underground utility services are located and marked out in the field.

7.1.2) Drilling Methods

Direct Push Drilling (i.e. Geoprobe, Powerprobe, Pionjar, etc.)

The direct push drilling machine is a hydraulically powered hammer/ram sampling device. The unit is designed so that the weight of the vehicle provides the majority of downward force. The hydraulics, with the aid of a percussion hammer, push lengths of specially modified 54 mm (2.125 inch) outside diameter (OD), hardened steel rod into the ground. The rod is advanced to target sampling depth is reached. The steel rod has been specially modified for specific types of sample collection.

Flight-Auger Drilling

The flight-auger drilling machine is a hydraulically powered feed and retract system that provides 28,275 pounds (12,826 kg) of retract force and 18,650 pounds (8,460 kg) of down pressure. The 183 cm (72 inch) stroke, hydraulic vertical drive system has no chains or cables which can stretch. It is equipped with hollow-stem augers. It is extended to pre-determined sampling intervals using conventional drilling methods, at which time a decontaminated 51 mm

split-spoon sampler is extended ahead of the lead auger to collect a soil sample. The split-spoon sampler is then brought to surface and opened, exposing the soil core sample.

Hand Dug Test Pit

The hand-dug test pits were hand-dug using shovel. Prior to digging and sampling at each test pit location, the shovel was brushed clean using a solution of phosphate-free detergent and distilled water.

7.1.3) Occupational Health and Safety

Prior to drilling, the site is inspected to ensure that no potentially hazardous material is present near/around the drilling area. Safety procedures are reviewed and a safety check of the equipment is conducted including locating the emergency stop button on the drill rig, checking personal protective equipment (hard hats, safety shoes, eye/ear protection), locating the first aid kit and confirming the location of the nearest hospital, and verifying the standard procedure in case of injury.

7.1.4) Drilling Spoils

Excess soil generated during sampling and drilling procedure is stored at the site in metal barrels. If the analytical results indicate the soil is contaminated, a licensed disposal company is notified to collect the barrels of soil for proper disposal.

7.1.5) Borehole Abandonment

After drilling, logging and/or sampling, boreholes will be backfilled by the method described below:

- Bentonite is thoroughly mixed into the grout within the specified percentage range. The tremie grout is usually placed into the hole; however, for selected boreholes (e.g., shallow borings well above the water table) at certain sites, the grout may be allowed to free fall, taking care to ensure the grout does not bridge and form gaps or voids in the grout column.
- The volume of the borehole is calculated and compared to the grout volume used during grouting to aid in verifying that bridging did not occur.
- When using a tremie to place grout in the borehole, the bottom of the tremie is submerged into the grout column and withdrawn slowly as the hole fills with grout. If allowing the grout to free fall (and not using a tremie), the grout is poured slowly into the boring. The rise of the grout column is visually monitored or sounded with a weighted tape.
- If the method used to drill the boring utilized a drive casing, the casing is slowly extracted during grouting such that the bottom of the casing does not come above the top of the grout column.
- During the grouting process, no contaminating material (oil, grease, or fuels from gloves, pumps, hoses, et. al) is permitted to enter the grout mix and personnel wear personal protective equipment as specified in the Project Health and Safety Plan.
- Following grouting, barriers are placed over grouted boreholes as the grout is likely to settle in time, creating a physical hazard. Grouted boreholes typically require at least a second visit to 'top off' the hole.
- The surface hole condition should match the pre-drilling condition (asphalt, concrete, or smoothed flush with native surface), unless otherwise specified in the project work plans.

7.1.6) Subsurface Obstruction

Where refusal to drilling occurs due to rock, foundation or underground services, the borehole is relocated within 2.0 m downstream from the original borehole location.

7.2) **Soil Sampling**

7.2.1) Introduction

Soil sampling is conducted in accordance with the "Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario, May 1996" as revised December 1996 (MOE Guidance Manual) and as amended by O. Reg. 366/05, 66/08, 511/09, 245/10, 179/11, 269/11 and 333/13. The sampling procedures are described herein.

Drilling Rig Decontamination

Geoprobe

One-time use Shelby tube (thin-walled) samples are recovered from the boreholes in clear disposable PVC liners to prevent cross-contamination.

CME 55

Drilling equipment such as drill rigs, augers, drill pipes, drilling rods and split-spoons are decontaminated prior to initial use, between borehole locations and at the completion of drilling activities. The drilling equipment is manually scrubbed with a brush using a phosphate-free solution and thoroughly steam cleaned and/or power washed to remove any foreign material and potential contaminants.

In addition, the spilt-spoon sampler and any sub-sampling equipment is decontaminated prior to each usage. Various solutions are used for sampling equipment decontamination as described below:

- Phosphate-free soap solution (i.e., Alconox), tap water and distilled water are used for suspected petroleum hydrocarbon soil sampling.
- A reagent-grade methanol solution and distilled water are used for suspected VOCs soil sampling. The reinstate waste is collected.
- Reagent-grade 10% nitric acid solution and distilled water are used for suspected metals soil sampling. The reinstate waste will be collected.

7.2.2) Sample Logging and Field Screening

Samples are typically collected at 1.5 m intervals in the overburden. Tactile examination of the samples is made to classify the soil, and a log is recorded for each borehole detailing the physical characteristics of the soil including colour, soil type, structure, and any observed staining or odour. The organic vapour readings, the moisture content of the samples as determined in the laboratory, the groundwater and cave-in levels measured at the time of investigation, and the groundwater monitoring well construction details are given on the borehole logs.

7.2.3) Field Screening and Calibration Procedures

The soil samples are classified based on physical characteristics including colour, soil type, moisture, and visible observation of staining and/or odour. In addition, the organic vapour reading for each soil sample is determined using a gas detector. Based on the overall soil physical characteristics, representative soil sample are selected for chemical analysis.

The organic vapour readings are measured using a portable RKI Eagle gas detector, TYPE 101 (Serial Number: E091015) set to include all gases, and having a minimum detection of 2 ppm. Prior to measurement, the detector is calibrated using a Hexane 40% LEL gas. The allowable range of calibration is 38% to 42%.

7.2.4) Soil Sampling

The soil from the disposable sampler liner is handled using new disposable gloves in order to avoid the risk of cross-contamination between the samples. Sufficient amounts of the soil samples are placed into clean glass jars with Teflon lined lids for analyses for moisture content, medium to heavy PHCs, and Metals and Inorganics.

Small amounts of the soil samples are collected using a disposable 'T'-shaped Terracore sampler and stored in methanol or sodium bisulfate vials for light PHCs (CCME F1) and VOCs analysis, respectively; the remainder of the samples is placed into a sealable bag for vapour measurement and soil classification. The samples are stored in an insulated container with ice after sampling and during shipment to the laboratory.

The minimum requirements for the number, type and frequency of field quality control are given below:

i. Field Duplicates: At least 1 field duplicate sample is collected and submitted for laboratory analysis for every 10 soil samples that are collected to ensure the soil sampling technique is accurate.

7.3) **Well Installation**

7.3.1) Introduction

The well installation procedures are described herein.

7.3.2) Screen and Riser Pipe

Monitoring wells are constructed from individually wrapped 38 or 50 mm inside diameter (ID) schedule 40 polyvinyl chloride (PVC) flush threaded casing equipped with O-rings. The screen consists of casing material which is factory slotted (slot width = 0.25 mm) to permit the entry of water into the well. The bottom of the screens is equipped with threaded end caps. The appropriate number of risers is coupled with the screen section(s) via threaded joints to construct the well. The top of the wells are tightly capped using a locking well cap, which prevents the infiltration of surface water and foreign material into the well and also provides security. A watertight, traffic-rated protective casing is installed over each monitoring well within a concrete pad extending approximately 0.5 mbgs. No PVC cements or other solvent based cements are used in the construction of the monitoring wells.

7.3.3) Well Materials Decontamination

Dedicated sampling equipment, such as submersible pumps, are decontaminated prior to installation inside monitoring wells.

Where factory-cleaned, hermetically sealed materials are used, no decontamination is conducted.

Setting Screen, Riser Casings and Filter Materials

At total depth, the soil cuttings are removed through circulation or rapidly spinning the augers prior to constructing the well. The drill pipe and bit or centre bit boring is removed. The well construction materials are then installed inside the open borehole or through the centre of the drive casing or augers.

After the monitoring well assembly is lowered to the bottom of the borehole, the filter pack is added until its height is approximately two feet above the top of the screen, and placement is verified. The filter pack is then surged using a surge block or swab in order to settle the pack material and reduce the possibility of bridging.

Setting Seals and Grouting

Once the top of the filter pack is verified to be in the correct position, a bentonite seal is placed above the filter pack. The seal is allowed to hydrate for at least one hour before proceeding with the grouting operation.

After hydration of the bentonite seal, grout is then pumped through a tremie pipe and filled from the top of the bentonite seal upward. The bottom of the tremie pipe should be maintained below the top of the grout to prevent free fall and bridging. When using drive casing or hollow-stem auger techniques, the drive casing/augers should be raised in incremental intervals, keeping the bottom of the drive casing/augers below the top of the grout. Grouting will cease when the grout level has risen to within approximately one to two feet of the ground surface, depending on the surface completion type (flush-mount versus above-ground). Grout levels are monitored to assure that grout taken into the formation is replaced by additional grout.

Capping the Wells

For above-ground completions, the protective steel casing will be centered on the well casing and inserted into the grouted annulus. Prior to installation, a 2-inch deep temporary spacer may be placed between the PVC well cap and the bottom of the protective casing cover to keep the protective casing from settling onto the well cap. A minimum of 24 hours after grouting should elapse before installation of the concrete pad and steel guard posts for above-ground completions, or street boxes or vaults for flush mount completions. For above-ground completions, a concrete pad, usually 3-foot by 3-foot by 4-inch thick, is constructed at ground surface around the protective steel casing. The concrete is sloped away from the protective casing to promote surface drainage from the well.

For flush-mount (or subgrade) completions, a street box or vault is set and cemented in position. The top of the street box or vault will be raised slightly above grade and the cement sloped to grade to promote surface drainage away from the well.

7.3.4) Documentation of Monitoring Well Configuration

The following information is recorded:

- Length of well screen
- Total depth of well boring
- Depth from ground surface to top of grout or bentonite plug in bottom of borehole (if present)
- Depth to base of well string
- Depth to top and bottom of well screen

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FAX: (705) 721-7864	FAX: (905) 542-2769	FAX: (905) 725-1315	FAX: (905) 881-8335	FAX: (705) 684-8522	FAX: (905) 725-1315	FAX: (905) 542-2769

APPENDIX 'B'

BOREHOLE LOGS

REFERENCE NO. 1802-E072

JOB NO.: 1802-E072

LOG OF BOREHOLE NO.: 1

FIGURE NO.: 1

PROJECT DESCRIPTION: Proposed 3-Storey Mixed Use Building with 1-Level Underground Parking

METHOD OF BORING: Flight-Auger (Hollow-Stem)

PROJECT LOCATION: 224 Ardagh Road, City of Barrie

DRILLING DATE: March 28, 2018

El. (masl) / Depth (mbgs)	SOIL DESCRIPTION	SAMPLES Number	Type	Gas Reading	Depth Scale (mbgs)	Gas Reading (ppm) 20 60 100 140 180	REMARKS	WATER LEVEL
260.10	Ground Surface							
0.0	**210 mm TOPSOIL**				0			
	EARTH FILL brown to dark brown silty sand trace of organics	1	DO	0		0		
259.1								
1.0	Brown, compact to very dense	2	DO	0	1	0		
	SAND fine to medium grained some silt to silty trace of gravel	3	DO	0	2	0		
		4	DO	0		0		
257.0		5A		0	3	0		
3.1	Brown, very dense	5B	AS	0		0		
	SILT trace of clay seams of fine sand				4			Dry on April 10, 2018
255.7								
4.4	Brown, very dense	6	DO	0	5	0		
	SAND fine grained silty				6			
253.6		7	DO	0		0		
6.5	END OF BOREHOLE				7			
					8			
					9			
					10			

Soil Engineers Ltd.

JOB NO.: 1802-E072

LOG OF BOREHOLE NO.: 2

FIGURE NO.: 2

PROJECT DESCRIPTION: Proposed 3-Storey Mixed Use Building with 1-Level Underground Parking

METHOD OF BORING: Flight-Auger (Hollow-Stem)

PROJECT LOCATION: 224 Ardagh Road, City of Barrie

DRILLING DATE: April 10, 2018

El. (masl) / Depth (mbgs)	SOIL DESCRIPTION	SAMPLES Number	Type	Gas Reading	Depth Scale (mbgs)	Gas Reading (ppm) 20 60 100 140 180	REMARKS	WATER LEVEL
260.42	Ground Surface							
0.0	**80 mm ASPHALT** **530 mm GRANULAR FILL**	1	DO	0	0	0		
	EARTH FILL brown silty sand concrete rubble below 1.6 m	2	DO	0	1	0	BH2/2: Metals	
		3	DO	0	2	0		
		4	DO	0	3	0		
		5	DO	0	4	0		
		6A	DO	0	4	0		
		6B		0	4	0		
255.5		7	DO	0	5	0		
4.9	Brown, compact to dense **SILT** some clay seams of fine sand and silty clay occasional layers of silty clay below 7.0 m				6			
254.4								
6.0	END OF BOREHOLE Installed 51 mm standpipe to 6.0 m. Bentonite seal from 0 to 2.4 m. Sand backfill from 2.4 to 6.0 m. 3 m screen from 3.0 to 6.0 m. Provided with flushmount protective casing.				7 8 9 10			W.L. @ 4.40 mbgs on April 10, 2018

Soil Engineers Ltd.

JOB NO.: 1802-E072

LOG OF BOREHOLE NO.: 3

FIGURE NO.: 3

PROJECT DESCRIPTION: Proposed 3-Storey Mixed Use Building with 1-Level Underground Parking

METHOD OF BORING: Flight-Auger (Hollow-Stem)

PROJECT LOCATION: 224 Ardagh Road, City of Barrie

DRILLING DATE: March 28, 2018

El. (masl) / Depth (mbgs)	SOIL DESCRIPTION	SAMPLES Number	Type	Gas Reading	Depth Scale (mbgs)	● Gas Reading (ppm) 20 60 100 140 180	REMARKS	WATER LEVEL
261.24	Ground Surface							
0.0	**160 mm TOPSOIL**							
	Brown, loose to dense	1	DO	0				
	SAND fine to medium grained some silt to silty occasional layers os sandy silt fine grained below 1.6 m	2	DO	0				
		3A	DO	0				
		3B		0				
		4A	DO	0				
		4B		0				
		5A	DO	0				
		5B		0				
256.4		6A	DO	0				
4.8	Brown, stiff	6B		0				
	SILTY CLAY seams of fine sand and silt							
254.7		7	DO	0				
6.5	END OF BOREHOLE Installed 51 mm standpipe to 6.5 m. Bentonite seal from 0 to 2.9 m. Sand backfill from 2.9 to 6.5 m. 3 m screen from 3.5 to 6.5 m. Provided with monument protective casing.							

W.L @ 3.36 mbgs on April 10, 2018

Soil Engineers Ltd.

JOB NO.: 1802-E072

LOG OF BOREHOLE NO.: 4

FIGURE NO.: 4

PROJECT DESCRIPTION: Proposed 3-Storey Mixed Use Building with 1-Level Underground Parking

METHOD OF BORING: Flight-Auger (Hollow-Stem)

PROJECT LOCATION: 224 Ardagh Road, City of Barrie

DRILLING DATE: March 28, 2018

El. (masl) / Depth (mbgs)	SOIL DESCRIPTION	SAMPLES Number	Type	Gas Reading	Depth Scale (mbgs)	● Gas Reading (ppm) 20 60 100 140 180	REMARKS	WATER LEVEL
262.14	Ground Surface							
0.0	**210 mm TOPSOIL**				0			
	Brown, compact to dense	1	DO	0		0		
	SAND fine to medium grained occasional layers of sandy silt	2	DO	0	1	0		
		3	DO	0	2	0		
259.6		4A	DO	0		0		
2.5	Brown, compact to dense	4B		0		0		
	SILT trace of clay seams of fine sand	5A	DO	0	3	0		
		5B		0		0		
257.3		6A	DO	0	4	0		
4.8	Brown, dense to very dense	6B		0		0		
	SAND fine grained silty seams of silt				5			
256.0					6			
6.1	END OF BOREHOLE Installed 51 mm standpipe to 6.1 m. Bentonite seal from 0 to 2.5 m. Sand backfill from 2.5 to 6.1 m. 3 m screen from 3.1 to 6.1 m. Provided with monument protective casing.				7			Dry on April 10, 2018
					8			
					9			
					10			

Soil Engineers Ltd.

JOB NO.: 1802-E072

LOG OF BOREHOLE NO.: 5

FIGURE NO.: 5

PROJECT DESCRIPTION: Proposed 3-Storey Mixed Use Building with 1-Level Underground Parking

METHOD OF BORING: Flight-Auger (Hollow-Stem)

PROJECT LOCATION: 224 Ardagh Road, City of Barrie

DRILLING DATE: April 10, 2018

El. (masl) / Depth (mbgs)	SOIL DESCRIPTION	SAMPLES Number	Type	Gas Reading	Depth Scale (mbgs)	● Gas Reading (ppm) 20 60 100 140 180	REMARKS	WATER LEVEL
263.00	Ground Surface							
0.0	210 mm TOPSOIL							
262.4	**EARTH FILL**	1	DO	0	0	0	BH5/1: Metals	
0.6	dark brown sand and gravel	2	DO	0	1	0		
	some silt and rootlets							
	Brown, compact	3	DO	0	2	0		
	SAND							
	fine to medium grained	4	DO	0	3	0		
	some silt to silty							
	weathered to 2.0 m	5	DO	0	4	0		
258.7		6	DO	0				
4.3	Brown, compact	7	DO	0	5	0	BH5/7: PHC	
	SILT	8	DO	0	6	0		
	some clay							
	occasional sand seams	9	DO	0	7	0	BH5/9: VOC	
		10	DO	0	8	0		
		11	DO	0	9	0		
		12	DO	0	10	0		
		13	DO	0				
		14	DO	0	11	0		
		15	DO	15	12			
		16	DO	0	13	15		
		17	DO	40	14	0		
		18	DO	0	15	40		
246.2					16	0		
16.8	END OF BOREHOLE				17			
	Installed 51 mm standpipe to 16.8 m.				18			
	Bentonite seal from 0 to 13.2 m.							
	Sand backfill from 13.2 to 16.8 m.				19			
	3 m screen from 13.8 to 16.8 m.							
	Provided with monument protective casing.				20			

WL @ 16.02 mbgs on May 30, 2018

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JOB NO.: 1802-E072

LOG OF BOREHOLE NO.: 6

FIGURE NO.: 6

PROJECT DESCRIPTION: Proposed 3-Storey Mixed Use Building with 1-Level Underground Parking

METHOD OF BORING: Flight-Auger (Hollow-Stem)

PROJECT LOCATION: 224 Ardagh Road, City of Barrie

DRILLING DATE: April 10, 2018

El. (masl) / Depth (mbgs)	SOIL DESCRIPTION	SAMPLES: Number	SAMPLES: Type	SAMPLES: Gas Reading	Depth Scale (mbgs)	Gas Reading (ppm) 20 60 100 140 180	REMARKS	WATER LEVEL
261.52	Ground Surface							
0.0	**50 mm ASPHALT and GRAVEL**				0			
	Dry	1	DO	0			BH6/1 and DupS1: Metals	
	EARTH FILL brown sand				1			
					2			
					3			
					4			
256.5					5			
5.0	END OF BOREHOLE							
					6			
					7			
					8			
					9			
					10			

Soil Engineers Ltd.

JOB NO.: 1802-E072

LOG OF BOREHOLE NO.: 7

FIGURE NO.: 7

PROJECT DESCRIPTION: Proposed 3-Storey Mixed Use Building with 1-Level Underground Parking

METHOD OF BORING: Flight-Auger (Hollow-Stem)

PROJECT LOCATION: 224 Ardagh Road, City of Barrie

DRILLING DATE: April 10, 2018

El. (masl) / Depth (mbgs)	SOIL DESCRIPTION	SAMPLES: Number	SAMPLES: Type	SAMPLES: Gas Reading	Depth Scale (mbgs)	● Gas Reading (ppm) 20 60 100 140 180	REMARKS	WATER LEVEL
264.88 / 0.0	Ground Surface				0			
	SAND FILL	1	DO	0		● 0		
		2	DO	0	1	● 0	BH7/2: Metals and Inorganics	
263.4 / 1.5	END OF BOREHOLE				2			
					3			
					4			
					5			
					6			
					7			
					8			
					9			
					10			

Soil Engineers Ltd.

JOB NO.: 1802-E072

LOG OF BOREHOLE NO.: 8

FIGURE NO.: 8

PROJECT DESCRIPTION: Proposed 3-Storey Mixed Use Building with 1-Level Underground Parking

METHOD OF BORING: Flight-Auger (Hollow-Stem)

PROJECT LOCATION: 224 Ardagh Road, City of Barrie

DRILLING DATE: April 10, 2018

El. (masl) / Depth (mbgs)	SOIL DESCRIPTION	SAMPLES: Number	SAMPLES: Type	SAMPLES: Gas Reading	Depth Scale (mbgs)	● Gas Reading (ppm) 20 60 100 140 180	REMARKS	WATER LEVEL
264.71	Ground Surface							
0.0	**SAND FILL**	1	DO	0	0	● 0		
		2	DO	0	1	● 0	BH8/2: Metals	
263.2					2			
1.5	END OF BOREHOLE				3			
					4			
					5			
					6			
					7			
					8			
					9			
					10			

Soil Engineers Ltd.

JOB NO.: 1802-E072

LOG OF BOREHOLE NO.: 9

FIGURE NO.: 9

PROJECT DESCRIPTION: Proposed 3-Storey Mixed Use Building with 1-Level Underground Parking

METHOD OF BORING: Flight-Auger (Hollow-Stem)

PROJECT LOCATION: 224 Ardagh Road, City of Barrie

DRILLING DATE: April 10, 2018

El. (masl) / Depth (mbgs)	SOIL DESCRIPTION	SAMPLES Number	SAMPLES Type	SAMPLES Gas Reading	Depth Scale (mbgs)	● Gas Reading (ppm) 20 60 100 140 180	REMARKS	WATER LEVEL
264.69	Ground Surface							
0.0	**SAND FILL**	1	DO	0	0	● 0		
		2	DO	0	1	● 0	BH9/2: Metals	
263.2								
1.5	END OF BOREHOLE				2			
					3			
					4			
					5			
					6			
					7			
					8			
					9			
					10			

Soil Engineers Ltd.

JOB NO.: 1802-E072

LOG OF BOREHOLE NO.: 10

FIGURE NO.: 10

PROJECT DESCRIPTION: Proposed 3-Storey Mixed Use Building with 1-Level Underground Parking

METHOD OF BORING: Flight-Auger (Hollow-Stem)

PROJECT LOCATION: 224 Ardagh Road, City of Barrie

DRILLING DATE: April 10, 2018

El. (masl) / Depth (mbgs)	SOIL DESCRIPTION	SAMPLES Number	SAMPLES Type	SAMPLES Gas Reading	Depth Scale (mbgs)	Gas Reading (ppm) 20 60 100 140 180	REMARKS	WATER LEVEL
264.51	Ground Surface							
0.0	**SAND FILL**	1	DO	0	0	0		
		2	DO	0	1	0	BH10/2: Metals	
263.0 1.5	END OF BOREHOLE				2 3 4 5 6 7 8 9 10			

Soil Engineers Ltd.

JOB NO.: 1802-E072

LOG OF BOREHOLE NO.: 11

FIGURE NO.: 11

PROJECT DESCRIPTION: Proposed 3-Storey Mixed Use Building with 1-Level Underground Parking

METHOD OF BORING: Flight-Auger (Hollow-Stem)

PROJECT LOCATION: 224 Ardagh Road, City of Barrie

DRILLING DATE: April 10, 2018

El. (masl) / Depth (mbgs)	SOIL DESCRIPTION	SAMPLES: Number	SAMPLES: Type	SAMPLES: Gas Reading	Depth Scale (mbgs)	Gas Reading (ppm) 20 60 100 140 180	REMARKS	WATER LEVEL
263.59	Ground Surface							
0.0	**SAND FILL**	1	DO	0	0	0		
		2	DO	0	1	0	BH11/2: Metals	
262.1 1.5	END OF BOREHOLE				2 3 4 5 6 7 8 9 10			

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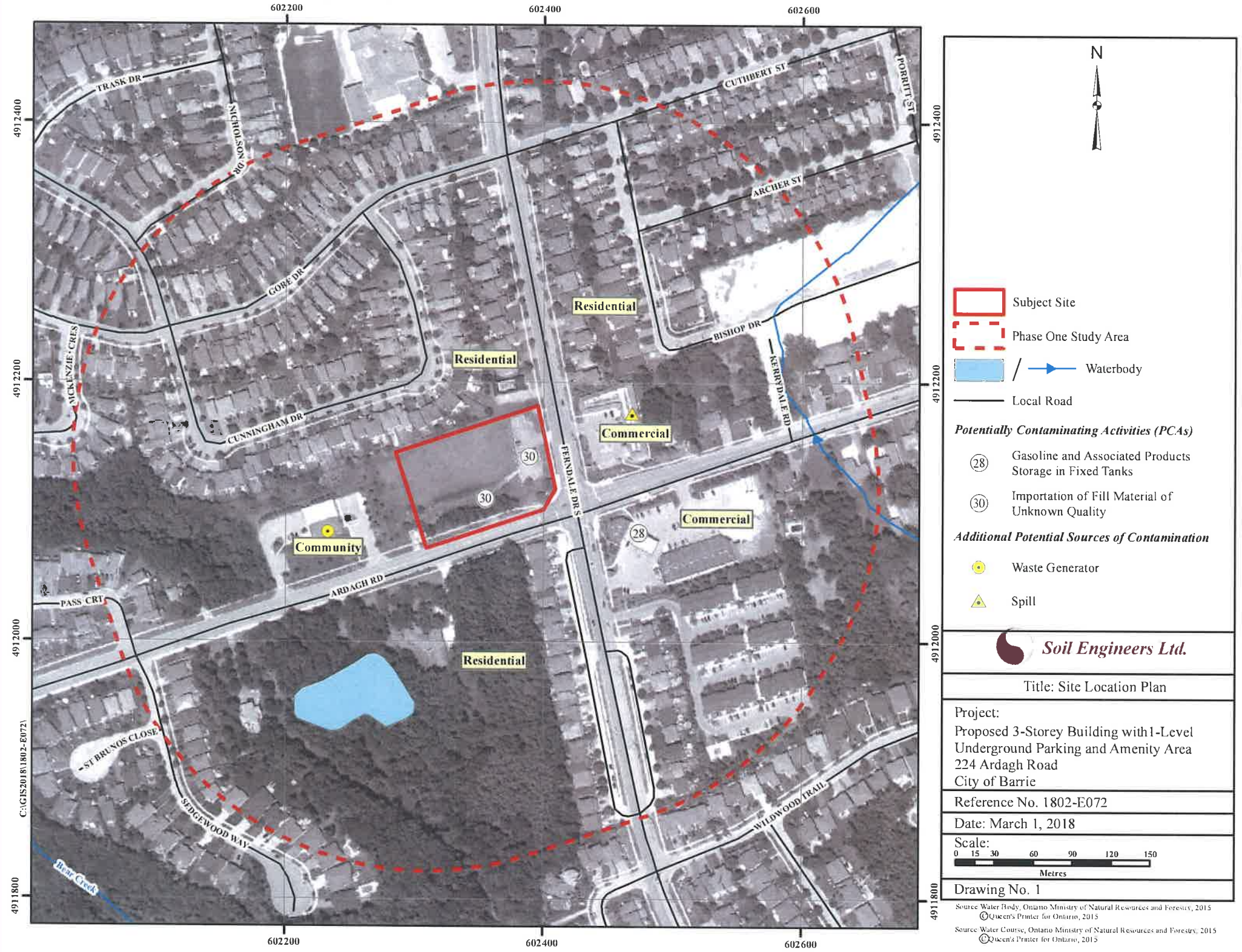
DRAWINGS

REFERENCE NO. 1802-E072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4912200
4912000
4911800
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NICHOLSON DR
CUTHBERT ST
PORRITT ST
ARCHER ST
GORE DR
MCKENZIE CRES
CUNNINGHAM DR
BISHOP DR
KERRYDALE RD
FERNDALE DR S
ARDAGH RD
PASS CRT
ST BRUNOS CLOSE
SEDGEWOOD WAY
WILDWOOD TRAIL
Bear Creek
Residential
Residential
Residential
Commercial
Commercial
Community
30
30
28
N
Subject Site
Phase One Study Area
Waterbody
Local Road
Potentially Contaminating Activities (PCAs)
28 Gasoline and Associated Products Storage in Fixed Tanks
30 Importation of Fill Material of Unknown Quality
Additional Potential Sources of Contamination
Waste Generator
Spill
Soil Engineers Ltd.
Title: Site Location Plan
Project:
Proposed 3-Storey Building with1-Level Underground Parking and Amenity Area
224 Ardagh Road
City of Barrie
Reference No. 1802-E072
Date: March 1, 2018
Scale:
0 15 30 60 90 120 150
Metres
Drawing No. 1
Source Water Body, Ontario Ministry of Natural Resources and Forestry, 2015
©Queen's Printer for Ontario, 2015
Source Water Course, Ontario Ministry of Natural Resources and Forestry, 2015
©Queen's Printer for Ontario, 2015
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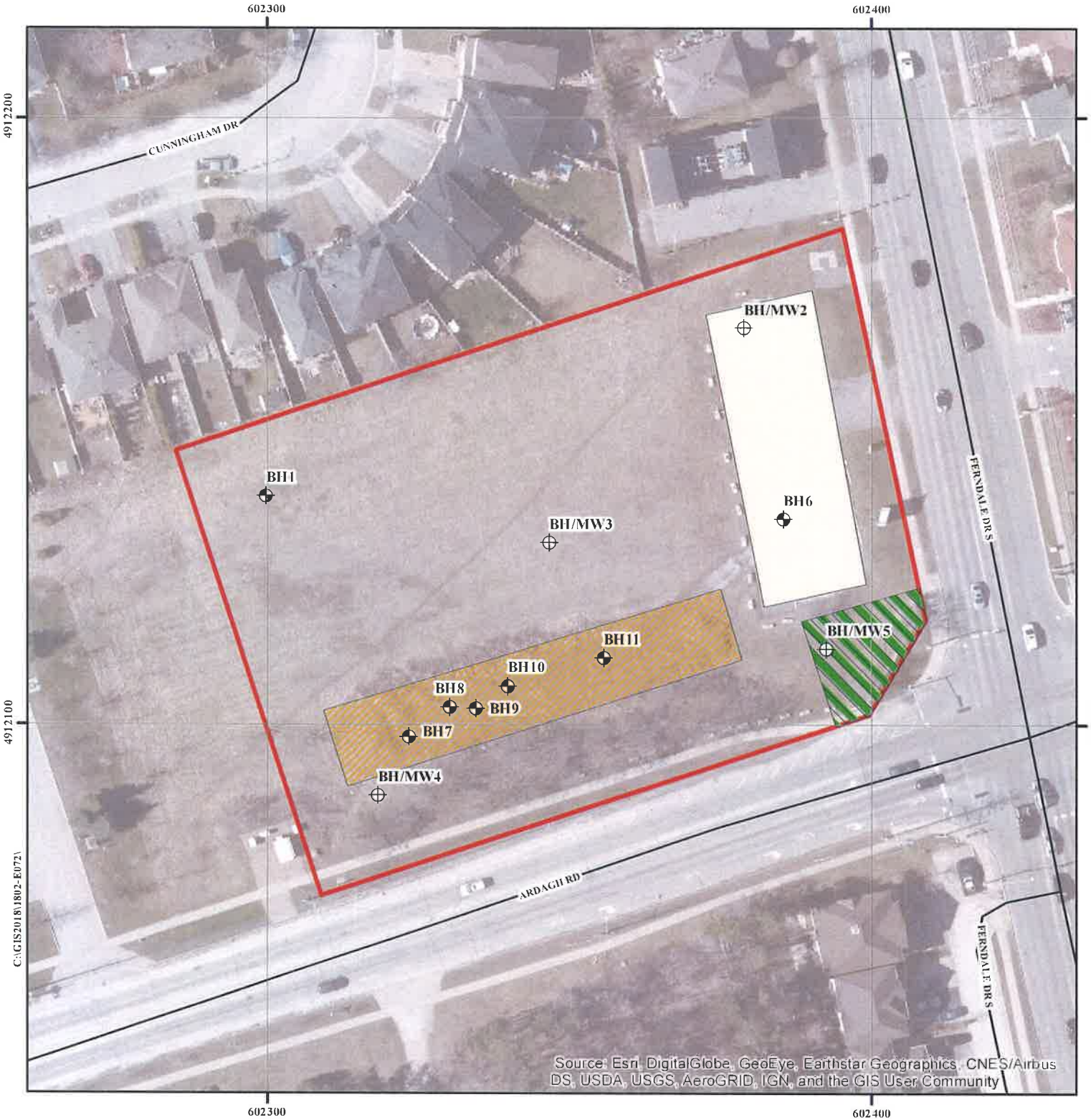

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N

Subject Site

Borehole

Borehole with Monitoring Well

Local Road

Areas of Potential Environmental Concern (APEC)

APEC 1

APEC 2

APEC 3

Soil Engineers Ltd.

Title: Borehole and Monitoring Well Location Plan

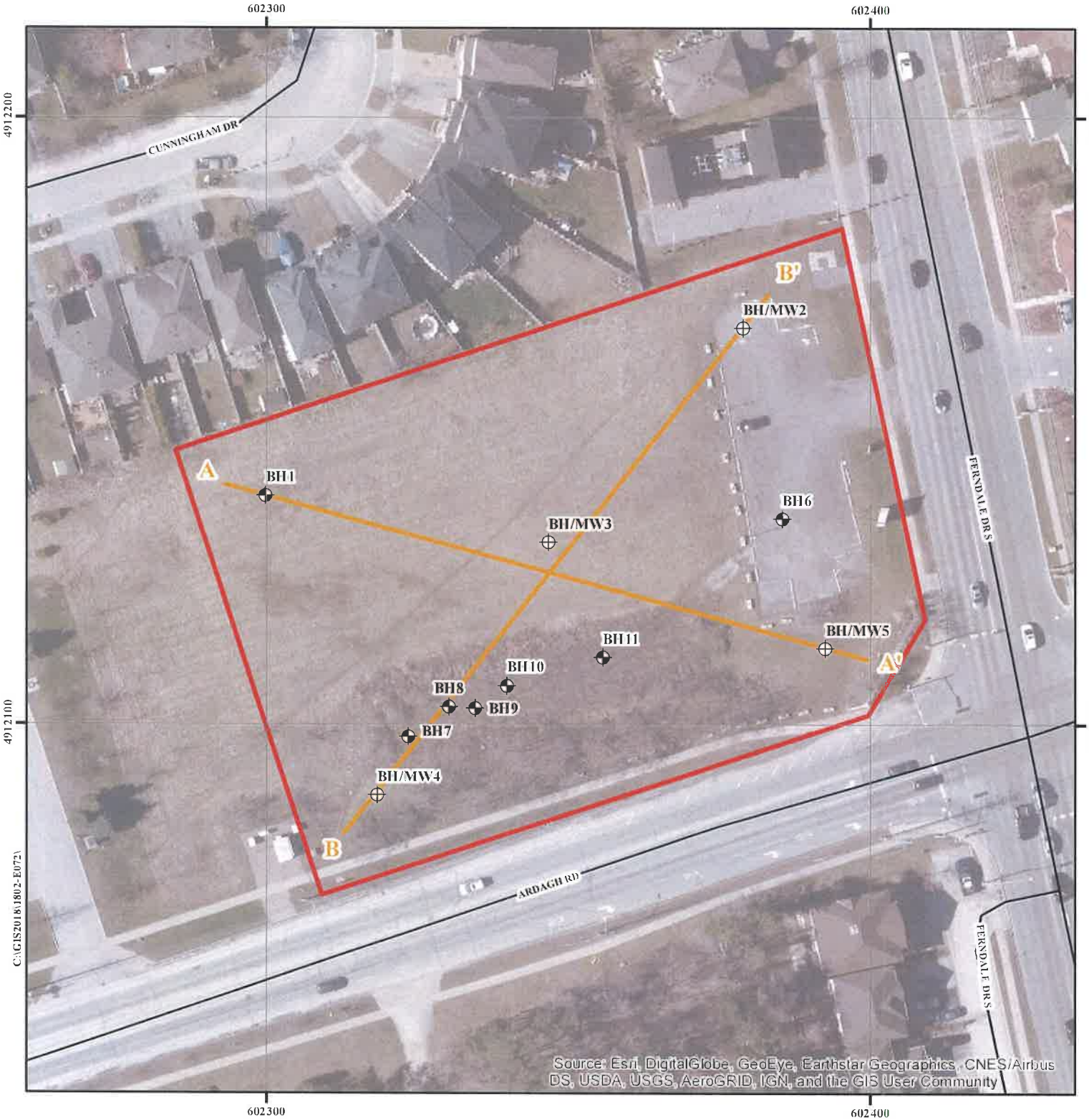
Project:
Proposed 3-Storey Building with 1-Level Underground Parking and Amenity Area
224 Ardagh Road
City of Barrie

Reference No. 1802-E072

Date: March 1, 2018

Scale:
0 4.75 9.5 19 28.5 38 47.5
Metres

Drawing No. 2



N

Subject Site

Borehole

Borehole with Monitoring Well

Cross-Section Direction

Local Road

Soil Engineers Ltd.

Title: Cross-Section Key Plan

Project:

Proposed 3-Storey Building with 1-Level Underground Parking and Amenity Area
224 Ardagh Road
City of Barrie

Reference No. 1802-E072

Date: March 1, 2018

Scale:
0 4.75 9.5 19 28.5 38 47.5
Metres

Drawing No. 3

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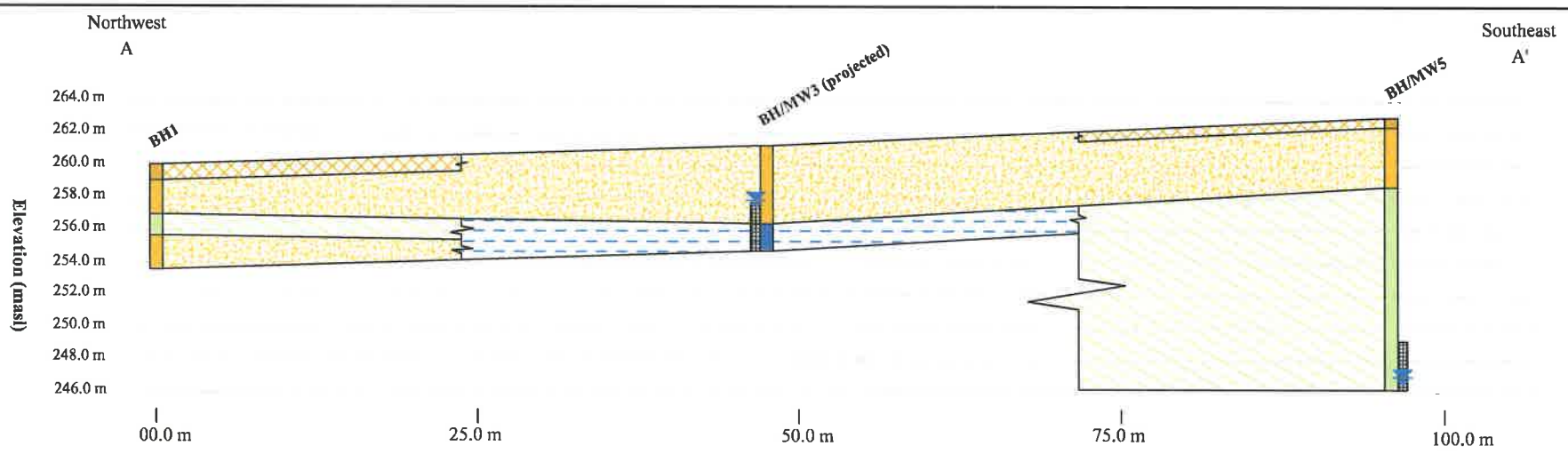
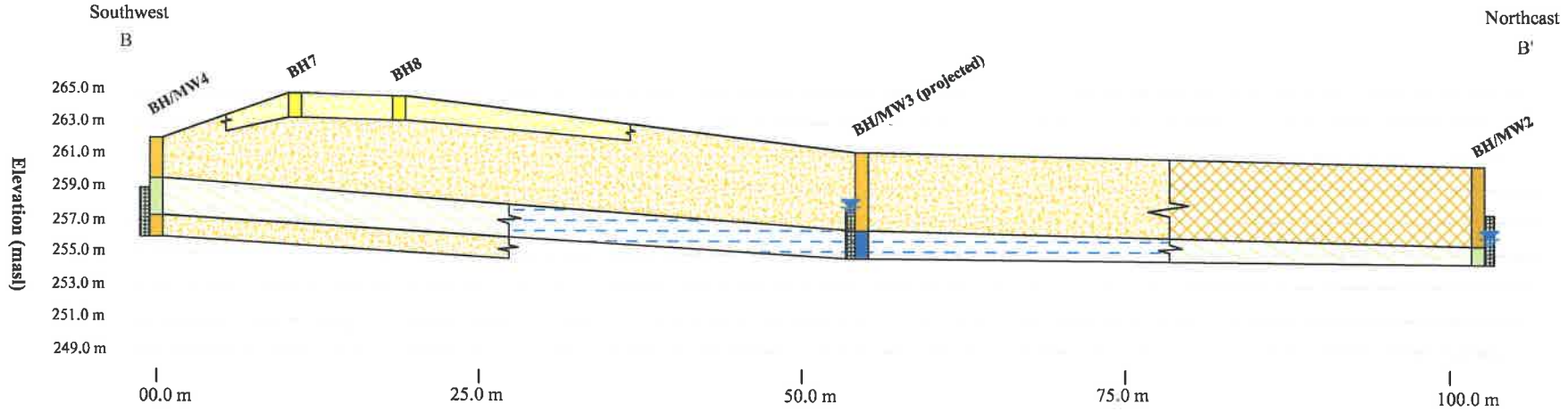


SECTION A-A'



SECTION B-B'

C: Projects/2018Jobs/1802-E072

Earth Fill
Sand Fill
Sand
Silt
Silty Clay
Water Table
3.0 m Screen

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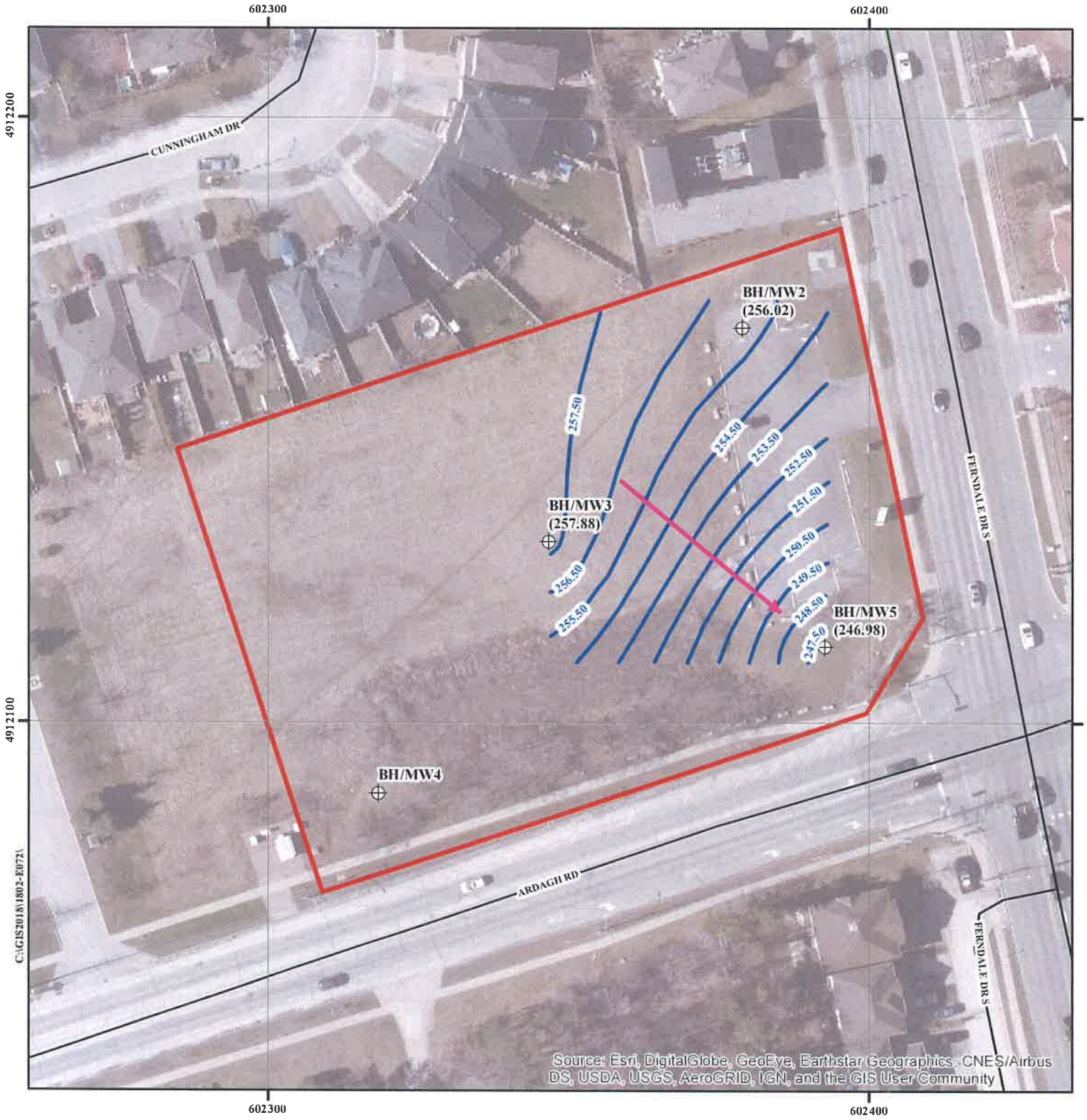
Title: Geological Cross-Sections A-A' and B-B'

Project: Proposed 3-Storey Building with
1-Level Underground Parking and Amenity Area
224 Ardagh Road, City of Barrie

Reference No:	Date:	Scale: V	Scale: H	Drawing No
1802-E072	April 10, 2018	1:400	1:500	4



N

Subject Site

Borehole with Monitoring Well

Interpreted Shallow Groundwater Flow Direction

Groundwater Elevation Contour

Local Road

Soil Engineers Ltd.

Title: Shallow Groundwater Contour Map

Project:
Proposed 3-Storey Building with 1-Level Underground Parking and Amenity Area
224 Ardagh Road
City of Barrie

Reference No. 1802-E072

Date: March 1, 2018

Scale:
0 4.75 9.5 19 28.5 38 47.5
Metres

Drawing No. 5

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APPENDIX 'C'

CERTIFICATE OF ANALYSIS (SOIL SAMPLES)

REFERENCE NO. 1802-E072

Maxxam
A Bureau Veritas Group Company

Your Project #: 1802-E072
Your C.O.C. #: 655968-01-01

Attention: Laila Torabansari

Soil Engineers Ltd
90 West Beaver Creek Road
Unit 100
Richmond Hill, ON
CANADA L4B 1E7

Report Date: 2018/04/18
Report #: R5082870
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B881603
Received: 2018/04/11, 14:50

Sample Matrix: Soil
Samples Received: 11

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Hot Water Extractable Boron	9	2018/04/13	2018/04/13	CAM SOP-00408	R153 Ana. Prot. 2011
1,3-Dichloropropene Sum	1	N/A	2018/04/16		EPA 8260C m
Free (WAD) Cyanide	8	2018/04/16	2018/04/17	CAM SOP-00457	OMOE E3015 m
Conductivity	5	2018/04/16	2018/04/17	CAM SOP-00414	OMOE E3530 v1 m
Hexavalent Chromium in Soil by IC (1)	9	2018/04/13	2018/04/16	CAM SOP-00436	EPA 3060/7199 m
Petroleum Hydro. CCME F1 & BTEX in Soil (2)	1	N/A	2018/04/16	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Soil (3)	1	2018/04/12	2018/04/13	CAM SOP-00316	CCME CWS m
Strong Acid Leachable Metals by ICPMS	9	2018/04/13	2018/04/13	CAM SOP-00447	EPA 6020B m
Moisture	11	N/A	2018/04/13	CAM SOP-00445	Carter 2nd ed 51.2 m
pH CaCl2 EXTRACT	6	2018/04/16	2018/04/16	CAM SOP-00413	EPA 9045 D m
Sodium Adsorption Ratio (SAR)	5	N/A	2018/04/18	CAM SOP-00102	EPA 6010C
Volatile Organic Compounds in Soil	1	N/A	2018/04/12	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.

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.

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

Maxxam
A Bureau Veritas Group Company

Your Project #: 1802-E072
Your C.O.C. #: 655968-01-01

Attention: Laila Torabansari

Soil Engineers Ltd
90 West Beaver Creek Road
Unit 100
Richmond Hill, ON
CANADA L4B 1E7

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

(1) Soils are reported on a dry weight basis unless otherwise specified.
(2) 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.
(3) 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

Maxxam
18 Apr 2018 15:34:23

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Antonella Brasil, Senior Project Manager
Email: ABrasil@maxxam.ca
Phone# (905)817-5817

This report has been generated and distributed using a secure automated process.
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.

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Maxxam Job #: B881603
Report Date: 2018/04/18

Soil Engineers Ltd
Client Project #: 1802-E072
Sampler Initials: LT

O.REG 153 METALS & INORGANICS PKG (SOIL)

Maxxam ID		GLA661		GLA662		GLA663		
Sampling Date		2018/04/10 05:20		2018/04/10 05:15		2018/04/10 05:30		
COC Number		655968-01-01		655968-01-01		655968-01-01		
	UNITS	BH7/2	QC Batch	BH8/2	QC Batch	BH9/2	RDL	QC Batch
Calculated Parameters								
Sodium Adsorption Ratio	N/A	0.23	5480954	0.24	5480954	0.24		5480954
Inorganics								
Conductivity	mS/cm	0.17	5485805	0.15	5485805	0.15	0.002	5485805
Moisture	%	12	5483501	13	5483501	17	1.0	5483501
Available (CaCl2) pH	pH	7.56	5483782	7.41	5483782	7.40		5483782
WAD Cyanide (Free)	ug/g	<0.01	5485890	0.02	5485890	0.02	0.01	5485890
Chromium (VI)	ug/g	<0.2	5482963	<0.2	5482963	<0.2	0.2	5482963
Metals								
Hot Water Ext. Boron (B)	ug/g	0.25	5483623	0.30	5483623	0.26	0.050	5483623
Acid Extractable Antimony (Sb)	ug/g	<0.20	5483556	<0.20	5483503	<0.20	0.20	5483556
Acid Extractable Arsenic (As)	ug/g	1.5	5483556	2.2	5483503	1.3	1.0	5483556
Acid Extractable Barium (Ba)	ug/g	52	5483556	34	5483503	26	0.50	5483556
Acid Extractable Beryllium (Be)	ug/g	0.22	5483556	0.21	5483503	<0.20	0.20	5483556
Acid Extractable Boron (B)	ug/g	<5.0	5483556	<5.0	5483503	<5.0	5.0	5483556
Acid Extractable Cadmium (Cd)	ug/g	0.13	5483556	0.15	5483503	0.11	0.10	5483556
Acid Extractable Chromium (Cr)	ug/g	13	5483556	11	5483503	9.1	1.0	5483556
Acid Extractable Cobalt (Co)	ug/g	3.1	5483556	2.4	5483503	2.0	0.10	5483556
Acid Extractable Copper (Cu)	ug/g	19	5483556	6.3	5483503	4.4	0.50	5483556
Acid Extractable Lead (Pb)	ug/g	33	5483556	15	5483503	7.8	1.0	5483556
Acid Extractable Molybdenum (Mo)	ug/g	<0.50	5483556	<0.50	5483503	<0.50	0.50	5483556
Acid Extractable Nickel (Ni)	ug/g	6.1	5483556	4.5	5483503	3.9	0.50	5483556
Acid Extractable Selenium (Se)	ug/g	<0.50	5483556	<0.50	5483503	<0.50	0.50	5483556
Acid Extractable Silver (Ag)	ug/g	<0.20	5483556	<0.20	5483503	<0.20	0.20	5483556
Acid Extractable Thallium (Tl)	ug/g	0.065	5483556	<0.050	5483503	<0.050	0.050	5483556
Acid Extractable Uranium (U)	ug/g	0.28	5483556	0.30	5483503	0.22	0.050	5483556
Acid Extractable Vanadium (V)	ug/g	20	5483556	21	5483503	20	5.0	5483556
Acid Extractable Zinc (Zn)	ug/g	56	5483556	34	5483503	23	5.0	5483556
Acid Extractable Mercury (Hg)	ug/g	0.083	5483556	0.10	5483503	0.064	0.050	5483556

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B881603
Report Date: 2018/04/18

Soil Engineers Ltd
Client Project #: 1802-E072
Sampler Initials: LT

O.REG 153 METALS & INORGANICS PKG (SOIL)

Maxxam ID		GLA664		GLA665		
Sampling Date		2018/04/10 06:00		2018/04/10 06:20		
COC Number		655968-01-01		655968-01-01		
	UNITS	BH10/2	QC Batch	BH11/2	RDL	QC Batch
Calculated Parameters						
Sodium Adsorption Ratio	N/A	0.23	5480954	0.24		5480954
Inorganics						
Conductivity	mS/cm	0.18	5485805	0.14	0.002	5485805
Moisture	%	13	5483501	13	1.0	5483501
Available (CaCl2) pH	pH	7.30	5483782	7.35		5483782
WAD Cyanide (Free)	ug/g	0.02	5485890	0.02	0.01	5485890
Chromium (VI)	ug/g	<0.2	5482963	<0.2	0.2	5482963
Metals						
Hot Water Ext. Boron (B)	ug/g	0.29	5483521	0.28	0.050	5483521
Acid Extractable Antimony (Sb)	ug/g	<0.20	5483503	<0.20	0.20	5483556
Acid Extractable Arsenic (As)	ug/g	1.4	5483503	1.6	1.0	5483556
Acid Extractable Barium (Ba)	ug/g	28	5483503	27	0.50	5483556
Acid Extractable Beryllium (Be)	ug/g	<0.20	5483503	<0.20	0.20	5483556
Acid Extractable Boron (B)	ug/g	<5.0	5483503	<5.0	5.0	5483556
Acid Extractable Cadmium (Cd)	ug/g	<0.10	5483503	0.14	0.10	5483556
Acid Extractable Chromium (Cr)	ug/g	13	5483503	10	1.0	5483556
Acid Extractable Cobalt (Co)	ug/g	2.2	5483503	2.3	0.10	5483556
Acid Extractable Copper (Cu)	ug/g	4.7	5483503	4.8	0.50	5483556
Acid Extractable Lead (Pb)	ug/g	16	5483503	7.2	1.0	5483556
Acid Extractable Molybdenum (Mo)	ug/g	<0.50	5483503	<0.50	0.50	5483556
Acid Extractable Nickel (Ni)	ug/g	4.5	5483503	4.3	0.50	5483556
Acid Extractable Selenium (Se)	ug/g	<0.50	5483503	<0.50	0.50	5483556
Acid Extractable Silver (Ag)	ug/g	<0.20	5483503	<0.20	0.20	5483556
Acid Extractable Thallium (Tl)	ug/g	<0.050	5483503	<0.050	0.050	5483556
Acid Extractable Uranium (U)	ug/g	0.27	5483503	0.27	0.050	5483556
Acid Extractable Vanadium (V)	ug/g	21	5483503	21	5.0	5483556
Acid Extractable Zinc (Zn)	ug/g	22	5483503	24	5.0	5483556
Acid Extractable Mercury (Hg)	ug/g	<0.050	5483503	0.053	0.050	5483556

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B881603
Report Date: 2018/04/18

Soil Engineers Ltd
Client Project #: 1802-E072
Sampler Initials: LT

O.REG 153 METALS PACKAGE (SOIL)

Maxxam ID		GLA656	GLA659			GLA659		
Sampling Date		2018/04/10 12:00	2018/04/10 11:30			2018/04/10 11:30		
COC Number		655968-01-01	655968-01-01			655968-01-01		
	UNITS	BH5/1	BH2/2	RDL	QC Batch	BH2/2 Lab-Dup	RDL	QC Batch
Inorganics								
Moisture	%	10	7.6	1.0	5483501	8.4	1.0	5483501
Chromium (VI)	ug/g	<0.2	<0.2	0.2	5482963			
Metals								
Hot Water Ext. Boron (B)	ug/g	0.10	<0.050	0.050	5483623	<0.050	0.050	5483623
Acid Extractable Antimony (Sb)	ug/g	<0.20	<0.20	0.20	5483556			
Acid Extractable Arsenic (As)	ug/g	<1.0	<1.0	1.0	5483556			
Acid Extractable Barium (Ba)	ug/g	23	8.0	0.50	5483556			
Acid Extractable Beryllium (Be)	ug/g	<0.20	<0.20	0.20	5483556			
Acid Extractable Boron (B)	ug/g	<5.0	<5.0	5.0	5483556			
Acid Extractable Cadmium (Cd)	ug/g	<0.10	<0.10	0.10	5483556			
Acid Extractable Chromium (Cr)	ug/g	8.2	6.7	1.0	5483556			
Acid Extractable Cobalt (Co)	ug/g	2.2	1.5	0.10	5483556			
Acid Extractable Copper (Cu)	ug/g	3.3	1.9	0.50	5483556			
Acid Extractable Lead (Pb)	ug/g	4.6	1.2	1.0	5483556			
Acid Extractable Molybdenum (Mo)	ug/g	<0.50	<0.50	0.50	5483556			
Acid Extractable Nickel (Ni)	ug/g	4.0	2.7	0.50	5483556			
Acid Extractable Selenium (Se)	ug/g	<0.50	<0.50	0.50	5483556			
Acid Extractable Silver (Ag)	ug/g	<0.20	<0.20	0.20	5483556			
Acid Extractable Thallium (Tl)	ug/g	<0.050	<0.050	0.050	5483556			
Acid Extractable Uranium (U)	ug/g	0.21	0.25	0.050	5483556			
Acid Extractable Vanadium (V)	ug/g	19	19	5.0	5483556			
Acid Extractable Zinc (Zn)	ug/g	17	6.3	5.0	5483556			
Acid Extractable Mercury (Hg)	ug/g	<0.050	<0.050	0.050	5483556			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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Maxxam Job #: B881603
Report Date: 2018/04/18

Soil Engineers Ltd
Client Project #: 1802-E072
Sampler Initials: LT

O.REG 153 METALS PACKAGE (SOIL)

Maxxam ID		GLA660		GLA666		
Sampling Date		2018/04/10 12:30		2018/04/10 06:00		
COC Number		655968-01-01		655968-01-01		
	UNITS	BH6/1	QC Batch	DUPS1	RDL	QC Batch
Inorganics						
Moisture	%	6.6	5483501	7.2	1.0	5483501
Chromium (VI)	ug/g	<0.2	5482963	<0.2	0.2	5482963
Metals						
Hot Water Ext. Boron (B)	ug/g	<0.050	5483059	<0.050	0.050	5483623
Acid Extractable Antimony (Sb)	ug/g	<0.20	5483580	<0.20	0.20	5483556
Acid Extractable Arsenic (As)	ug/g	<1.0	5483580	<1.0	1.0	5483556
Acid Extractable Barium (Ba)	ug/g	6.5	5483580	5.4	0.50	5483556
Acid Extractable Beryllium (Be)	ug/g	<0.20	5483580	<0.20	0.20	5483556
Acid Extractable Boron (B)	ug/g	<5.0	5483580	<5.0	5.0	5483556
Acid Extractable Cadmium (Cd)	ug/g	<0.10	5483580	<0.10	0.10	5483556
Acid Extractable Chromium (Cr)	ug/g	4.1	5483580	7.6	1.0	5483556
Acid Extractable Cobalt (Co)	ug/g	1.1	5483580	1.6	0.10	5483556
Acid Extractable Copper (Cu)	ug/g	1.8	5483580	2.1	0.50	5483556
Acid Extractable Lead (Pb)	ug/g	1.0	5483580	1.1	1.0	5483556
Acid Extractable Molybdenum (Mo)	ug/g	<0.50	5483580	<0.50	0.50	5483556
Acid Extractable Nickel (Ni)	ug/g	2.4	5483580	2.6	0.50	5483556
Acid Extractable Selenium (Se)	ug/g	<0.50	5483580	<0.50	0.50	5483556
Acid Extractable Silver (Ag)	ug/g	<0.20	5483580	<0.20	0.20	5483556
Acid Extractable Thallium (Tl)	ug/g	<0.050	5483580	<0.050	0.050	5483556
Acid Extractable Uranium (U)	ug/g	0.18	5483580	0.27	0.050	5483556
Acid Extractable Vanadium (V)	ug/g	10	5483580	27	5.0	5483556
Acid Extractable Zinc (Zn)	ug/g	5.2	5483580	7.1	5.0	5483556
Acid Extractable Mercury (Hg)	ug/g	<0.050	5483580	<0.050	0.050	5483556

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B881603
Report Date: 2018/04/18

Soil Engineers Ltd
Client Project #: 1802-E072
Sampler Initials: LT

O.REG 153 PETROLEUM HYDROCARBONS (SOIL)

Maxxam ID		GLA658		
Sampling Date		2018/04/10 03:00		
COC Number		655968-01-01		
	UNITS	BH5/7	RDL	QC Batch
Inorganics				
Moisture	%	10	1.0	5483985
BTEX & F1 Hydrocarbons				
Benzene	ug/g	<0.020	0.020	5485006
Toluene	ug/g	<0.020	0.020	5485006
Ethylbenzene	ug/g	<0.020	0.020	5485006
o-Xylene	ug/g	<0.020	0.020	5485006
p+m-Xylene	ug/g	<0.040	0.040	5485006
Total Xylenes	ug/g	<0.040	0.040	5485006
F1 (C6-C10)	ug/g	<10	10	5485006
F1 (C6-C10) - BTEX	ug/g	<10	10	5485006
F2-F4 Hydrocarbons				
F2 (C10-C16 Hydrocarbons)	ug/g	<10	10	5482615
F3 (C16-C34 Hydrocarbons)	ug/g	<50	50	5482615
F4 (C34-C50 Hydrocarbons)	ug/g	<50	50	5482615
Reached Baseline at C50	ug/g	Yes		5482615
Surrogate Recovery (%)				
1,4-Difluorobenzene	%	107		5485006
4-Bromofluorobenzene	%	101		5485006
D10-Ethylbenzene	%	102		5485006
D4-1,2-Dichloroethane	%	94		5485006
o-Terphenyl	%	102		5482615

RDL = Reportable Detection Limit
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Maxxam Job #: B881603
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Soil Engineers Ltd
Client Project #: 1802-E072
Sampler Initials: LT

O.REG 153 VOCS BY HS (SOIL)

Maxxam ID		GLA657		
Sampling Date		2018/04/10 03:30		
COC Number		655968-01-01		
	UNITS	BH5/9	RDL	QC Batch
Inorganics				
Moisture	%	20	1.0	5483501
Calculated Parameters				
1,3-Dichloropropene (cis+trans)	ug/g	<0.050	0.050	5480952
Volatile Organics				
Acetone (2-Propanone)	ug/g	<0.50	0.50	5481002
Benzene	ug/g	<0.020	0.020	5481002
Bromodichloromethane	ug/g	<0.050	0.050	5481002
Bromoform	ug/g	<0.050	0.050	5481002
Bromomethane	ug/g	<0.050	0.050	5481002
Carbon Tetrachloride	ug/g	<0.050	0.050	5481002
Chlorobenzene	ug/g	<0.050	0.050	5481002
Chloroform	ug/g	<0.050	0.050	5481002
Dibromochloromethane	ug/g	<0.050	0.050	5481002
1,2-Dichlorobenzene	ug/g	<0.050	0.050	5481002
1,3-Dichlorobenzene	ug/g	<0.050	0.050	5481002
1,4-Dichlorobenzene	ug/g	<0.050	0.050	5481002
Dichlorodifluoromethane (FREON 12)	ug/g	<0.050	0.050	5481002
1,1-Dichloroethane	ug/g	<0.050	0.050	5481002
1,2-Dichloroethane	ug/g	<0.050	0.050	5481002
1,1-Dichloroethylene	ug/g	<0.050	0.050	5481002
cis-1,2-Dichloroethylene	ug/g	<0.050	0.050	5481002
trans-1,2-Dichloroethylene	ug/g	<0.050	0.050	5481002
1,2-Dichloropropane	ug/g	<0.050	0.050	5481002
cis-1,3-Dichloropropene	ug/g	<0.030	0.030	5481002
trans-1,3-Dichloropropene	ug/g	<0.040	0.040	5481002
Ethylbenzene	ug/g	<0.020	0.020	5481002
Ethylene Dibromide	ug/g	<0.050	0.050	5481002
Hexane	ug/g	<0.050	0.050	5481002
Methylene Chloride(Dichloromethane)	ug/g	<0.050	0.050	5481002
Methyl Ethyl Ketone (2-Butanone)	ug/g	<0.50	0.50	5481002
Methyl Isobutyl Ketone	ug/g	<0.50	0.50	5481002
Methyl t-butyl ether (MTBE)	ug/g	<0.050	0.050	5481002
Styrene	ug/g	<0.050	0.050	5481002
1,1,1,2-Tetrachloroethane	ug/g	<0.050	0.050	5481002
1,1,2,2-Tetrachloroethane	ug/g	<0.050	0.050	5481002

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B881603
Report Date: 2018/04/18

Soil Engineers Ltd
Client Project #: 1802-E072
Sampler Initials: LT

O.REG 153 VOCS BY HS (SOIL)

Maxxam ID		GLA657		
Sampling Date		2018/04/10 03:30		
COC Number		655968-01-01		
	UNITS	BH5/9	RDL	QC Batch
Tetrachloroethylene	ug/g	<0.050	0.050	5481002
Toluene	ug/g	<0.020	0.020	5481002
1,1,1-Trichloroethane	ug/g	<0.050	0.050	5481002
1,1,2-Trichloroethane	ug/g	<0.050	0.050	5481002
Trichloroethylene	ug/g	<0.050	0.050	5481002
Trichlorofluoromethane (FREON 11)	ug/g	<0.050	0.050	5481002
Vinyl Chloride	ug/g	<0.020	0.020	5481002
p+m-Xylene	ug/g	<0.020	0.020	5481002
o-Xylene	ug/g	<0.020	0.020	5481002
Total Xylenes	ug/g	<0.020	0.020	5481002
Surrogate Recovery (%)				
4-Bromofluorobenzene	%	103		5481002
D10-o-Xylene	%	107		5481002
D4-1,2-Dichloroethane	%	103		5481002
D8-Toluene	%	97		5481002

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B881603
Report Date: 2018/04/18

Soil Engineers Ltd
Client Project #: 1802-E072
Sampler Initials: LT

RESULTS OF ANALYSES OF SOIL

Maxxam ID		GLA656			GLA657		GLA659	GLA660		
Sampling Date		2018/04/10 12:00			2018/04/10 03:30		2018/04/10 11:30	2018/04/10 12:30		
COC Number		655968-01-01			655968-01-01		655968-01-01	655968-01-01		
	UNITS	**BH5/1**	**RDL**	**QC Batch**	**BH5/9**	**QC Batch**	**BH2/2**	**BH6/1**	**RDL**	**QC Batch**
Inorganics										
Available (CaCl2) pH	pH				7.78	5483782				
WAD Cyanide (Free)	ug/g	<0.01	0.01	5485890			<0.01	<0.01	0.01	5485890

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B881603
Report Date: 2018/04/18

Soil Engineers Ltd
Client Project #: 1802-E072
Sampler Initials: LT

TEST SUMMARY

Maxxam ID: GLA656
Sample ID: BH5/1
Matrix: Soil

Collected: 2018/04/10
Shipped:
Received: 2018/04/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hot Water Extractable Boron	ICP	5483623	2018/04/13	2018/04/13	Suban Kanapathippllai
Free (WAD) Cyanide	TECH	5485890	2018/04/16	2018/04/17	Xuanhong Qiu
Hexavalent Chromium in Soil by IC	IC/SPEC	5482963	2018/04/13	2018/04/16	Rupinder Sihota
Strong Acid Leachable Metals by ICPMS	ICP/MS	5483556	2018/04/13	2018/04/13	Daniel Teclu
Moisture	BAL	5483501	N/A	2018/04/13	Gurpreet Kaur

Maxxam ID: GLA657
Sample ID: BH5/9
Matrix: Soil

Collected: 2018/04/10
Shipped:
Received: 2018/04/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	5480952	N/A	2018/04/16	Automated Statchk
Moisture	BAL	5483501	N/A	2018/04/13	Gurpreet Kaur
pH CaCl2 EXTRACT	AT	5483782	2018/04/16	2018/04/16	Neil Dassanayake
Volatile Organic Compounds in Soil	GC/MS	5481002	N/A	2018/04/12	Manpreet Sarao

Maxxam ID: GLA658
Sample ID: BH5/7
Matrix: Soil

Collected: 2018/04/10
Shipped:
Received: 2018/04/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	5485006	N/A	2018/04/16	Domnica Andronescu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	5482615	2018/04/12	2018/04/13	Margaret Kulczyk-Stanko
Moisture	BAL	5483985	N/A	2018/04/13	Gurpreet Kaur

Maxxam ID: GLA659
Sample ID: BH2/2
Matrix: Soil

Collected: 2018/04/10
Shipped:
Received: 2018/04/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hot Water Extractable Boron	ICP	5483623	2018/04/13	2018/04/13	Suban Kanapathippllai
Free (WAD) Cyanide	TECH	5485890	2018/04/16	2018/04/17	Xuanhong Qiu
Hexavalent Chromium in Soil by IC	IC/SPEC	5482963	2018/04/13	2018/04/16	Rupinder Sihota
Strong Acid Leachable Metals by ICPMS	ICP/MS	5483556	2018/04/13	2018/04/13	Daniel Teclu
Moisture	BAL	5483501	N/A	2018/04/13	Gurpreet Kaur

Maxxam ID: GLA659 Dup
Sample ID: BH2/2
Matrix: Soil

Collected: 2018/04/10
Shipped:
Received: 2018/04/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hot Water Extractable Boron	ICP	5483623	2018/04/13	2018/04/13	Suban Kanapathippllai
Moisture	BAL	5483501	N/A	2018/04/13	Gurpreet Kaur

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TEST SUMMARY

Maxxam ID: GLA660
Sample ID: BH6/1
Matrix: Soil

Collected: 2018/04/10
Shipped:
Received: 2018/04/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hot Water Extractable Boron	ICP	5483059	2018/04/13	2018/04/13	Jolly John
Free (WAD) Cyanide	TECH	5485890	2018/04/16	2018/04/17	Xuanhong Qiu
Hexavalent Chromium in Soil by IC	IC/SPEC	5482963	2018/04/13	2018/04/16	Rupinder Sihota
Strong Acid Leachable Metals by ICPMS	ICP/MS	5483580	2018/04/13	2018/04/13	Viviana Canzonieri
Moisture	BAL	5483501	N/A	2018/04/13	Gurpreet Kaur

Maxxam ID: GLA661
Sample ID: BH7/2
Matrix: Soil

Collected: 2018/04/10
Shipped:
Received: 2018/04/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hot Water Extractable Boron	ICP	5483623	2018/04/13	2018/04/13	Suban Kanapathippllai
Free (WAD) Cyanide	TECH	5485890	2018/04/16	2018/04/17	Xuanhong Qiu
Conductivity	AT	5485805	2018/04/16	2018/04/17	Tahir Anwar
Hexavalent Chromium in Soil by IC	IC/SPEC	5482963	2018/04/13	2018/04/16	Rupinder Sihota
Strong Acid Leachable Metals by ICPMS	ICP/MS	5483556	2018/04/13	2018/04/13	Daniel Teclu
Moisture	BAL	5483501	N/A	2018/04/13	Gurpreet Kaur
pH CaCl2 EXTRACT	AT	5483782	2018/04/16	2018/04/16	Neil Dassanayake
Sodium Adsorption Ratio (SAR)	CALC/MET	5480954	N/A	2018/04/18	Automated Statchk

Maxxam ID: GLA662
Sample ID: BH8/2
Matrix: Soil

Collected: 2018/04/10
Shipped:
Received: 2018/04/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hot Water Extractable Boron	ICP	5483623	2018/04/13	2018/04/13	Suban Kanapathippllai
Free (WAD) Cyanide	TECH	5485890	2018/04/16	2018/04/17	Xuanhong Qiu
Conductivity	AT	5485805	2018/04/16	2018/04/17	Tahir Anwar
Hexavalent Chromium in Soil by IC	IC/SPEC	5482963	2018/04/13	2018/04/16	Rupinder Sihota
Strong Acid Leachable Metals by ICPMS	ICP/MS	5483503	2018/04/13	2018/04/13	Daniel Teclu
Moisture	BAL	5483501	N/A	2018/04/13	Gurpreet Kaur
pH CaCl2 EXTRACT	AT	5483782	2018/04/16	2018/04/16	Neil Dassanayake
Sodium Adsorption Ratio (SAR)	CALC/MET	5480954	N/A	2018/04/18	Automated Statchk

Maxxam ID: GLA663
Sample ID: BH9/2
Matrix: Soil

Collected: 2018/04/10
Shipped:
Received: 2018/04/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hot Water Extractable Boron	ICP	5483623	2018/04/13	2018/04/13	Suban Kanapathippllai
Free (WAD) Cyanide	TECH	5485890	2018/04/16	2018/04/17	Xuanhong Qiu
Conductivity	AT	5485805	2018/04/16	2018/04/17	Tahir Anwar
Hexavalent Chromium in Soil by IC	IC/SPEC	5482963	2018/04/13	2018/04/16	Rupinder Sihota
Strong Acid Leachable Metals by ICPMS	ICP/MS	5483556	2018/04/13	2018/04/13	Daniel Teclu
Moisture	BAL	5483501	N/A	2018/04/13	Gurpreet Kaur
pH CaCl2 EXTRACT	AT	5483782	2018/04/16	2018/04/16	Neil Dassanayake

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Soil Engineers Ltd
Client Project #: 1802-E072
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TEST SUMMARY

Maxxam ID: GLA663
Sample ID: BH9/2
Matrix: Soil

Collected: 2018/04/10
Shipped:
Received: 2018/04/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Sodium Adsorption Ratio (SAR)	CALC/MET	5480954	N/A	2018/04/18	Automated Statchk

Maxxam ID: GLA664
Sample ID: BH10/2
Matrix: Soil

Collected: 2018/04/10
Shipped:
Received: 2018/04/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hot Water Extractable Boron	ICP	5483521	2018/04/13	2018/04/13	Suban Kanapathippllai
Free (WAD) Cyanide	TECH	5485890	2018/04/16	2018/04/17	Xuanhong Qiu
Conductivity	AT	5485805	2018/04/16	2018/04/17	Tahir Anwar
Hexavalent Chromium in Soil by IC	IC/SPEC	5482963	2018/04/13	2018/04/16	Rupinder Sihota
Strong Acid Leachable Metals by ICPMS	ICP/MS	5483503	2018/04/13	2018/04/13	Daniel Teclu
Moisture	BAL	5483501	N/A	2018/04/13	Gurpreet Kaur
pH CaCl2 EXTRACT	AT	5483782	2018/04/16	2018/04/16	Neil Dassanayake
Sodium Adsorption Ratio (SAR)	CALC/MET	5480954	N/A	2018/04/18	Automated Statchk

Maxxam ID: GLA665
Sample ID: BH11/2
Matrix: Soil

Collected: 2018/04/10
Shipped:
Received: 2018/04/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hot Water Extractable Boron	ICP	5483521	2018/04/13	2018/04/13	Suban Kanapathippllai
Free (WAD) Cyanide	TECH	5485890	2018/04/16	2018/04/17	Xuanhong Qiu
Conductivity	AT	5485805	2018/04/16	2018/04/17	Tahir Anwar
Hexavalent Chromium in Soil by IC	IC/SPEC	5482963	2018/04/13	2018/04/16	Rupinder Sihota
Strong Acid Leachable Metals by ICPMS	ICP/MS	5483556	2018/04/13	2018/04/13	Daniel Teclu
Moisture	BAL	5483501	N/A	2018/04/13	Gurpreet Kaur
pH CaCl2 EXTRACT	AT	5483782	2018/04/16	2018/04/16	Neil Dassanayake
Sodium Adsorption Ratio (SAR)	CALC/MET	5480954	N/A	2018/04/18	Automated Statchk

Maxxam ID: GLA666
Sample ID: DUPS1
Matrix: Soil

Collected: 2018/04/10
Shipped:
Received: 2018/04/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hot Water Extractable Boron	ICP	5483623	2018/04/13	2018/04/13	Suban Kanapathippllai
Hexavalent Chromium in Soil by IC	IC/SPEC	5482963	2018/04/13	2018/04/16	Rupinder Sihota
Strong Acid Leachable Metals by ICPMS	ICP/MS	5483556	2018/04/13	2018/04/13	Daniel Teclu
Moisture	BAL	5483501	N/A	2018/04/13	Gurpreet Kaur

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Client Project #: 1802-E072
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GENERAL COMMENTS

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

Package 1	7.7°C

Sample GLA661 [BH7/2] : SAR Analysis: Sodium was not detected. To report SAR the sodium detection limit was used in the calculation. This value represents a maximum ratio.

Sample GLA662 [BH8/2] : SAR Analysis: Sodium was not detected. To report SAR the sodium detection limit was used in the calculation. This value represents a maximum ratio.

Sample GLA663 [BH9/2] : SAR Analysis: Sodium was not detected. To report SAR the sodium detection limit was used in the calculation. This value represents a maximum ratio.

Sample GLA664 [BH10/2] : SAR Analysis: Sodium was not detected. To report SAR the sodium detection limit was used in the calculation. This value represents a maximum ratio.

Sample GLA665 [BH11/2] : SAR Analysis: Sodium was not detected. To report SAR the sodium detection limit was used in the calculation. This value represents a maximum ratio.

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

Soil Engineers Ltd
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			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5481002	4-Bromofluorobenzene	2018/04/12	98	60 - 140	100	60 - 140	97	%		
5481002	D10-o-Xylene	2018/04/12	95	60 - 130	93	60 - 130	96	%		
5481002	D4-1,2-Dichloroethane	2018/04/12	108	60 - 140	101	60 - 140	101	%		
5481002	D8-Toluene	2018/04/12	101	60 - 140	101	60 - 140	98	%		
5482615	o-Terphenyl	2018/04/13	93	60 - 130	96	60 - 130	104	%		
5485006	1,4-Difluorobenzene	2018/04/16	104	60 - 140	105	60 - 140	102	%		
5485006	4-Bromofluorobenzene	2018/04/16	102	60 - 140	101	60 - 140	98	%		
5485006	D10-Ethylbenzene	2018/04/16	107	60 - 140	99	60 - 140	100	%		
5485006	D4-1,2-Dichloroethane	2018/04/16	94	60 - 140	94	60 - 140	90	%		
5481002	1,1,1,2-Tetrachloroethane	2018/04/12	95	60 - 140	92	60 - 130	<0.050	ug/g	NC	50
5481002	1,1,1-Trichloroethane	2018/04/12	94	60 - 140	95	60 - 130	<0.050	ug/g	NC	50
5481002	1,1,2,2-Tetrachloroethane	2018/04/12	100	60 - 140	95	60 - 130	<0.050	ug/g	NC	50
5481002	1,1,2-Trichloroethane	2018/04/12	100	60 - 140	92	60 - 130	<0.050	ug/g	NC	50
5481002	1,1-Dichloroethane	2018/04/12	100	60 - 140	98	60 - 130	<0.050	ug/g	NC	50
5481002	1,1-Dichloroethylene	2018/04/12	96	60 - 140	96	60 - 130	<0.050	ug/g	NC	50
5481002	1,2-Dichlorobenzene	2018/04/12	91	60 - 140	88	60 - 130	<0.050	ug/g	NC	50
5481002	1,2-Dichloroethane	2018/04/12	102	60 - 140	95	60 - 130	<0.050	ug/g	NC	50
5481002	1,2-Dichloropropane	2018/04/12	102	60 - 140	98	60 - 130	<0.050	ug/g	NC	50
5481002	1,3-Dichlorobenzene	2018/04/12	92	60 - 140	90	60 - 130	<0.050	ug/g	NC	50
5481002	1,4-Dichlorobenzene	2018/04/12	92	60 - 140	89	60 - 130	<0.050	ug/g	NC	50
5481002	Acetone (2-Propanone)	2018/04/12	101	60 - 140	93	60 - 140	<0.50	ug/g	NC	50
5481002	Benzene	2018/04/12	96	60 - 140	95	60 - 130	<0.020	ug/g	NC	50
5481002	Bromodichloromethane	2018/04/12	95	60 - 140	93	60 - 130	<0.050	ug/g	NC	50
5481002	Bromoform	2018/04/12	96	60 - 140	92	60 - 130	<0.050	ug/g	NC	50
5481002	Bromomethane	2018/04/12	95	60 - 140	97	60 - 140	<0.050	ug/g	NC	50
5481002	Carbon Tetrachloride	2018/04/12	92	60 - 140	93	60 - 130	<0.050	ug/g	NC	50
5481002	Chlorobenzene	2018/04/12	94	60 - 140	91	60 - 130	<0.050	ug/g	NC	50
5481002	Chloroform	2018/04/12	98	60 - 140	96	60 - 130	<0.050	ug/g	NC	50
5481002	cis-1,2-Dichloroethylene	2018/04/12	98	60 - 140	96	60 - 130	<0.050	ug/g	NC	50
5481002	cis-1,3-Dichloropropene	2018/04/12	93	60 - 140	96	60 - 130	<0.030	ug/g	NC	50
5481002	Dibromochloromethane	2018/04/12	98	60 - 140	93	60 - 130	<0.050	ug/g	NC	50

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QUALITY ASSURANCE REPORT(CONT'D)

Soil Engineers Ltd
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			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5481002	Dichlorodifluoromethane (FREON 12)	2018/04/12	90	60 - 140	98	60 - 140	<0.050	ug/g	NC	50
5481002	Ethylbenzene	2018/04/12	90	60 - 140	90	60 - 130	<0.020	ug/g	NC	50
5481002	Ethylene Dibromide	2018/04/12	101	60 - 140	94	60 - 130	<0.050	ug/g	NC	50
5481002	Hexane	2018/04/12	95	60 - 140	97	60 - 130	<0.050	ug/g	NC	50
5481002	Methyl Ethyl Ketone (2-Butanone)	2018/04/12	102	60 - 140	95	60 - 140	<0.50	ug/g	NC	50
5481002	Methyl Isobutyl Ketone	2018/04/12	101	60 - 140	97	60 - 130	<0.50	ug/g	NC	50
5481002	Methyl t-butyl ether (MTBE)	2018/04/12	96	60 - 140	93	60 - 130	<0.050	ug/g	NC	50
5481002	Methylene Chloride(Dichloromethane)	2018/04/12	100	60 - 140	94	60 - 130	<0.050	ug/g	NC	50
5481002	o-Xylene	2018/04/12	90	60 - 140	90	60 - 130	<0.020	ug/g	NC	50
5481002	p+m-Xylene	2018/04/12	89	60 - 140	90	60 - 130	<0.020	ug/g	NC	50
5481002	Styrene	2018/04/12	94	60 - 140	94	60 - 130	<0.050	ug/g	NC	50
5481002	Tetrachloroethylene	2018/04/12	93	60 - 140	92	60 - 130	<0.050	ug/g	NC	50
5481002	Toluene	2018/04/12	93	60 - 140	92	60 - 130	<0.020	ug/g	NC	50
5481002	Total Xylenes	2018/04/12					<0.020	ug/g	NC	50
5481002	trans-1,2-Dichloroethylene	2018/04/12	96	60 - 140	94	60 - 130	<0.050	ug/g	NC	50
5481002	trans-1,3-Dichloropropene	2018/04/12	93	60 - 140	98	60 - 130	<0.040	ug/g	NC	50
5481002	Trichloroethylene	2018/04/12	93	60 - 140	93	60 - 130	<0.050	ug/g	NC	50
5481002	Trichlorofluoromethane (FREON 11)	2018/04/12	92	60 - 140	93	60 - 130	<0.050	ug/g	NC	50
5481002	Vinyl Chloride	2018/04/12	97	60 - 140	100	60 - 130	<0.020	ug/g	NC	50
5482615	F2 (C10-C16 Hydrocarbons)	2018/04/13	92	50 - 130	94	80 - 120	<10	ug/g	NC	30
5482615	F3 (C16-C34 Hydrocarbons)	2018/04/13	90	50 - 130	92	80 - 120	<50	ug/g	NC	30
5482615	F4 (C34-C50 Hydrocarbons)	2018/04/13	90	50 - 130	91	80 - 120	<50	ug/g	NC	30
5482963	Chromium (VI)	2018/04/16	57 (1)	75 - 125	93	80 - 120	<0.2	ug/g	NC	35
5483059	Hot Water Ext. Boron (B)	2018/04/13	93	75 - 125	101	75 - 125	<0.050	ug/g	NC	40
5483501	Moisture	2018/04/13							10	20
5483503	Acid Extractable Antimony (Sb)	2018/04/13	95	75 - 125	101	80 - 120	<0.20	ug/g	NC	30
5483503	Acid Extractable Arsenic (As)	2018/04/13	100	75 - 125	103	80 - 120	<1.0	ug/g	2.9	30
5483503	Acid Extractable Barium (Ba)	2018/04/13	NC	75 - 125	96	80 - 120	<0.50	ug/g	2.9	30
5483503	Acid Extractable Beryllium (Be)	2018/04/13	100	75 - 125	98	80 - 120	<0.20	ug/g	1.7	30
5483503	Acid Extractable Boron (B)	2018/04/13	97	75 - 125	95	80 - 120	<5.0	ug/g	7.3	30
5483503	Acid Extractable Cadmium (Cd)	2018/04/13	102	75 - 125	101	80 - 120	<0.10	ug/g	18	30

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QUALITY ASSURANCE REPORT(CONT'D)

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			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5483503	Acid Extractable Chromium (Cr)	2018/04/13	107	75 - 125	102	80 - 120	<1.0	ug/g	0.66	30
5483503	Acid Extractable Cobalt (Co)	2018/04/13	103	75 - 125	103	80 - 120	<0.10	ug/g	3.3	30
5483503	Acid Extractable Copper (Cu)	2018/04/13	96	75 - 125	101	80 - 120	<0.50	ug/g	2.0	30
5483503	Acid Extractable Lead (Pb)	2018/04/13	101	75 - 125	100	80 - 120	<1.0	ug/g	0.98	30
5483503	Acid Extractable Mercury (Hg)	2018/04/13	104	75 - 125	99	80 - 120	<0.050	ug/g		
5483503	Acid Extractable Molybdenum (Mo)	2018/04/13	101	75 - 125	102	80 - 120	<0.50	ug/g	NC	30
5483503	Acid Extractable Nickel (Ni)	2018/04/13	104	75 - 125	103	80 - 120	<0.50	ug/g	2.7	30
5483503	Acid Extractable Selenium (Se)	2018/04/13	100	75 - 125	101	80 - 120	<0.50	ug/g	NC	30
5483503	Acid Extractable Silver (Ag)	2018/04/13	99	75 - 125	99	80 - 120	<0.20	ug/g	NC	30
5483503	Acid Extractable Thallium (Tl)	2018/04/13	103	75 - 125	102	80 - 120	<0.050	ug/g	8.1	30
5483503	Acid Extractable Uranium (U)	2018/04/13	93	75 - 125	92	80 - 120	<0.050	ug/g	5.9	30
5483503	Acid Extractable Vanadium (V)	2018/04/13	NC	75 - 125	101	80 - 120	<5.0	ug/g	3.6	30
5483503	Acid Extractable Zinc (Zn)	2018/04/13	NC	75 - 125	99	80 - 120	<5.0	ug/g	1.2	30
5483521	Hot Water Ext. Boron (B)	2018/04/13	100	75 - 125	101	75 - 125	<0.050	ug/g	18	40
5483556	Acid Extractable Antimony (Sb)	2018/04/13	98	75 - 125	99	80 - 120	<0.20	ug/g	3.7	30
5483556	Acid Extractable Arsenic (As)	2018/04/13	99	75 - 125	102	80 - 120	<1.0	ug/g	0.47	30
5483556	Acid Extractable Barium (Ba)	2018/04/13	NC	75 - 125	101	80 - 120	<0.50	ug/g	8.6	30
5483556	Acid Extractable Beryllium (Be)	2018/04/13	96	75 - 125	95	80 - 120	<0.20	ug/g	3.5	30
5483556	Acid Extractable Boron (B)	2018/04/13	88	75 - 125	93	80 - 120	<5.0	ug/g	11	30
5483556	Acid Extractable Cadmium (Cd)	2018/04/13	99	75 - 125	100	80 - 120	<0.10	ug/g	21	30
5483556	Acid Extractable Chromium (Cr)	2018/04/13	NC	75 - 125	100	80 - 120	<1.0	ug/g	0.24	30
5483556	Acid Extractable Cobalt (Co)	2018/04/13	99	75 - 125	102	80 - 120	<0.10	ug/g	0.85	30
5483556	Acid Extractable Copper (Cu)	2018/04/13	NC	75 - 125	101	80 - 120	<0.50	ug/g	5.2	30
5483556	Acid Extractable Lead (Pb)	2018/04/13	NC	75 - 125	102	80 - 120	<1.0	ug/g	3.7	30
5483556	Acid Extractable Mercury (Hg)	2018/04/13	100	75 - 125	99	80 - 120	<0.050	ug/g		
5483556	Acid Extractable Molybdenum (Mo)	2018/04/13	102	75 - 125	99	80 - 120	<0.50	ug/g	15	30
5483556	Acid Extractable Nickel (Ni)	2018/04/13	NC	75 - 125	105	80 - 120	<0.50	ug/g	5.2	30
5483556	Acid Extractable Selenium (Se)	2018/04/13	99	75 - 125	101	80 - 120	<0.50	ug/g	NC	30
5483556	Acid Extractable Silver (Ag)	2018/04/13	101	75 - 125	100	80 - 120	<0.20	ug/g	13	30
5483556	Acid Extractable Thallium (Tl)	2018/04/13	99	75 - 125	101	80 - 120	<0.050	ug/g	6.7	30
5483556	Acid Extractable Uranium (U)	2018/04/13	91	75 - 125	90	80 - 120	<0.050	ug/g	0.45	30

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Maxxam Job #: B881603
Report Date: 2018/04/18

QUALITY ASSURANCE REPORT(CONT'D)

Soil Engineers Ltd
Client Project #: 1802-E072
Sampler Initials: LT

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5483556	Acid Extractable Vanadium (V)	2018/04/13	NC	75 - 125	100	80 - 120	<5.0	ug/g	3.0	30
5483556	Acid Extractable Zinc (Zn)	2018/04/13	NC	75 - 125	103	80 - 120	<5.0	ug/g	1.1	30
5483580	Acid Extractable Antimony (Sb)	2018/04/13	94	75 - 125	102	80 - 120	<0.20	ug/g	NC	30
5483580	Acid Extractable Arsenic (As)	2018/04/13	104	75 - 125	104	80 - 120	<1.0	ug/g	3.6	30
5483580	Acid Extractable Barium (Ba)	2018/04/13	NC	75 - 125	100	80 - 120	<0.50	ug/g	9.6	30
5483580	Acid Extractable Beryllium (Be)	2018/04/13	102	75 - 125	97	80 - 120	<0.20	ug/g	7.3	30
5483580	Acid Extractable Boron (B)	2018/04/13	100	75 - 125	97	80 - 120	<5.0	ug/g	18	30
5483580	Acid Extractable Cadmium (Cd)	2018/04/13	103	75 - 125	105	80 - 120	<0.10	ug/g	NC	30
5483580	Acid Extractable Chromium (Cr)	2018/04/13	NC	75 - 125	104	80 - 120	<1.0	ug/g	7.4	30
5483580	Acid Extractable Cobalt (Co)	2018/04/13	106	75 - 125	104	80 - 120	<0.10	ug/g	5.2	30
5483580	Acid Extractable Copper (Cu)	2018/04/13	105	75 - 125	104	80 - 120	<0.50	ug/g	3.6	30
5483580	Acid Extractable Lead (Pb)	2018/04/13	103	75 - 125	103	80 - 120	<1.0	ug/g	4.3	30
5483580	Acid Extractable Mercury (Hg)	2018/04/13	96	75 - 125	101	80 - 120	<0.050	ug/g	NC	30
5483580	Acid Extractable Molybdenum (Mo)	2018/04/13	102	75 - 125	104	80 - 120	<0.50	ug/g	NC	30
5483580	Acid Extractable Nickel (Ni)	2018/04/13	NC	75 - 125	105	80 - 120	<0.50	ug/g	4.0	30
5483580	Acid Extractable Selenium (Se)	2018/04/13	98	75 - 125	102	80 - 120	<0.50	ug/g	NC	30
5483580	Acid Extractable Silver (Ag)	2018/04/13	101	75 - 125	101	80 - 120	<0.20	ug/g	NC	30
5483580	Acid Extractable Thallium (Tl)	2018/04/13	97	75 - 125	102	80 - 120	<0.050	ug/g	12	30
5483580	Acid Extractable Uranium (U)	2018/04/13	89	75 - 125	93	80 - 120	<0.050	ug/g	4.4	30
5483580	Acid Extractable Vanadium (V)	2018/04/13	NC	75 - 125	103	80 - 120	<5.0	ug/g	7.5	30
5483580	Acid Extractable Zinc (Zn)	2018/04/13	NC	75 - 125	103	80 - 120	<5.0	ug/g	4.0	30
5483623	Hot Water Ext. Boron (B)	2018/04/13	100	75 - 125	100	75 - 125	<0.050	ug/g	NC	40
5483782	Available (CaCl2) pH	2018/04/16			99	97 - 103			0.85	N/A
5483985	Moisture	2018/04/13							7.8	20
5485006	Benzene	2018/04/16	97	60 - 140	103	60 - 140	<0.020	ug/g	NC	50
5485006	Ethylbenzene	2018/04/16	97	60 - 140	101	60 - 140	<0.020	ug/g	NC	50
5485006	F1 (C6-C10) - BTEX	2018/04/16					<10	ug/g	NC	30
5485006	F1 (C6-C10)	2018/04/16	88	60 - 140	88	80 - 120	<10	ug/g	NC	30
5485006	o-Xylene	2018/04/16	99	60 - 140	103	60 - 140	<0.020	ug/g	NC	50
5485006	p+m-Xylene	2018/04/16	96	60 - 140	100	60 - 140	<0.040	ug/g	NC	50
5485006	Toluene	2018/04/16	87	60 - 140	91	60 - 140	<0.020	ug/g	NC	50

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Maxxam Job #: B881603
Report Date: 2018/04/18

QUALITY ASSURANCE REPORT(CONT'D)

Soil Engineers Ltd
Client Project #: 1802-E072
Sampler Initials: LT

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5485006	Total Xylenes	2018/04/16					<0.040	ug/g	NC	50
5485805	Conductivity	2018/04/17			98	90 - 110	<0.002	mS/cm	2.6	10
5485890	WAD Cyanide (Free)	2018/04/17	92	75 - 125	96	80 - 120	<0.01	ug/g	NC	35

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.

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) The matrix spike recovery was below the lower control limit. This may be due in part to the reducing environment of the sample. The matrix spike was reanalyzed to confirm result.

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Maxxam Job #: B881603
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Soil Engineers Ltd
Client Project #: 1802-E072
Sampler Initials: LT

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

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Soil Engineers Ltd.
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APPENDIX 'D'

CERTIFICATE OF ANALYSIS (GROUNDWATER SAMPLES)

REFERENCE NO. 1802-E072

Maxxam
A Bureau Veritas Group Company

Your Project #: 1802-E072
Your C.O.C. #: 663460-01-01

Attention: Laila Torabansari

Soil Engineers Ltd
90 West Beaver Creek Road
Unit 100
Richmond Hill, ON
CANADA L4B 1E7

Report Date: 2018/05/24
Report #: R5168807
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B8B5893
Received: 2018/05/16, 15:00

Sample Matrix: Water
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
1,3-Dichloropropene Sum	2	N/A	2018/05/24		EPA 8260C m
Petroleum Hydro. CCME F1 & BTEX in Water	1	N/A	2018/05/23	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Water (1)	1	2018/05/22	2018/05/23	CAM SOP-00316	CCME PHC-CWS m
Volatile Organic Compounds and F1 PHCs	1	N/A	2018/05/23	CAM SOP-00230	EPA 8260C m
Volatile Organic Compounds in Water	1	N/A	2018/05/24	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.

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.

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.

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Maxxam
A Bureau Veritas Group Company

Your Project #: 1802-E072
Your C.O.C. #: 663460-01-01

Attention: Laila Torabansari

Soil Engineers Ltd
90 West Beaver Creek Road
Unit 100
Richmond Hill, ON
CANADA L4B 1E7

Report Date: 2018/05/24
Report #: R5168807
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B8B5893
Received: 2018/05/16, 15:00

Encryption Key

Maxxam
24 May 2018 15:22:28

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Antonella Brasil, Senior Project Manager
Email: ABrasil@maxxam.ca
Phone# (905)817-5817

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Maxxam Job #: B8B5893
Report Date: 2018/05/24

Soil Engineers Ltd
Client Project #: 1802-E072
Sampler Initials: JP

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID			GSF697	GSF697		
Sampling Date			2018/05/15 17:15	2018/05/15 17:15		
COC Number			663460-01-01	663460-01-01		
	UNITS	Criteria	DUPW1	DUPW1 Lab-Dup	RDL	QC Batch
BTEX & F1 Hydrocarbons						
Benzene	ug/L	**0.5**	<0.20	<0.20	0.20	5541775
Toluene	ug/L	**0.8**	0.40	0.41	0.20	5541775
Ethylbenzene	ug/L	**0.5**	<0.20	<0.20	0.20	5541775
o-Xylene	ug/L	-	<0.20	<0.20	0.20	5541775
p+m-Xylene	ug/L	-	<0.40	<0.40	0.40	5541775
Total Xylenes	ug/L	**72**	<0.40	<0.40	0.40	5541775
Surrogate Recovery (%)						
1,4-Difluorobenzene	%	-	103	102		5541775
4-Bromofluorobenzene	%	-	99	100		5541775
D10-Ethylbenzene	%	-	82	81		5541775
D4-1,2-Dichloroethane	%	-	99	99		5541775

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 1: Full Depth Background Site Condition Standards
Ground Water - All Types of Property Uses

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Maxxam Job #: B8B5893
Report Date: 2018/05/24

Soil Engineers Ltd
Client Project #: 1802-E072
Sampler Initials: JP

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

Maxxam ID			GSF696		
Sampling Date			2018/05/15 17:00		
COC Number			663460-01-01		
	UNITS	Criteria	MW5	RDL	QC Batch
Calculated Parameters					
1,3-Dichloropropene (cis+trans)	ug/L	**0.5**	<0.50	0.50	5535645
Volatile Organics					
Acetone (2-Propanone)	ug/L	**2700**	<10	10	5536474
Benzene	ug/L	**0.5**	<0.20	0.20	5536474
Bromodichloromethane	ug/L	**2**	**6.9**	0.50	5536474
Bromoform	ug/L	**5.0**	<1.0	1.0	5536474
Bromomethane	ug/L	**0.89**	<0.50	0.50	5536474
Carbon Tetrachloride	ug/L	**0.2**	<0.20	0.20	5536474
Chlorobenzene	ug/L	**0.5**	<0.20	0.20	5536474
Chloroform	ug/L	**2**	**9.8**	0.20	5536474
Dibromochloromethane	ug/L	**2**	**4.7**	0.50	5536474
1,2-Dichlorobenzene	ug/L	**0.5**	<0.50	0.50	5536474
1,3-Dichlorobenzene	ug/L	**0.5**	<0.50	0.50	5536474
1,4-Dichlorobenzene	ug/L	**0.5**	<0.50	0.50	5536474
Dichlorodifluoromethane (FREON 12)	ug/L	**590**	<1.0	1.0	5536474
1,1-Dichloroethane	ug/L	**0.5**	<0.20	0.20	5536474
1,2-Dichloroethane	ug/L	**0.5**	<0.50	0.50	5536474
1,1-Dichloroethylene	ug/L	**0.5**	<0.20	0.20	5536474
cis-1,2-Dichloroethylene	ug/L	**1.6**	<0.50	0.50	5536474
trans-1,2-Dichloroethylene	ug/L	**1.6**	<0.50	0.50	5536474
1,2-Dichloropropane	ug/L	**0.5**	<0.20	0.20	5536474
cis-1,3-Dichloropropene	ug/L	**0.5**	<0.30	0.30	5536474
trans-1,3-Dichloropropene	ug/L	**0.5**	<0.40	0.40	5536474
Ethylbenzene	ug/L	**0.5**	<0.20	0.20	5536474
Ethylene Dibromide	ug/L	**0.2**	<0.20	0.20	5536474
Hexane	ug/L	**5**	<1.0	1.0	5536474
Methylene Chloride(Dichloromethane)	ug/L	**5**	<2.0	2.0	5536474
Methyl Ethyl Ketone (2-Butanone)	ug/L	**400**	<10	10	5536474
Methyl Isobutyl Ketone	ug/L	**640**	<5.0	5.0	5536474
Methyl t-butyl ether (MTBE)	ug/L	**15**	<0.50	0.50	5536474
Styrene	ug/L	**0.5**	<0.50	0.50	5536474
1,1,1,2-Tetrachloroethane	ug/L	**1.1**	<0.50	0.50	5536474

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 1: Full Depth Background Site Condition Standards
Ground Water - All Types of Property Uses

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Maxxam Job #: B8B5893
Report Date: 2018/05/24

Soil Engineers Ltd
Client Project #: 1802-E072
Sampler Initials: JP

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

Maxxam ID			GSF696		
Sampling Date			2018/05/15 17:00		
COC Number			663460-01-01		
	UNITS	Criteria	MW5	RDL	QC Batch
1,1,2,2-Tetrachloroethane	ug/L	**0.5**	<0.50	0.50	5536474
Tetrachloroethylene	ug/L	**0.5**	<0.20	0.20	5536474
Toluene	ug/L	**0.8**	0.48	0.20	5536474
1,1,1-Trichloroethane	ug/L	**0.5**	<0.20	0.20	5536474
1,1,2-Trichloroethane	ug/L	**0.5**	<0.50	0.50	5536474
Trichloroethylene	ug/L	**0.5**	<0.20	0.20	5536474
Trichlorofluoromethane (FREON 11)	ug/L	**150**	<0.50	0.50	5536474
Vinyl Chloride	ug/L	**0.5**	<0.20	0.20	5536474
p+m-Xylene	ug/L	-	0.23	0.20	5536474
o-Xylene	ug/L	-	<0.20	0.20	5536474
Total Xylenes	ug/L	**72**	0.23	0.20	5536474
F1 (C6-C10)	ug/L	**420**	<25	25	5536474
F1 (C6-C10) - BTEX	ug/L	**420**	<25	25	5536474
F2-F4 Hydrocarbons					
F2 (C10-C16 Hydrocarbons)	ug/L	**150**	<100	100	5541493
F3 (C16-C34 Hydrocarbons)	ug/L	**500**	<200	200	5541493
F4 (C34-C50 Hydrocarbons)	ug/L	**500**	<200	200	5541493
Reached Baseline at C50	ug/L	-	Yes		5541493
Surrogate Recovery (%)					
o-Terphenyl	%	-	93		5541493
4-Bromofluorobenzene	%	-	90		5536474
D4-1,2-Dichloroethane	%	-	105		5536474
D8-Toluene	%	-	95		5536474

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 1: Full Depth Background Site Condition Standards
Ground Water - All Types of Property Uses

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Maxxam Job #: B8B5893
Report Date: 2018/05/24

Soil Engineers Ltd
Client Project #: 1802-E072
Sampler Initials: JP

O.REG 153 VOCS BY HS (WATER)

Maxxam ID			GSF698		
Sampling Date			2018/05/15 09:00		
COC Number			663460-01-01		
	UNITS	Criteria	TRIP BLANK	RDL	QC Batch
Calculated Parameters					
1,3-Dichloropropene (cis+trans)	ug/L	**0.5**	<0.50	0.50	5535645
Volatile Organics					
Acetone (2-Propanone)	ug/L	**2700**	<10	10	5531317
Benzene	ug/L	**0.5**	<0.20	0.20	5531317
Bromodichloromethane	ug/L	**2**	<0.50	0.50	5531317
Bromoform	ug/L	**5.0**	<1.0	1.0	5531317
Bromomethane	ug/L	**0.89**	<0.50	0.50	5531317
Carbon Tetrachloride	ug/L	**0.2**	<0.20	0.20	5531317
Chlorobenzene	ug/L	**0.5**	<0.20	0.20	5531317
Chloroform	ug/L	**2**	<0.20	0.20	5531317
Dibromochloromethane	ug/L	**2**	<0.50	0.50	5531317
1,2-Dichlorobenzene	ug/L	**0.5**	<0.50	0.50	5531317
1,3-Dichlorobenzene	ug/L	**0.5**	<0.50	0.50	5531317
1,4-Dichlorobenzene	ug/L	**0.5**	<0.50	0.50	5531317
Dichlorodifluoromethane (FREON 12)	ug/L	**590**	<1.0	1.0	5531317
1,1-Dichloroethane	ug/L	**0.5**	<0.20	0.20	5531317
1,2-Dichloroethane	ug/L	**0.5**	<0.50	0.50	5531317
1,1-Dichloroethylene	ug/L	**0.5**	<0.20	0.20	5531317
cis-1,2-Dichloroethylene	ug/L	**1.6**	<0.50	0.50	5531317
trans-1,2-Dichloroethylene	ug/L	**1.6**	<0.50	0.50	5531317
1,2-Dichloropropane	ug/L	**0.5**	<0.20	0.20	5531317
cis-1,3-Dichloropropene	ug/L	**0.5**	<0.30	0.30	5531317
trans-1,3-Dichloropropene	ug/L	**0.5**	<0.40	0.40	5531317
Ethylbenzene	ug/L	**0.5**	<0.20	0.20	5531317
Ethylene Dibromide	ug/L	**0.2**	<0.20	0.20	5531317
Hexane	ug/L	**5**	<1.0	1.0	5531317
Methylene Chloride(Dichloromethane)	ug/L	**5**	<2.0	2.0	5531317
Methyl Ethyl Ketone (2-Butanone)	ug/L	**400**	<10	10	5531317
Methyl Isobutyl Ketone	ug/L	**640**	<5.0	5.0	5531317
Methyl t-butyl ether (MTBE)	ug/L	**15**	<0.50	0.50	5531317
Styrene	ug/L	**0.5**	<0.50	0.50	5531317
1,1,1,2-Tetrachloroethane	ug/L	**1.1**	<0.50	0.50	5531317

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 1: Full Depth Background Site Condition Standards
Ground Water - All Types of Property Uses

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Maxxam Job #: B8B5893
Report Date: 2018/05/24

Soil Engineers Ltd
Client Project #: 1802-E072
Sampler Initials: JP

O.REG 153 VOCS BY HS (WATER)

Maxxam ID			GSF698		
Sampling Date			2018/05/15 09:00		
COC Number			663460-01-01		
	UNITS	Criteria	TRIP BLANK	RDL	QC Batch
1,1,2,2-Tetrachloroethane	ug/L	**0.5**	<0.50	0.50	5531317
Tetrachloroethylene	ug/L	**0.5**	<0.20	0.20	5531317
Toluene	ug/L	**0.8**	<0.20	0.20	5531317
1,1,1-Trichloroethane	ug/L	**0.5**	<0.20	0.20	5531317
1,1,2-Trichloroethane	ug/L	**0.5**	<0.50	0.50	5531317
Trichloroethylene	ug/L	**0.5**	<0.20	0.20	5531317
Trichlorofluoromethane (FREON 11)	ug/L	**150**	<0.50	0.50	5531317
Vinyl Chloride	ug/L	**0.5**	<0.20	0.20	5531317
p+m-Xylene	ug/L	-	<0.20	0.20	5531317
o-Xylene	ug/L	-	<0.20	0.20	5531317
Total Xylenes	ug/L	**72**	<0.20	0.20	5531317
Surrogate Recovery (%)					
4-Bromofluorobenzene	%	-	102		5531317
D4-1,2-Dichloroethane	%	-	110		5531317
D8-Toluene	%	-	98		5531317

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Reg. 153/04 (Amended April 15, 2011)
Table 1: Full Depth Background Site Condition Standards
Ground Water - All Types of Property Uses

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Soil Engineers Ltd
Client Project #: 1802-E072
Sampler Initials: JP

TEST SUMMARY

Maxxam ID: GSF696
Sample ID: MW5
Matrix: Water

Collected: 2018/05/15
Shipped:
Received: 2018/05/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	5535645	N/A	2018/05/24	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	5541493	2018/05/22	2018/05/23	Zhiyue (Frank) Zhu
Volatile Organic Compounds and F1 PHCs	GC/MSFD	5536474	N/A	2018/05/23	Blair Gannon

Maxxam ID: GSF697
Sample ID: DUPW1
Matrix: Water

Collected: 2018/05/15
Shipped:
Received: 2018/05/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	5541775	N/A	2018/05/23	Ravinder Gaidhu

Maxxam ID: GSF697 Dup
Sample ID: DUPW1
Matrix: Water

Collected: 2018/05/15
Shipped:
Received: 2018/05/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	5541775	N/A	2018/05/23	Ravinder Gaidhu

Maxxam ID: GSF698
Sample ID: TRIP BLANK
Matrix: Water

Collected: 2018/05/15
Shipped:
Received: 2018/05/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	5535645	N/A	2018/05/24	Automated Statchk
Volatile Organic Compounds in Water	GC/MS	5531317	N/A	2018/05/24	Rebecca McClean

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Maxxam Job #: B8B5893
Report Date: 2018/05/24

Soil Engineers Ltd
Client Project #: 1802-E072
Sampler Initials: JP

GENERAL COMMENTS

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

Package 1	5.3°C

All 250mL amber glass bottles for F2-F4 analysis contained visible sediment, which was included in the extraction.
All 40mL vials for F1BTEX and VOC analyses contained visible sediment.

Results relate only to the items tested.

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Maxxam Job #: B8B5893
Report Date: 2018/05/24

QUALITY ASSURANCE REPORT

Soil Engineers Ltd
Client Project #: 1802-E072
Sampler Initials: JP

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5531317	4-Bromofluorobenzene	2018/05/16	87	70 - 130	104	70 - 130	89	%		
5531317	D4-1,2-Dichloroethane	2018/05/16	107	70 - 130	107	70 - 130	115	%		
5531317	D8-Toluene	2018/05/16	104	70 - 130	105	70 - 130	101	%		
5536474	4-Bromofluorobenzene	2018/05/22	103	70 - 130	103	70 - 130	95	%		
5536474	D4-1,2-Dichloroethane	2018/05/22	100	70 - 130	99	70 - 130	100	%		
5536474	D8-Toluene	2018/05/22	101	70 - 130	102	70 - 130	98	%		
5541493	o-Terphenyl	2018/05/23	100	60 - 130	100	60 - 130	99	%		
5541775	1,4-Difluorobenzene	2018/05/23	100	70 - 130	103	70 - 130	101	%		
5541775	4-Bromofluorobenzene	2018/05/23	99	70 - 130	98	70 - 130	97	%		
5541775	D10-Ethylbenzene	2018/05/23	83	70 - 130	87	70 - 130	79	%		
5541775	D4-1,2-Dichloroethane	2018/05/23	99	70 - 130	101	70 - 130	99	%		
5531317	1,1,1,2-Tetrachloroethane	2018/05/16	104	70 - 130	106	70 - 130	<0.50	ug/L		
5531317	1,1,1-Trichloroethane	2018/05/16	99	70 - 130	98	70 - 130	<0.20	ug/L		
5531317	1,1,2,2-Tetrachloroethane	2018/05/16	106	70 - 130	109	70 - 130	<0.50	ug/L	NC	30
5531317	1,1,2-Trichloroethane	2018/05/16	102	70 - 130	105	70 - 130	<0.50	ug/L		
5531317	1,1-Dichloroethane	2018/05/16	98	70 - 130	98	70 - 130	<0.20	ug/L		
5531317	1,1-Dichloroethylene	2018/05/16	94	70 - 130	93	70 - 130	<0.20	ug/L		
5531317	1,2-Dichlorobenzene	2018/05/16	98	70 - 130	100	70 - 130	<0.50	ug/L	NC	30
5531317	1,2-Dichloroethane	2018/05/16	100	70 - 130	100	70 - 130	<0.50	ug/L		
5531317	1,2-Dichloropropane	2018/05/16	98	70 - 130	98	70 - 130	<0.20	ug/L		
5531317	1,3-Dichlorobenzene	2018/05/16	93	70 - 130	95	70 - 130	<0.50	ug/L		
5531317	1,4-Dichlorobenzene	2018/05/16	97	70 - 130	99	70 - 130	<0.50	ug/L	NC	30
5531317	Acetone (2-Propanone)	2018/05/16	97	60 - 140	96	60 - 140	<10	ug/L		
5531317	Benzene	2018/05/16	95	70 - 130	95	70 - 130	<0.20	ug/L	NC	30
5531317	Bromodichloromethane	2018/05/16	103	70 - 130	104	70 - 130	<0.50	ug/L		
5531317	Bromoform	2018/05/16	100	70 - 130	103	70 - 130	<1.0	ug/L		
5531317	Bromomethane	2018/05/16	97	60 - 140	94	60 - 140	<0.50	ug/L		
5531317	Carbon Tetrachloride	2018/05/16	100	70 - 130	99	70 - 130	<0.20	ug/L		
5531317	Chlorobenzene	2018/05/16	94	70 - 130	96	70 - 130	<0.20	ug/L		
5531317	Chloroform	2018/05/16	100	70 - 130	100	70 - 130	<0.20	ug/L	NC	30
5531317	cis-1,2-Dichloroethylene	2018/05/16	97	70 - 130	97	70 - 130	<0.50	ug/L	NC	30

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QUALITY ASSURANCE REPORT(CONT'D)

Soil Engineers Ltd
Client Project #: 1802-E072
Sampler Initials: JP

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5531317	cis-1,3-Dichloropropene	2018/05/16	99	70 - 130	95	70 - 130	<0.30	ug/L		
5531317	Dibromochloromethane	2018/05/16	100	70 - 130	103	70 - 130	<0.50	ug/L		
5531317	Dichlorodifluoromethane (FREON 12)	2018/05/16	83	60 - 140	89	60 - 140	<1.0	ug/L		
5531317	Ethylbenzene	2018/05/16	91	70 - 130	93	70 - 130	<0.20	ug/L	NC	30
5531317	Ethylene Dibromide	2018/05/16	101	70 - 130	103	70 - 130	<0.20	ug/L		
5531317	Hexane	2018/05/16	95	70 - 130	94	70 - 130	<1.0	ug/L		
5531317	Methyl Ethyl Ketone (2-Butanone)	2018/05/16	100	60 - 140	100	60 - 140	<10	ug/L		
5531317	Methyl Isobutyl Ketone	2018/05/16	101	70 - 130	104	70 - 130	<5.0	ug/L		
5531317	Methyl t-butyl ether (MTBE)	2018/05/16	84	70 - 130	85	70 - 130	<0.50	ug/L		
5531317	Methylene Chloride(Dichloromethane)	2018/05/16	92	70 - 130	92	70 - 130	<2.0	ug/L	NC	30
5531317	o-Xylene	2018/05/16	89	70 - 130	95	70 - 130	<0.20	ug/L	NC	30
5531317	p+m-Xylene	2018/05/16	91	70 - 130	92	70 - 130	<0.20	ug/L	NC	30
5531317	Styrene	2018/05/16	98	70 - 130	102	70 - 130	<0.50	ug/L		
5531317	Tetrachloroethylene	2018/05/16	91	70 - 130	92	70 - 130	<0.20	ug/L	NC	30
5531317	Toluene	2018/05/16	94	70 - 130	95	70 - 130	<0.20	ug/L	NC	30
5531317	Total Xylenes	2018/05/16					<0.20	ug/L	NC	30
5531317	trans-1,2-Dichloroethylene	2018/05/16	97	70 - 130	96	70 - 130	<0.50	ug/L		
5531317	trans-1,3-Dichloropropene	2018/05/16	106	70 - 130	100	70 - 130	<0.40	ug/L	NC	30
5531317	Trichloroethylene	2018/05/16	94	70 - 130	94	70 - 130	<0.20	ug/L	NC	30
5531317	Trichlorofluoromethane (FREON 11)	2018/05/16	94	70 - 130	95	70 - 130	<0.50	ug/L		
5531317	Vinyl Chloride	2018/05/16	88	70 - 130	93	70 - 130	<0.20	ug/L		
5536474	1,1,1,2-Tetrachloroethane	2018/05/22	95	70 - 130	100	70 - 130	<0.50	ug/L	NC	30
5536474	1,1,1-Trichloroethane	2018/05/22	94	70 - 130	102	70 - 130	<0.20	ug/L	NC	30
5536474	1,1,2,2-Tetrachloroethane	2018/05/22	96	70 - 130	98	70 - 130	<0.50	ug/L	NC	30
5536474	1,1,2-Trichloroethane	2018/05/22	97	70 - 130	99	70 - 130	<0.50	ug/L	NC	30
5536474	1,1-Dichloroethane	2018/05/22	95	70 - 130	102	70 - 130	<0.20	ug/L	NC	30
5536474	1,1-Dichloroethylene	2018/05/22	95	70 - 130	104	70 - 130	<0.20	ug/L	NC	30
5536474	1,2-Dichlorobenzene	2018/05/22	95	70 - 130	100	70 - 130	<0.50	ug/L	NC	30
5536474	1,2-Dichloroethane	2018/05/22	97	70 - 130	99	70 - 130	<0.50	ug/L	NC	30
5536474	1,2-Dichloropropane	2018/05/22	93	70 - 130	98	70 - 130	<0.20	ug/L	NC	30
5536474	1,3-Dichlorobenzene	2018/05/22	100	70 - 130	107	70 - 130	<0.50	ug/L	NC	30

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QUALITY ASSURANCE REPORT(CONT'D)

Soil Engineers Ltd
Client Project #: 1802-E072
Sampler Initials: JP

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5536474	1,4-Dichlorobenzene	2018/05/22	106	70 - 130	113	70 - 130	<0.50	ug/L	NC	30
5536474	Acetone (2-Propanone)	2018/05/22	96	60 - 140	101	60 - 140	<10	ug/L	1.6	30
5536474	Benzene	2018/05/22	94	70 - 130	100	70 - 130	<0.20	ug/L	1.4	30
5536474	Bromodichloromethane	2018/05/22	94	70 - 130	98	70 - 130	<0.50	ug/L	NC	30
5536474	Bromoform	2018/05/22	95	70 - 130	97	70 - 130	<1.0	ug/L	NC	30
5536474	Bromomethane	2018/05/22	99	60 - 140	105	60 - 140	<0.50	ug/L	NC	30
5536474	Carbon Tetrachloride	2018/05/22	94	70 - 130	102	70 - 130	<0.20	ug/L	NC	30
5536474	Chlorobenzene	2018/05/22	94	70 - 130	99	70 - 130	<0.20	ug/L	NC	30
5536474	Chloroform	2018/05/22	95	70 - 130	101	70 - 130	<0.20	ug/L	NC	30
5536474	cis-1,2-Dichloroethylene	2018/05/22	97	70 - 130	103	70 - 130	<0.50	ug/L	NC	30
5536474	cis-1,3-Dichloropropene	2018/05/22	97	70 - 130	100	70 - 130	<0.30	ug/L	NC	30
5536474	Dibromochloromethane	2018/05/22	96	70 - 130	98	70 - 130	<0.50	ug/L	NC	30
5536474	Dichlorodifluoromethane (FREON 12)	2018/05/22	98	60 - 140	107	60 - 140	<1.0	ug/L	NC	30
5536474	Ethylbenzene	2018/05/22	95	70 - 130	102	70 - 130	<0.20	ug/L	1.3	30
5536474	Ethylene Dibromide	2018/05/22	96	70 - 130	99	70 - 130	<0.20	ug/L	NC	30
5536474	F1 (C6-C10) - BTEX	2018/05/22					<25	ug/L	NC	30
5536474	F1 (C6-C10)	2018/05/22	98	60 - 140	96	60 - 140	<25	ug/L	NC	30
5536474	Hexane	2018/05/22	95	70 - 130	102	70 - 130	<1.0	ug/L	NC	30
5536474	Methyl Ethyl Ketone (2-Butanone)	2018/05/22	102	60 - 140	104	60 - 140	<10	ug/L	2.0	30
5536474	Methyl Isobutyl Ketone	2018/05/22	98	70 - 130	101	70 - 130	<5.0	ug/L	3.3	30
5536474	Methyl t-butyl ether (MTBE)	2018/05/22	97	70 - 130	100	70 - 130	<0.50	ug/L	NC	30
5536474	Methylene Chloride(Dichloromethane)	2018/05/22	102	70 - 130	107	70 - 130	<2.0	ug/L	NC	30
5536474	o-Xylene	2018/05/22	95	70 - 130	101	70 - 130	<0.20	ug/L	2.8	30
5536474	p+m-Xylene	2018/05/22	94	70 - 130	101	70 - 130	<0.20	ug/L	1.6	30
5536474	Styrene	2018/05/22	96	70 - 130	102	70 - 130	<0.50	ug/L	NC	30
5536474	Tetrachloroethylene	2018/05/22	93	70 - 130	102	70 - 130	<0.20	ug/L	NC	30
5536474	Toluene	2018/05/22	86	70 - 130	93	70 - 130	<0.20	ug/L	0.18	30
5536474	Total Xylenes	2018/05/22					<0.20	ug/L	2.0	30
5536474	trans-1,2-Dichloroethylene	2018/05/22	94	70 - 130	102	70 - 130	<0.50	ug/L	NC	30
5536474	trans-1,3-Dichloropropene	2018/05/22	100	70 - 130	102	70 - 130	<0.40	ug/L	NC	30
5536474	Trichloroethylene	2018/05/22	95	70 - 130	102	70 - 130	<0.20	ug/L	NC	30

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QUALITY ASSURANCE REPORT(CONT'D)

Soil Engineers Ltd
Client Project #: 1802-E072
Sampler Initials: JP

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5536474	Trichlorofluoromethane (FREON 11)	2018/05/22	96	70 - 130	105	70 - 130	<0.50	ug/L	NC	30
5536474	Vinyl Chloride	2018/05/22	97	70 - 130	107	70 - 130	<0.20	ug/L	NC	30
5541493	F2 (C10-C16 Hydrocarbons)	2018/05/23	98	50 - 130	95	60 - 130	<100	ug/L	NC	30
5541493	F3 (C16-C34 Hydrocarbons)	2018/05/23	98	50 - 130	96	60 - 130	<200	ug/L	NC	30
5541493	F4 (C34-C50 Hydrocarbons)	2018/05/23	90	50 - 130	88	60 - 130	<200	ug/L	NC	30
5541775	Benzene	2018/05/23	84	70 - 130	84	70 - 130	<0.20	ug/L	NC	30
5541775	Ethylbenzene	2018/05/23	79	70 - 130	79	70 - 130	<0.20	ug/L	NC	30
5541775	o-Xylene	2018/05/23	78	70 - 130	77	70 - 130	<0.20	ug/L	NC	30
5541775	p+m-Xylene	2018/05/23	77	70 - 130	76	70 - 130	<0.40	ug/L	NC	30
5541775	Toluene	2018/05/23	76	70 - 130	76	70 - 130	<0.20	ug/L	4.0	30
5541775	Total Xylenes	2018/05/23					<0.40	ug/L	NC	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).

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Maxxam Job #: B8B5893
Report Date: 2018/05/24

Soil Engineers Ltd
Client Project #: 1802-E072
Sampler Initials: JP

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

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Maxxam Job #: B8B5893
Report Date: 2018/05/24

Soil Engineers Ltd
Client Project #: 1802-E072
Sampler Initials: JP

Exceedence Summary Table – Reg153/04 T1-GW

Result Exceedences

Sample ID	Maxxam ID	Parameter	Criteria	Result	DL	Units
MW5	GSF696-02	Bromodichloromethane	2	6.9	0.50	ug/L
MW5	GSF696-02	Chloroform	2	9.8	0.20	ug/L
MW5	GSF696-02	Dibromochloromethane	2	4.7	0.50	ug/L

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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Maxxam
A Bureau Veritas Group Company

Your Project #: 1802-E072
Your C.O.C. #: 666590-01-01

Attention: Laila Torabansari

Soil Engineers Ltd
90 West Beaver Creek Road
Unit 100
Richmond Hill, ON
CANADA L4B 1E7

Report Date: 2018/06/08
Report #: R5223727
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B8D2111
Received: 2018/06/01, 13:25

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
1,3-Dichloropropene Sum	1	N/A	2018/06/07		EPA 8260C m
Petroleum Hydro. CCME F1 & BTEX in Water	1	N/A	2018/06/04	CAM SOP-00315	CCME PHC-CWS m
Volatile Organic Compounds in Water	1	N/A	2018/06/07	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.

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.

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.

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Maxxam
A Bureau Veritas Group Company

Your Project #: 1802-E072
Your C.O.C. #: 666590-01-01

Attention: Laila Torabansari

Soil Engineers Ltd
90 West Beaver Creek Road
Unit 100
Richmond Hill, ON
CANADA L4B 1E7

Report Date: 2018/06/08
Report #: R5223727
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B8D2111
Received: 2018/06/01, 13:25

Encryption Key

Maxxam
08 Jun 2018 09:27:50

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Antonella Brasil, Senior Project Manager
Email: ABrasil@maxxam.ca
Phone# (905)817-5817

==========

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Maxxam
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Maxxam Job #: B8D2111
Report Date: 2018/06/08

Soil Engineers Ltd
Client Project #: 1802-E072

PETROLEUM HYDROCARBONS (CCME)

Maxxam ID		GVT585		
Sampling Date				
COC Number		666590-01-01		
	UNITS	TB	RDL	QC Batch
BTEX & F1 Hydrocarbons				
Benzene	ug/L	<0.20	0.20	5561943
Toluene	ug/L	<0.20	0.20	5561943
Ethylbenzene	ug/L	<0.20	0.20	5561943
o-Xylene	ug/L	<0.20	0.20	5561943
p+m-Xylene	ug/L	<0.40	0.40	5561943
Total Xylenes	ug/L	<0.40	0.40	5561943
Surrogate Recovery (%)				
1,4-Difluorobenzene	%	102		5561943
4-Bromofluorobenzene	%	101		5561943
D10-Ethylbenzene	%	106		5561943
D4-1,2-Dichloroethane	%	100		5561943

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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O.REG 153 VOCS BY HS (WATER)

Maxxam ID		GVT584		
Sampling Date		2018/05/31 14:00		
COC Number		666590-01-01		
	UNITS	MW5	RDL	QC Batch
Calculated Parameters				
1,3-Dichloropropene (cis+trans)	ug/L	<0.50	0.50	5560802
Volatile Organics				
Acetone (2-Propanone)	ug/L	29	10	5561487
Benzene	ug/L	<0.20	0.20	5561487
Bromodichloromethane	ug/L	<0.50	0.50	5561487
Bromoform	ug/L	<1.0	1.0	5561487
Bromomethane	ug/L	<0.50	0.50	5561487
Carbon Tetrachloride	ug/L	<0.20	0.20	5561487
Chlorobenzene	ug/L	<0.20	0.20	5561487
Chloroform	ug/L	<0.20	0.20	5561487
Dibromochloromethane	ug/L	<0.50	0.50	5561487
1,2-Dichlorobenzene	ug/L	<0.50	0.50	5561487
1,3-Dichlorobenzene	ug/L	<0.50	0.50	5561487
1,4-Dichlorobenzene	ug/L	<0.50	0.50	5561487
Dichlorodifluoromethane (FREON 12)	ug/L	<1.0	1.0	5561487
1,1-Dichloroethane	ug/L	<0.20	0.20	5561487
1,2-Dichloroethane	ug/L	<0.50	0.50	5561487
1,1-Dichloroethylene	ug/L	<0.20	0.20	5561487
cis-1,2-Dichloroethylene	ug/L	<0.50	0.50	5561487
trans-1,2-Dichloroethylene	ug/L	<0.50	0.50	5561487
1,2-Dichloropropane	ug/L	<0.20	0.20	5561487
cis-1,3-Dichloropropene	ug/L	<0.30	0.30	5561487
trans-1,3-Dichloropropene	ug/L	<0.40	0.40	5561487
Ethylbenzene	ug/L	<0.20	0.20	5561487
Ethylene Dibromide	ug/L	<0.20	0.20	5561487
Hexane	ug/L	<1.0	1.0	5561487
Methylene Chloride(Dichloromethane)	ug/L	4.0	2.0	5561487
Methyl Ethyl Ketone (2-Butanone)	ug/L	<10	10	5561487
Methyl Isobutyl Ketone	ug/L	<5.0	5.0	5561487
Methyl t-butyl ether (MTBE)	ug/L	<0.50	0.50	5561487
Styrene	ug/L	<0.50	0.50	5561487
1,1,1,2-Tetrachloroethane	ug/L	<0.50	0.50	5561487
1,1,2,2-Tetrachloroethane	ug/L	<0.50	0.50	5561487
Tetrachloroethylene	ug/L	<0.20	0.20	5561487
Toluene	ug/L	0.44	0.20	5561487

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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O.REG 153 VOCS BY HS (WATER)

Maxxam ID		GVT584		
Sampling Date		2018/05/31 14:00		
COC Number		666590-01-01		
	UNITS	MW5	RDL	QC Batch
1,1,1-Trichloroethane	ug/L	<0.20	0.20	5561487
1,1,2-Trichloroethane	ug/L	<0.50	0.50	5561487
Trichloroethylene	ug/L	<0.20	0.20	5561487
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	0.50	5561487
Vinyl Chloride	ug/L	<0.20	0.20	5561487
p+m-Xylene	ug/L	<0.20	0.20	5561487
o-Xylene	ug/L	<0.20	0.20	5561487
Total Xylenes	ug/L	<0.20	0.20	5561487
Surrogate Recovery (%)				
4-Bromofluorobenzene	%	91		5561487
D4-1,2-Dichloroethane	%	114		5561487
D8-Toluene	%	92		5561487

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B8D2111
Report Date: 2018/06/08

Soil Engineers Ltd
Client Project #: 1802-E072

TEST SUMMARY

Maxxam ID: GVT584
Sample ID: MW5
Matrix: Water

Collected: 2018/05/31
Shipped:
Received: 2018/06/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	5560802	N/A	2018/06/07	Automated Statchk
Volatile Organic Compounds in Water	GC/MS	5561487	N/A	2018/06/07	Anna Gabrielyan

Maxxam ID: GVT585
Sample ID: TB
Matrix: Water

Collected:
Shipped:
Received: 2018/06/01

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	5561943	N/A	2018/06/04	Haibin Wu

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GENERAL COMMENTS

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

Package 1	1.7°C

Results relate only to the items tested.

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Maxxam Job #: B8D2111
Report Date: 2018/06/08

QUALITY ASSURANCE REPORT

Soil Engineers Ltd
Client Project #: 1802-E072

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5561487	4-Bromofluorobenzene	2018/06/06	99	70 - 130	99	70 - 130	94	%		
5561487	D4-1,2-Dichloroethane	2018/06/06	106	70 - 130	102	70 - 130	106	%		
5561487	D8-Toluene	2018/06/06	103	70 - 130	103	70 - 130	94	%		
5561943	1,4-Difluorobenzene	2018/06/04	101	70 - 130	100	70 - 130	99	%		
5561943	4-Bromofluorobenzene	2018/06/04	102	70 - 130	102	70 - 130	101	%		
5561943	D10-Ethylbenzene	2018/06/04	99	70 - 130	98	70 - 130	102	%		
5561943	D4-1,2-Dichloroethane	2018/06/04	100	70 - 130	98	70 - 130	99	%		
5561487	1,1,1,2-Tetrachloroethane	2018/06/06	97	70 - 130	95	70 - 130	<0.50	ug/L	NC	30
5561487	1,1,1-Trichloroethane	2018/06/06	94	70 - 130	91	70 - 130	<0.20	ug/L	NC	30
5561487	1,1,2,2-Tetrachloroethane	2018/06/06	107	70 - 130	102	70 - 130	<0.50	ug/L	NC	30
5561487	1,1,2-Trichloroethane	2018/06/06	106	70 - 130	101	70 - 130	<0.50	ug/L	NC	30
5561487	1,1-Dichloroethane	2018/06/06	101	70 - 130	97	70 - 130	<0.20	ug/L	0.74	30
5561487	1,1-Dichloroethylene	2018/06/06	99	70 - 130	96	70 - 130	<0.20	ug/L	NC	30
5561487	1,2-Dichlorobenzene	2018/06/06	99	70 - 130	95	70 - 130	<0.50	ug/L	NC	30
5561487	1,2-Dichloroethane	2018/06/06	102	70 - 130	97	70 - 130	<0.50	ug/L	NC	30
5561487	1,2-Dichloropropane	2018/06/06	101	70 - 130	97	70 - 130	<0.20	ug/L	NC	30
5561487	1,3-Dichlorobenzene	2018/06/06	90	70 - 130	89	70 - 130	<0.50	ug/L	NC	30
5561487	1,4-Dichlorobenzene	2018/06/06	96	70 - 130	95	70 - 130	<0.50	ug/L	NC	30
5561487	Acetone (2-Propanone)	2018/06/06	110	60 - 140	100	60 - 140	<10	ug/L	NC	30
5561487	Benzene	2018/06/06	97	70 - 130	94	70 - 130	<0.20	ug/L	NC	30
5561487	Bromodichloromethane	2018/06/06	96	70 - 130	93	70 - 130	<0.50	ug/L	NC	30
5561487	Bromoform	2018/06/06	98	70 - 130	94	70 - 130	<1.0	ug/L	NC	30
5561487	Bromomethane	2018/06/06	103	60 - 140	96	60 - 140	<0.50	ug/L	NC	30
5561487	Carbon Tetrachloride	2018/06/06	92	70 - 130	92	70 - 130	<0.20	ug/L	NC	30
5561487	Chlorobenzene	2018/06/06	96	70 - 130	94	70 - 130	<0.20	ug/L	NC	30
5561487	Chloroform	2018/06/06	98	70 - 130	94	70 - 130	<0.20	ug/L	NC	30
5561487	cis-1,2-Dichloroethylene	2018/06/06	98	70 - 130	95	70 - 130	<0.50	ug/L	0.39	30
5561487	cis-1,3-Dichloropropene	2018/06/06	100	70 - 130	94	70 - 130	<0.30	ug/L	NC	30
5561487	Dibromochloromethane	2018/06/06	98	70 - 130	94	70 - 130	<0.50	ug/L	NC	30
5561487	Dichlorodifluoromethane (FREON 12)	2018/06/06	86	60 - 140	84	60 - 140	<1.0	ug/L	NC	30
5561487	Ethylbenzene	2018/06/06	93	70 - 130	93	70 - 130	<0.20	ug/L	NC	30
5561487	Ethylene Dibromide	2018/06/06	101	70 - 130	96	70 - 130	<0.20	ug/L	NC	30

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			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5561487	Hexane	2018/06/06	102	70 - 130	99	70 - 130	<1.0	ug/L	NC	30
5561487	Methyl Ethyl Ketone (2-Butanone)	2018/06/06	110	60 - 140	104	60 - 140	<10	ug/L	NC	30
5561487	Methyl Isobutyl Ketone	2018/06/06	106	70 - 130	104	70 - 130	<5.0	ug/L	NC	30
5561487	Methyl t-butyl ether (MTBE)	2018/06/06	93	70 - 130	91	70 - 130	<0.50	ug/L	NC	30
5561487	Methylene Chloride(Dichloromethane)	2018/06/06	108	70 - 130	103	70 - 130	<2.0	ug/L	NC	30
5561487	o-Xylene	2018/06/06	88	70 - 130	92	70 - 130	<0.20	ug/L	NC	30
5561487	p+m-Xylene	2018/06/06	92	70 - 130	93	70 - 130	<0.20	ug/L	NC	30
5561487	Styrene	2018/06/06	94	70 - 130	97	70 - 130	<0.50	ug/L	NC	30
5561487	Tetrachloroethylene	2018/06/06	96	70 - 130	94	70 - 130	<0.20	ug/L	2.4	30
5561487	Toluene	2018/06/06	96	70 - 130	94	70 - 130	<0.20	ug/L	NC	30
5561487	Total Xylenes	2018/06/06					<0.20	ug/L	NC	30
5561487	trans-1,2-Dichloroethylene	2018/06/06	99	70 - 130	96	70 - 130	<0.50	ug/L	NC	30
5561487	trans-1,3-Dichloropropene	2018/06/06	110	70 - 130	100	70 - 130	<0.40	ug/L	NC	30
5561487	Trichloroethylene	2018/06/06	94	70 - 130	93	70 - 130	<0.20	ug/L	1.5	30
5561487	Trichlorofluoromethane (FREON 11)	2018/06/06	91	70 - 130	88	70 - 130	<0.50	ug/L	NC	30
5561487	Vinyl Chloride	2018/06/06	101	70 - 130	98	70 - 130	<0.20	ug/L	0.70	30
5561943	Benzene	2018/06/04	106	70 - 130	102	70 - 130	<0.20	ug/L	1.4	30
5561943	Ethylbenzene	2018/06/04	96	70 - 130	95	70 - 130	<0.20	ug/L	NC	30
5561943	o-Xylene	2018/06/04	97	70 - 130	96	70 - 130	<0.20	ug/L	NC	30
5561943	p+m-Xylene	2018/06/04	96	70 - 130	96	70 - 130	<0.40	ug/L	NC	30
5561943	Toluene	2018/06/04	93	70 - 130	92	70 - 130	<0.20	ug/L	NC	30
5561943	Total Xylenes	2018/06/04					<0.40	ug/L	NC	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).

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Maxxam Job #: B8D2111
Report Date: 2018/06/08

Soil Engineers Ltd
Client Project #: 1802-E072

VALIDATION SIGNATURE PAGE

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

Cristina Carriere

Cristina Carriere, Scientific Service Specialist

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A Bureau Veritas Group Company

Your Project #: 1802-E072
Your C.O.C. #: 671882-01-01

Attention: Laila Torabansari

Soil Engineers Ltd
90 West Beaver Creek Road
Unit 100
Richmond Hill, ON
CANADA L4B 1E7

Report Date: 2018/07/17
Report #: R5299684
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B8H3020
Received: 2018/07/11, 15:11

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
1,3-Dichloropropene Sum	1	N/A	2018/07/16		EPA 8260C m
1,3-Dichloropropene Sum	1	N/A	2018/07/17		EPA 8260C m
Volatile Organic Compounds in Water	1	N/A	2018/07/14	CAM SOP-00228	EPA 8260C m
Volatile Organic Compounds in Water	1	N/A	2018/07/16	CAM SOP-00228	EPA 8260C m

Remarks:

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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.

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.

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Your Project #: 1802-E072
Your C.O.C. #: 671882-01-01

Attention: Laila Torabansari

Soil Engineers Ltd
90 West Beaver Creek Road
Unit 100
Richmond Hill, ON
CANADA L4B 1E7

Report Date: 2018/07/17
Report #: R5299684
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B8H3020
Received: 2018/07/11, 15:11

Encryption Key

Maxxam
17 Jul 2018 16:45:27

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Antonella Brasil, Senior Project Manager
Email: ABrasil@maxxam.ca
Phone# (905)817-5817

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Maxxam
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Maxxam Job #: B8H3020
Report Date: 2018/07/17

Soil Engineers Ltd
Client Project #: 1802-E072
Sampler Initials: LT

O.REG 153 VOCS BY HS (WATER)

Maxxam ID		HEP914	HEP915		
Sampling Date		2018/07/10 17:00	2018/07/10 08:00		
COC Number		671882-01-01	671882-01-01		
	UNITS	MW5	TRIP BLANK	RDL	QC Batch
Calculated Parameters					
1,3-Dichloropropene (cis+trans)	ug/L	<0.50	<0.50	0.50	5622963
Volatile Organics					
Acetone (2-Propanone)	ug/L	28	<10	10	5625604
Benzene	ug/L	<0.20	<0.20	0.20	5625604
Bromodichloromethane	ug/L	<0.50	<0.50	0.50	5625604
Bromoform	ug/L	<1.0	<1.0	1.0	5625604
Bromomethane	ug/L	<0.50	<0.50	0.50	5625604
Carbon Tetrachloride	ug/L	<0.20	<0.20	0.20	5625604
Chlorobenzene	ug/L	<0.20	<0.20	0.20	5625604
Chloroform	ug/L	<0.20	<0.20	0.20	5625604
Dibromochloromethane	ug/L	<0.50	<0.50	0.50	5625604
1,2-Dichlorobenzene	ug/L	<0.50	<0.50	0.50	5625604
1,3-Dichlorobenzene	ug/L	<0.50	<0.50	0.50	5625604
1,4-Dichlorobenzene	ug/L	<0.50	<0.50	0.50	5625604
Dichlorodifluoromethane (FREON 12)	ug/L	<1.0	<1.0	1.0	5625604
1,1-Dichloroethane	ug/L	<0.20	<0.20	0.20	5625604
1,2-Dichloroethane	ug/L	<0.50	<0.50	0.50	5625604
1,1-Dichloroethylene	ug/L	<0.20	<0.20	0.20	5625604
cis-1,2-Dichloroethylene	ug/L	<0.50	<0.50	0.50	5625604
trans-1,2-Dichloroethylene	ug/L	<0.50	<0.50	0.50	5625604
1,2-Dichloropropane	ug/L	<0.20	<0.20	0.20	5625604
cis-1,3-Dichloropropene	ug/L	<0.30	<0.30	0.30	5625604
trans-1,3-Dichloropropene	ug/L	<0.40	<0.40	0.40	5625604
Ethylbenzene	ug/L	<0.20	<0.20	0.20	5625604
Ethylene Dibromide	ug/L	<0.20	<0.20	0.20	5625604
Hexane	ug/L	<1.0	<1.0	1.0	5625604
Methylene Chloride(Dichloromethane)	ug/L	<2.0	<2.0	2.0	5625604
Methyl Ethyl Ketone (2-Butanone)	ug/L	<10	<10	10	5625604
Methyl Isobutyl Ketone	ug/L	<5.0	<5.0	5.0	5625604
Methyl t-butyl ether (MTBE)	ug/L	<0.50	<0.50	0.50	5625604
Styrene	ug/L	<0.50	<0.50	0.50	5625604
1,1,1,2-Tetrachloroethane	ug/L	<0.50	<0.50	0.50	5625604
1,1,2,2-Tetrachloroethane	ug/L	<0.50	<0.50	0.50	5625604
Tetrachloroethylene	ug/L	<0.20	<0.20	0.20	5625604
Toluene	ug/L	0.45	<0.20	0.20	5625604

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B8H3020
Report Date: 2018/07/17

Soil Engineers Ltd
Client Project #: 1802-E072
Sampler Initials: LT

O.REG 153 VOCS BY HS (WATER)

Maxxam ID		HEP914	HEP915		
Sampling Date		2018/07/10 17:00	2018/07/10 08:00		
COC Number		671882-01-01	671882-01-01		
	UNITS	MW5	TRIP BLANK	RDL	QC Batch
1,1,1-Trichloroethane	ug/L	<0.20	<0.20	0.20	5625604
1,1,2-Trichloroethane	ug/L	<0.50	<0.50	0.50	5625604
Trichloroethylene	ug/L	<0.20	<0.20	0.20	5625604
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	<0.50	0.50	5625604
Vinyl Chloride	ug/L	<0.20	<0.20	0.20	5625604
p+m-Xylene	ug/L	<0.20	<0.20	0.20	5625604
o-Xylene	ug/L	<0.20	<0.20	0.20	5625604
Total Xylenes	ug/L	<0.20	<0.20	0.20	5625604
Surrogate Recovery (%)					
4-Bromofluorobenzene	%	99	96		5625604
D4-1,2-Dichloroethane	%	104	110		5625604
D8-Toluene	%	97	93		5625604

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B8H3020
Report Date: 2018/07/17

Soil Engineers Ltd
Client Project #: 1802-E072
Sampler Initials: LT

TEST SUMMARY

Maxxam ID: HEP914
Sample ID: MW5
Matrix: Water

Collected: 2018/07/10
Shipped:
Received: 2018/07/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	5622963	N/A	2018/07/17	Automated Statchk
Volatile Organic Compounds in Water	GC/MS	5625604	N/A	2018/07/16	Juan Pangilinan

Maxxam ID: HEP915
Sample ID: TRIP BLANK
Matrix: Water

Collected: 2018/07/10
Shipped:
Received: 2018/07/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	5622963	N/A	2018/07/16	Automated Statchk
Volatile Organic Compounds in Water	GC/MS	5625604	N/A	2018/07/14	Juan Pangilinan

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Soil Engineers Ltd
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GENERAL COMMENTS

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

Package 1	3.7°C

Results relate only to the items tested.

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Maxxam Job #: B8H3020
Report Date: 2018/07/17

QUALITY ASSURANCE REPORT

Soil Engineers Ltd
Client Project #: 1802-E072
Sampler Initials: LT

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5625604	4-Bromofluorobenzene	2018/07/13	98	70 - 130	105	70 - 130	101	%		
5625604	D4-1,2-Dichloroethane	2018/07/13	100	70 - 130	99	70 - 130	101	%		
5625604	D8-Toluene	2018/07/13	98	70 - 130	102	70 - 130	95	%		
5625604	1,1,1,2-Tetrachloroethane	2018/07/13	90	70 - 130	94	70 - 130	<0.50	ug/L	NC	30
5625604	1,1,1-Trichloroethane	2018/07/13	91	70 - 130	94	70 - 130	<0.20	ug/L	6.4	30
5625604	1,1,2,2-Tetrachloroethane	2018/07/13	88	70 - 130	92	70 - 130	<0.50	ug/L	NC	30
5625604	1,1,2-Trichloroethane	2018/07/13	95	70 - 130	91	70 - 130	<0.50	ug/L	NC	30
5625604	1,1-Dichloroethane	2018/07/13	91	70 - 130	92	70 - 130	<0.20	ug/L	2.6	30
5625604	1,1-Dichloroethylene	2018/07/13	89	70 - 130	91	70 - 130	<0.20	ug/L	NC	30
5625604	1,2-Dichlorobenzene	2018/07/13	86	70 - 130	92	70 - 130	<0.50	ug/L	NC	30
5625604	1,2-Dichloroethane	2018/07/13	92	70 - 130	94	70 - 130	<0.50	ug/L	NC	30
5625604	1,2-Dichloropropane	2018/07/13	87	70 - 130	92	70 - 130	<0.20	ug/L	NC	30
5625604	1,3-Dichlorobenzene	2018/07/13	86	70 - 130	92	70 - 130	<0.50	ug/L	NC	30
5625604	1,4-Dichlorobenzene	2018/07/13	87	70 - 130	95	70 - 130	<0.50	ug/L	NC	30
5625604	Acetone (2-Propanone)	2018/07/13	100	60 - 140	92	60 - 140	<10	ug/L	NC	30
5625604	Benzene	2018/07/13	85	70 - 130	90	70 - 130	<0.20	ug/L	NC	30
5625604	Bromodichloromethane	2018/07/13	92	70 - 130	91	70 - 130	<0.50	ug/L	NC	30
5625604	Bromoform	2018/07/13	86	70 - 130	94	70 - 130	<1.0	ug/L	NC	30
5625604	Bromomethane	2018/07/13	74	60 - 140	84	60 - 140	<0.50	ug/L	NC	30
5625604	Carbon Tetrachloride	2018/07/13	93	70 - 130	95	70 - 130	<0.20	ug/L	NC	30
5625604	Chlorobenzene	2018/07/13	88	70 - 130	92	70 - 130	<0.20	ug/L	NC	30
5625604	Chloroform	2018/07/13	90	70 - 130	93	70 - 130	<0.20	ug/L	NC	30
5625604	cis-1,2-Dichloroethylene	2018/07/13	88	70 - 130	91	70 - 130	<0.50	ug/L	NC	30
5625604	cis-1,3-Dichloropropene	2018/07/13	92	70 - 130	94	70 - 130	<0.30	ug/L	NC	30
5625604	Dibromochloromethane	2018/07/13	96	70 - 130	94	70 - 130	<0.50	ug/L	NC	30
5625604	Dichlorodifluoromethane (FREON 12)	2018/07/13	71	60 - 140	80	60 - 140	<1.0	ug/L	NC	30
5625604	Ethylbenzene	2018/07/13	87	70 - 130	93	70 - 130	<0.20	ug/L	NC	30
5625604	Ethylene Dibromide	2018/07/13	94	70 - 130	94	70 - 130	<0.20	ug/L	NC	30
5625604	Hexane	2018/07/13	88	70 - 130	95	70 - 130	<1.0	ug/L	NC	30
5625604	Methyl Ethyl Ketone (2-Butanone)	2018/07/13	98	60 - 140	93	60 - 140	<10	ug/L	NC	30
5625604	Methyl Isobutyl Ketone	2018/07/13	97	70 - 130	97	70 - 130	<5.0	ug/L	NC	30

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
5625604	Methyl t-butyl ether (MTBE)	2018/07/13	92	70 - 130	92	70 - 130	<0.50	ug/L	NC	30
5625604	Methylene Chloride(Dichloromethane)	2018/07/13	83	70 - 130	85	70 - 130	<2.0	ug/L	NC	30
5625604	o-Xylene	2018/07/13	81	70 - 130	95	70 - 130	<0.20	ug/L	NC	30
5625604	p+m-Xylene	2018/07/13	90	70 - 130	95	70 - 130	<0.20	ug/L	NC	30
5625604	Styrene	2018/07/13	85	70 - 130	100	70 - 130	<0.50	ug/L	NC	30
5625604	Tetrachloroethylene	2018/07/13	96	70 - 130	96	70 - 130	<0.20	ug/L	NC	30
5625604	Toluene	2018/07/13	82	70 - 130	88	70 - 130	<0.20	ug/L	NC	30
5625604	Total Xylenes	2018/07/13					<0.20	ug/L	NC	30
5625604	trans-1,2-Dichloroethylene	2018/07/13	90	70 - 130	92	70 - 130	<0.50	ug/L	NC	30
5625604	trans-1,3-Dichloropropene	2018/07/13	104	70 - 130	99	70 - 130	<0.40	ug/L	NC	30
5625604	Trichloroethylene	2018/07/13	89	70 - 130	93	70 - 130	<0.20	ug/L	NC	30
5625604	Trichlorofluoromethane (FREON 11)	2018/07/13	88	70 - 130	93	70 - 130	<0.50	ug/L	NC	30
5625604	Vinyl Chloride	2018/07/13	77	70 - 130	88	70 - 130	<0.20	ug/L	NC	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).

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Maxxam Job #: B8H3020
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Soil Engineers Ltd
Client Project #: 1802-E072
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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

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