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A REPORT TO SAVENA COVE HOMES INC.

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT PROPOSED RESIDENTIAL DEVELOPMENT

**12785 NINTH LINE
TOWN OF WHITCHURCH-STOUFFVILLE**

Reference No. 2005-E074

July 27, 2020

DISTRIBUTION

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1.0 **EXECUTIVE SUMMARY**

Soil Engineers Ltd. (SEL) was retained by Savena Cove Homes Inc. to carry out 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 12785 Ninth Line in the Town of Whitchurch-Stouffville (hereinafter referred to as “the subject site”).

The purpose of the Phase Two ESA was to assess the soil and groundwater quality at the subject site, as related to the areas of potential environmental concern (APECs) identified in our Phase One Environmental Site Assessment (Phase One ESA).

The field work was performed at selected locations on the subject site. Soil and groundwater samples were collected and submitted for chemical analyses in accordance with the Ministry of the Environment, Conservation and Parks (MECP) Table 1, Full Depth Background Site Condition Standards, for Residential/Parkland/Institutional/ Industrial/Commercial/ Community Property Use (Table 1 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 test results of soil and groundwater samples indicates the tested parameters at the test locations meet the Table 1 Standards. Consequently, there are no contaminants identified at the subject site at a concentration above the applicable site condition standards (Table 1 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 Savena Cove Homes Inc. to carry out a Phase Two Environmental Site Assessment (Phase Two ESA), as defined by 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 12785 Ninth Line in the Town of Whitchurch-Stouffville (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 Environmental Site Assessment (Phase One ESA) for the subject site.

2.1 **Site Description**

The subject site, irregular in shape, encompassing an approximate area of 19.87 ha (49.09 ac) is located at 12785 Ninth Line, in the Town of Whitchurch-Stouffville. The Property Identification Number (PIN) of the subject site is 03708-1710 (LT). The legal description of the subject site from the parcel register is “PART LOT 4, CONCESSION 9, WHITCHURCH, DESIGNATED AS PARTS 1 & 2, 65R38876; SUBJECT TO AN EASEMENT OVER PART 2, 65R38876 AS IN R581297; TOWN OF WHITCHURCH-STOUFFVILLE”.

At the time of the assessment, the subject site was a vacant land with construction activities at the eastern portion. There was no structure on the subject site. The subject site is located in a mixed residential, agricultural, and parkland area within the Town of Whitchurch-Stouffville. The neighboring properties consist of agricultural properties to the north and east, residential properties to the south, and parkland property (a golf course) to the west.

The ground surface on the subject site appears to be locally undulating and the general grade at the subject site descends towards the south.



2.2 Property Ownership

This Phase Two ESA was commissioned to address the items of environmental concerns in association with the proposed development in accordance with our proposal, as approved by Mr. Sang Kim of Savena Cove Homes Inc. Our client and the owner of the subject site can be contacted at:

Savena Cove Homes Inc.
8600 Dufferin Street
City of Vaughan, Ontario
L4K 5P5

Attention: Mr. Sang Kim

2.3 Current and Proposed Future Uses

The subject site has been used for agricultural purposes with a residence dwelling. A residential development is 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 Standards

SEL has selected the applicable regulatory criteria from O. Reg. 153/04, as amended, made under the Environmental Protection Act (EPA), to assess the analytical data from the submitted soil samples. The following information was used to select the appropriate criteria:

- The subject site is considered to be sensitive based on the definition set forth in the O. Reg. 153/04, as amended, including O. Reg. 511/09, as the property is adjacent to a provincially significant wetland and the Oak Ridges Moraine, designated as the Natural Linkage Area to the northeast. The analytical testing indicated the pH of tested surface soil samples is between 5 and 9 and subsurface soil sample is between 5 and 11.
- The subject site is not a shallow soil property, as the bedrock was not encountered within 2.0 m below ground surface (mbgs) during the investigation.
- Water bodies (i.e. tributaries of the Stouffville Creek and the Willowgrove Creek) are located on the northeastern and northwestern portions of the subject site, respectively.
- Full Depth Background Site Condition criteria is to be used in this assessment.



- The intended property use of the subject site is residential.
- No grain size analysis has been performed for this Phase Two ESA.

Based on the above information, the Ministry of the Environment, Conservation and Parks (MECP) Table 1, Full Depth Background Site Condition Standards, for Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use (Table 1 Standards) as published in the "Soil, Groundwater, Sediment Standards for use under Part XV.1 of the Environmental Protection Act" (EPA), 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 mixed residential, agricultural, and parkland area in the Town of Whitchurch-Stouffville. The neighboring properties consisted of agricultural properties to the north and east, residential properties to the south, and parkland property (a golf course) to the west.

According to the Surface Geology Map of the area, the subject site is located on The Halton Till deposit, which consist of predominantly silt to silty clay matrix, high in matrix carbonate and clast poor. The Bedrock Geology Map shows the subject site is on undifferentiated units, the Georgian Formation; Blue Mountain Formation; Billings Formation; Collingwood member; Eastview member, which were deposited within the Upper Ordovician epoch. The rock description is shale, limestone, dolostone and siltstone. According to the Bedrock Topography Series (Markham Area, 1992), depth to bedrock in general vicinity of the subject site is approximately 90 to 100 mbgs.

A roadway (i.e. Ninth Line) is adjacent to west side of the subject site. The overall grade of the subject site generally descends to the south. A watershed map obtained from the Land Information Ontario (LIO), shows that the subject site is located on the border between the Rouge River Watershed and Duffins Creek Watershed.

Based on the review of the Ministry of the Natural Resources and Forestry (MNR) and the LIO for listings of various classes of natural areas within the vicinity of the subject site, the subject site is sited on the Oak Ridges Moraine, designated as the Settlement Area. Oak Ridges Moraine, designated as the Natural Linkage Area and Countryside Area are located immediate adjacent to the northeast and north of the subject site. Provincially significant wetland is located immediate adjacent to the northeast of the subject site. Water bodies (i.e. watercourses) are located at the northeastern and northwestern portions of the subject site.



3.2 Past Investigations

The following previous investigation report was reviewed as part of this Phase Two ESA:

- Phase I Environmental Site Assessment (CSA Standard), Proposed Residential Development, 12785 Ninth Line, Town of Whitchurch-Stouffville, Reference No. 1103-S039E, June 17, 2011 (Phase I ESA).
- Phase II Environmental Site Assessment (CSA Standard), Proposed Residential Development, 12785 Ninth Line, Town of Whitchurch-Stouffville, Reference No. 1103-S039E, June 17, 2011 (Phase II CSA).
- Phase One Environmental Site Assessment, Proposed Residential Development, 12785 Ninth Line, Town of Whitchurch-Stouffville, Reference No. 2005-E074, May 18, 2020 (Phase One ESA),

The following information was obtained from the Phase I ESA (CSA Standard):

- The subject site has been used for the agricultural purposes.
- Former railway tracks were located at the middle-east portion of the subject site.
- Potential fill material of unknown quality is located at the location of former buildings at the southwestern portion of the subject site.
- Soil Stockpiles were located at the southwestern portion of the subject site. The soil stockpiles were removed from the subject site in June 2011.
- The southwestern portion of the subject site was used for storage of landscaping supplies and equipment in 2011.
- A Phase II ESA recommended.

The following information was obtained from the Phase II ESA (CSA Standard):

- One (1) borehole and two (2) hand-dug test pits conducted at the subject site.
- Soil samples collected and tested for metal and inorganic parameters and polycyclic aromatic hydrocarbons (PAHs).
- The analytical test results compared with the Table 2 Standards for residential/parkland/institutional property use, and meet the Table 2 Standards.



The following information was obtained from the Phase II ESA (CSA Standard):

The Phase One ESA identified the Potentially Contaminating Activities (PCAs) at the subject site and in the Phase One Study Area that may contribute to APECs at the subject site, based on records review, interviews and site reconnaissance. The findings of the Phase One ESA include the following APECs:

APEC 1: Potential soil impact due to former agricultural activities at the western-middle portions of the subject site.

APEC 2: Potential soil impact due to former agricultural activities at the eastern portion of the subject site

APEC 3: Potential impact in fill material of unknown quality.

APEC 4: Potential soil and groundwater impact at the middle-eastern portions of the subject site due to former railway tracks on the subject site.

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

**SCOPE OF THE 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 (R2013) and O. Reg. 153/04, as amended.

The scope of work for this investigation includes:

- Locate the underground and overhead utilities.
- Conduct seventeen (17) boreholes (designated as BH1 to BH17) to depths ranging from 3.0 to 6.9 mbgs and six (6) hand-dug test pits (designated as TP1 to TP6) to a depth of 0.3 mbgs.
- Collect representative soil samples from the sampling locations, and conduct composite soil sampling program, when applicable, to obtain a better representative sample in order to verify the concentration of contaminants of concern in surface soil.
- 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.
- Install three (3) monitoring wells in the selected boreholes for groundwater sampling and testing.
- Conduct groundwater monitoring and collect groundwater samples for chemical testing.
- Carry out an analytical testing program on selected soil and groundwater samples including quality assurance and quality control (QA/QC) samples for one or more of the following parameters: petroleum hydrocarbon compounds (PHCs), organochlorine pesticides (OCs), volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs) and Metals and/or Inorganic parameters.
- Review analytical testing results of submitted soil and groundwater samples using applicable Site Condition Standards.



- Prepare a Phase Two ESA report containing the findings of the investigation.

The rationale for the selection of sampling 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'. Sediment was not identified as potentially contaminated media in our Phase One ESA. Consequently, no sediment investigation was conducted as part of this Phase Two ESA.

Boreholes were advanced using a conventional drilling rig equipped with a direct push soil sampler. Soil samples were logged in the field and 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 parts per million by volume (ppm).

Groundwater monitoring wells were installed in all 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 analyses 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 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 Plan provided in Appendix 'A' and in accordance with the SEL Standard Operating Procedures.

The investigation of the Phase Two ESA consisted of drilling seventeen (17) boreholes, six (6) hand-dug test pits, installation of three (3) monitoring wells in the selected boreholes, field measurements, monitoring, and collection of soil samples from the soil sampling locations and groundwater samples from the installed monitoring wells for chemical analyses. The soil and groundwater samples were assessed for the potential contamination with respect to the PCAs 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 for the Phase Two ESA was conducted between February 14, 2019 and June 23, 2020, and consisted of seventeen (17) boreholes (designated as BH1 to BH17) to depths ranging from 3.0 to 6.9 mbgs and six (6) hand-dug test pits to a depth of 0.3 mbgs. Selected boreholes (BH3, BH6, and BH10) were completed as monitoring wells for groundwater observation, sampling and testing. The locations of the boreholes and monitoring wells are shown in Drawing No. 2.



The boreholes were advanced using conventional drilling rig equipped with a direct push soil sampler, supplied by a specialist drilling contractor, Kodiak Drilling. Soil samples retrieved from boreholes (BH1 to BH17) were recovered at regular intervals, using a continuous Shelby tube (thin-walled) sampler, for soil vapour measurement, soil classification and visual and olfactory observations of potential contamination. The soil samples collected from the test pits using a steel spade.

Drilling and sampling equipment such as drill rigs, augers, drill pipes, drilling rods, and steel spade 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. In addition, any of sampling equipment is decontaminated prior to each usage.

The field work was monitored by a SEL environmental technician who recorded the findings and observations.

5.3 Soil: Sampling

Soil samples from the boreholes (BH1 to BH17) were retrieved at regular intervals, using continuous shelly tube (thin-walled) soil sampler and from the test pits using a steel spade. 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 by the sampler 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. A small amount of the 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 PHC F1 and VOCs analyses.

The subsoil conditions at the borehole locations indicate a layer of fill material consisting of sandy silt and silty clay underlain by silty clay till at various depths and locations. No bedrock was encountered during the Phase Two ESA. Detailed descriptions of the encountered subsurface conditions are presented on the Borehole Logs provided in Appendix 'B'.



Generally the representative worst case soil samples from each borehole were selected and sent to the laboratory for chemical analyses, based on the soil vapour measurements and visual and olfactory observations. However, in absence of any evidence of elevated vapor or contamination/unusual observation, the soil samples were selected according to the contaminant of concerns (COCs) behavior (i.e. near the potential source for metals and PAHs, at the zone of water bearing for PHCs, and below the water table for VOCs).

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 combustible gases with the exception of methane (methane elimination mode), and having a minimum detection level of 2 parts per million by volume (ppm). Prior to taking the measurements, the instrument was calibrated to hexane standards for both ppm and lower explosive level (LEL) 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 Services Inc.) seasonally. The results of the soil vapour measurement are presented in the Borehole Logs, Appendix 'B'.

However, the soil vapour measurements alongside with the visual and olfactory observations were used to select the representative worst case soil samples from each sampling location for chemical analyses.

5.5 Groundwater: Monitoring Well Installation

Three (3) monitoring wells were installed at the subject site by Kodiak Drilling. The monitoring wells were constructed using 50 mm diameter PVC screen, 3m in length at the bottom of the borehole. 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 riser was protected by a steel monument casing 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 installed at the subject site were instrumented with dedicated low-density polyethylene tubing to facilitate well development, purging and sampling requirements.

Groundwater development was performed on May 26, 2020. The monitoring wells have been developed to remove any fluids that may have been introduced into the well during drilling and to remove particles that may have become entrained in the well and filter pack (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/or purging was conducted at the subject site on May 26 and 27, 2020. Water level measurements 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 product / surface sheen and any odours present during developing 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 and temperature are presented in Table II.

5.7 **Groundwater: Sampling**

Groundwater sampling was conducted on May 27, 2020, after purging and allows the water to stabilize. 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 analysis being conducted. The samples scheduled for 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 Bureau Veritas Laboratories (BV Labs) and AGAT Laboratories (AGAT) in Mississauga, Ontario. BV Labs and AGAT are accredited by Canadian Association for Laboratory Accreditation (CALA) in accordance with ISO/IEC 17025:2005 – “General Requirements for the Competence of Testing and Calibration Laboratories” for all the parameters analysed during this investigation.

5.10 Residue Management Procedures

Excess soil generated from the drilling program for the 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 at the subject site for later disposal.

5.11 Elevation Surveying

The ground surface at the borehole locations were surveyed using a Rugby 620 Rotating Laser (Serial No. 10946205337). The elevations of the boreholes were established using the bottom of a hypopole (HP) as a benchmark (BM). The geodetic elevation of the HP is 278.19 meters above sea level (masl).

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

5.12 Quality Assurance/Quality Control (QA/QC) Measures

The soil and ground water sampling and analysis plan provided in Appendix ‘A’ was prepared and executed based on the findings of the 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. Reg. 511/09 and O. Reg. 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 QA/QC protocols, applied to the investigation, are as follows:

- The collection of at least one field duplicate sample per ten (10) samples for every sampling media (where three or more such samples are collected).
- Where volatile organic chemical analysis is required, the collection of discrete 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 the 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 trace organics are cleaned using a phosphate-free detergent and water, followed by a distilled water rinse and a methanol rinse between sampling locations.
- The inclusion of one trip blank for water samples per site (where three or more samples are collected) for volatile 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 and trip blank samples are discussed in Section 6.9 of this report.



6.0 REVIEW AND EVALUATION

6.1 Geology

Detailed descriptions of the encountered subsoil conditions are presented on the Borehole Logs provided in Appendix 'B'. The subsoil conditions at the borehole locations indicate a layer of fill material consisting of sandy silt and silty clay underlain by silty clay till at various depths and locations. No bedrock was encountered during the Phase Two ESA. The location of cross sections for soil stratigraphy at the subject site is presented on Drawing No. 3. Geological Cross Sections, A-A' and B-B' are presented on Drawing No. 4.

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

Fill Material

At the borehole locations, a layer of fill material consist of silty clay and sandy silt, with traces of organics and wood, occasionally bricks and asphalt debris, gravel and clay, was encountered from the ground surface and extends to the depths ranging from 1.5 to 3.0 mbgs.

Silty Clay Till

At the borehole locations, silty clay till deposit, with some sand, gravel and occasionally sand and clay seams and layers, was encountered beneath the fill material and extends to the termination depths ranging from 3.0 to 6.9 mbgs.

Hydrogeology

On completion of the drilling activities, no groundwater was detected in the boreholes/ monitoring wells. Based on the field observation and groundwater monitoring records (as indicated in the section below), shallow groundwater is present in the silty clay till deposit. This hydrogeologic unit at the subject site was investigated for this Phase Two ESA.

6.2 Groundwater: Elevations and Flow Direction

Three (3) monitoring wells were installed at the subject site during the field investigation for



the Phase Two ESA on May 21, 22, and 25, 2020. The monitoring wells were installed at depths ranging from 5.46 to 7.05 mbgs.

On May 27, 2020 during groundwater monitoring round, water levels were recorded at depths of 3.4, 4.18, and 3.35 mbgs in the monitoring wells MW3 , MW6, and MW10, respectively.

The ground surface and groundwater elevations at the monitoring well locations were established using the geodetic hydropole (HP) located on the east side of Ninth Line, as a benchmark (BM). The geodetic elevation of the HP is 278.19 masl.

Water level measurements were taken using a water level meter (Dipper-T). The top of the well casings were 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 27, 2020, were used to determine the shallow groundwater 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 interpreted ground water flow direction are shown in Drawing No. 5.

6.3 Groundwater: Hydraulic Gradients

Based on the groundwater records on May 27, 2020, the horizontal hydraulic gradient for the investigated aquifer within the silty clay till at the subject site is between 0.010 m/m to 0.013 m/m (average 0.011 m/m).

6.4 Fine-Medium Soil Texture

No grain size analysis was performed as part of the Phase Two ESA.

6.5 Soil: Field Screening

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.

No soil vapour was detected for the collected soil samples.

6.6 Soil Quality

A representative “worst case” soil sample from each sampling location was 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 PHCs, BTEX, OCs, VOCs, PAHs, PCBs and/or Metals and Inorganic parameters.

The soil test results were reviewed using the MECP Table 1, Full Depth Background Site Condition Standards, for Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use (Table 1 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 V.

Copies of the Certificate of Analysis for the soil samples are presented in Appendix ‘C’.

The findings of the soil test results are summarized below.

Organochlorine pesticides (OCs)

Four (4) soil samples were submitted for analysis of OCs. The test results indicate that the tested parameters in the soil samples meet the Table 1 Standards.

Petroleum Hydrocarbons (PHCs)

During the first round of the soil sampling program, twelve (12) original soil samples were submitted for analysis of PHCs including benzene, toluene, ethylbenzene and xylenes (BTEX). The test results indicate that the tested parameters in the soil samples meet the Table 1 Standards, with the exception of elevated level of PHC F2 in soil sample ID BH11/2 (16 µg/g compared to the Table 1 Standards of 10 µg/g).



A second round of soil sampling to verify the concentration results of the first round including two (2) shallow boreholes was conducted at the location of BH11 from the same depth within 2 m radius of the original sampling point at BH11/2 location. Confirmatory soil samples BH11A/2 and BH11B/2 were collected and submitted for analysis of PHCs and BTEX from the same depth as the sample collected in the first round. The analysis results of the second round testing program indicate that the concentration of PHCs including BTEX are below laboratory detection limit for both tested samples. Therefore, it is our opinion that the concentrations of PHCs and BTEX meet the Table 1 Standards.

Volatile Organic Compounds (VOCs)

Nine (9) original soil samples and one (1) field duplicate soil sample were submitted for analysis of VOCs. The test results indicate that the tested parameters in the soil samples meet the Table 1 Standards.

Polycyclic Aromatic Hydrocarbons (PAHs)

Twelve (12) original soil samples and one (1) field duplicate soil sample were submitted for analysis of PAHs. The test results indicate that the tested parameters in the soil samples meet the Table 1 Standards.

Metals and/or Inorganic Parameters

Twenty-five (25) original soil samples and two (2) duplicated soil samples were submitted for analysis of Metals and/or Inorganic parameters. Three (3) soil samples were submitted for analysis of pH from a depth below 1.5 mbgs. The test results indicate that the tested parameters in the soil samples meet the Table 1 Standards, with the exception of molybdenum in BH10/5 (2.3 µg/g compared to the Table 1 Standards of 2.0 µg/g), located at the northern portion of the subject site.

A composite soil sampling program which consisted of collecting two (2) additional soil samples (BH10A/5 and BH10B/5) from the same depth within 2 m radius of the original sampling point at BH10/5 location was conducted on June 23, 2020 to verify the concentration of molybdenum in soil at depths of 3.0 to 3.75 mbgs in the area of BH10. The analytical result of the compositing sampling program at BH10 location indicates that the



average result of molybdenum in the BH10 location is 1.1 $\mu\text{g/g}$ (compared to Table 1 Standards of 2.0 $\mu\text{g/g}$) and meets the Table 1 Standards.

Polychlorinated Biphenyls (PCBs)

Four (4) soil samples were submitted for analysis of PCBs. The test results indicate that the tested parameters in the soil samples meet the Table 1 Standards.

6.7 Groundwater Quality

Groundwater samples collected from the monitoring wells at the subject site were submitted to the laboratory for chemical analyses of PHCs, VOCs, PAHs and/or Metal and Inorganic parameters.

The groundwater test results were reviewed using the MECP Table 1, Full Depth Background Site Condition Standards, for Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use (Table 1 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.

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

Two (2) original groundwater samples were submitted for analysis of PHCs, including BTEX. One (1) field duplicated groundwater sample and one (1) trip blank sample were submitted for analysis of PHC F1 and BTEX. The test results indicate that the tested parameters in the groundwater samples meet the Table 1 Standards.

**Volatile Organic Compounds (VOCs)**

Two (2) groundwater samples were submitted for analysis of VOCs. The test results indicate that the tested parameters in the groundwater samples meet the Table 1 Standards.

Metals and/or Inorganics

Two (2) groundwater samples were submitted for analysis of metal and/or inorganic parameters. The test results indicate that the tested parameters in the groundwater sample meet the Table 1 Standards, with the exception of elevated level of cyanide in groundwater in MW6 (45 µg/L compared to Table 1 Standards of 5 µg/L). A resampling program consists of two (2) rounds of groundwater purging and sampling was conducted on June 16 and July 16, 2020 to confirm the concentration of cyanide in groundwater. The analytical result of the resampling program indicates a concentration of below the laboratory detection limit (<1 µg/L), which meet the applicable Table 1 Standards. Therefore, it is our opinion that there is no elevated cyanide in groundwater at the subject site and all groundwater samples meet the Table 1 Standards.

Polycyclic Aromatic Hydrocarbons (PAHs)

Two (2) groundwater samples were submitted for analysis of PAHs. The test results indicate that the tested parameters in the groundwater samples meet the Table 1 Standards.

6.8 Sediment Quality

Sediment was not assessed as part of this investigation.

6.9 Quality Assurance and Quality Control (QA/QC) Results

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

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 and Quality Control (QA/QC) 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 the analyses of metals, PHC F1 and BTEX, VOCs, and PAHs in soil and PHC F1 and BTEX in groundwater. One trip blank for PHC F1 and BTEX was shipped with the batch of the groundwater samples submitted for the analyses.

Field Duplicate

A total of five (5) field duplicate soil sample and one (1) field duplicate groundwater sample were collected and submitted for chemical analyses. Details of duplicate sampling and analysis are presented in the Table below.

Duplicate Sample ID	Original Sample ID	Media	Test Conducted
Dup-S1	BH1/3	Soil	PHC F1 and BTEX
Dup-S2	BH17/1	Soil	Metals
Dup-S3	BH16/1	Soil	PAHs
Dup-S4	BH8/4	Soil	Metals
Dup-S5	BH12/2	Soil	VOCs
Dup-W1	MW10	Groundwater	PHC F1 and BTEX

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

Trip Blank

One (1) trip blank sample was submitted to the laboratory for analysis of BTEX, PHC F1. The tested parameters in the trip blank sample were 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.

The Certificates of Analysis for the QA/QC samples are included in Appendices 'C' and 'D'.

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 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 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 Appendices '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 RDLs were met for all tested parameters.
- The result 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.

6.9.5 Data Quality Objectives

In conclusion, the overall quality of field data did not affect 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 Environmental Site Assessment (Phase One ESA) and this Phase Two Environmental site Assessment (Phase Two ESA).

6.10.1 Description and Assessment

The subject site, irregular in shape, encompassing an approximate area of 19.87 ha (49.09 ac) is located at 12785 Ninth Line in the Town of Whitchurch-Stouffville. The The Property Identification Number (PIN) of the subject site is 03708-1710 (LT). The legal description of the subject site from the parcel register is “PART LOT 4, CONCESSION 9, WHITCHURCH, DESIGNATED AS PARTS 1 & 2, 65R38876; SUBJECT TO AN EASEMENT OVER PART 2, 65R38876 AS IN R581297; TOWN OF WHITCHURCH-STOUFFVILLE”.

6.10.1.1 Areas where Potentially Contaminating Activity Has Occurred

Potentially Contaminating Activities (PCAs) were identified at the subject site, based on the records review, the interview and the site reconnaissance. The areas of PCAs along with the corresponding list in Table 2 Schedule D of O. Reg. 153/04 are summarized below:

- Potential use of pesticides as part of agricultural activities at the subject site # 40: Pesticides (including Herbicides, Fungicides and Anti-Fouling Agents) Manufacturing, Processing, Bulk Storage and Large-Scale Applications.



- Fill material of unknown quality at the subject site # 30: Importation of Fill Material of Unknown Quality.
- Former railway tracks located at the middle-east portion of the subject site # 46: Rail Yards, Tracks and Spurs.

The locations of the PCAs are shown on Drawing No. 1.

6.10.1.2 Areas of Potential Environmental Concern

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

APEC 1: Potential soil impact due to former agricultural activities at the western-middle portions of the subject site.

APEC 2: Potential soil impact due to former agricultural activities at the eastern portion of the subject site

APEC 3: Potential impact in fill material of unknown quality.

APEC 4: Potential soil and groundwater impact at the middle-eastern portions of the subject site due to former railway tracks on the subject site.

The locations of the APECs are shown on Drawing No. 2.

6.10.1.3 Subsurface Structures and Utilities

At the time of the assessment, the subject site consisted of a vacant land with construction activities at the eastern portion. Underground utilities were located between the Ninth Line and the subject site and newly installed sanitary sewer lines at the eastern portion of the subject site.

Since no contaminants are found at the subject site at a concentration above the applicable site condition standard, no subsurface structures or utilities with the potential to affect contaminants distribution or transport are identified at the subject site.



6.10.2 Physical Setting

6.10.2.1 Stratigraphy

According to the surface and bedrock geology maps of the area, the subject site is located on The Halton Till deposit, which consist of predominantly silt to silty clay matrix, high in matrix carbonate and clast poor. The Bedrock Geology Map shows the subject site is on undifferentiated units, the Georgian Formation; Blue Mountain Formation; Billings Formation; Collingwood member; Eastview member, which were deposited within the Upper Ordovician epoch. The rock description is shale, limestone, dolostone and siltstone.

The field investigation for the Phase Two ESA consisted of seventeen (17) boreholes (designated as BH1 to BH17) to depths ranging from 3.0 to 6.9 metres below ground surface (mbgs). The subsoil conditions at the borehole locations indicate a layer of fill material consisting of sandy silt and silty clay underlain by silty clay till at various depths and locations. No bedrock was encountered during the Phase Two ESA.

The Sampling Location Plan is shown in Drawing No. 2. The locations of cross-sections for soil stratigraphy at the subject site are presented in Drawing No. 3. Geological Cross-sections A-A' and B-B' are presented in Drawing No. 4.

6.10.2.2 Hydrogeological Characteristics

The subject site is located in a larger hydrogeological region known as the Southern Ontario Region. A Watershed Map provided by the Lnad Information Ontario (LIO), shows the subject site is located on the border between the Rouge River Watershed and Duffins Creek Watershed.

Three (3) monitoring wells (designated as MW3, MW6, and MW10) were installed in selected borehole locations during the field investigation for the Phase Two ESA. The monitoring wells were installed at depths ranging from 5.46 to 7.05 mbgs. Based on the groundwater records, the groundwater flow direction appears to be southeasterly. The shallow groundwater contours and interpreted groundwater flow direction are shown on Drawing No. 5.

Based on the groundwater records, the horizontal hydraulic gradient for the investigated aquifer at the subject site is between 0.010 m/m to 0.013 m/m (average 0.011 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 6.9 mbgs. According to the Bedrock Topography Series (Markham Area, 1992), a depth to bedrock in general vicinity of the subject site is approximately 90 to 100 mbgs.

6.10.2.4 Approximate Depth to Water Table

Based on the groundwater records for this investigation, depth to the water table at the subject site ranges from 3.35 to 4.18 mbgs.

6.10.2.5 Section 41 or 43.1 of the Regulation

Oak Ridges Moraine, designated as the Natural Linkage Area is located immediate adjacent to the northeast of the subject site. Provincially significant wetland is located immediate adjacent to the northeast of the subject site. The analytical results indicated that the pH value of the tested parameters in the soil samples is between 5 and 9 for surface soil, and between 5 and 11 for subsurface soil. Therefore, Section 41 of the O. Reg. 153/04 applies to the subject site.

The subject site is not a shallow soil property, as the bedrock was not encountered within 2 mbgs during the investigation. Water bodies (i.e. watercourses) are located at the northeastern and northwestern portions of the subject site. Therefore, Section 43.1 of the O.Reg. 153/04 (Site Condition Standards, Shallow Soil Property or Water Body) applies to the subject site.

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

The findings of the Phase One ESA and the drilling investigation of the Phase Two ESA indicate presence of fill material at the subject site. The encountered fill material was assessed during this Phase Two ESA.

6.10.2.7 Proposed Building and Other Structures

A residential development is being proposed for the subject site. It is anticipated that the new development will be provided with municipal services meeting urban standards. The location of



proposed buildings or any other structures was 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 and groundwater with respect to the identified Areas of Potential Environmental Concern (APECs) 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, Conservation and Parks (MECP) Table 1, Full Depth Background Site Condition Standards, for Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use (Table 1 Standards), as published in the “Soil, Groundwater 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 analyses of one or more of the following parameters: petroleum hydrocarbon compounds (PHCs), benzene, toluene, ethylbenzene, xylene (BTEX), organochlorinated pesticides (OCs), volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), Metals, As, Sb, Se, B-HWS, pH, electrical conductivity, sodium adsorption ratio, Hg, Cr (VI), and/or CN⁻.

A review of the analytical test results of soil and groundwater samples indicate that the tested samples for tested parameters meet the Table 1 Standards.

Consequently, there are no contaminants identified at the subject site at a concentration above the applicable site condition standards (Table 1 Standards) during the Phase Two ESA.

6.10.3.2 Distribution of Contaminants

No contaminants are identified at the test locations at a concentration above applicable site condition standards.



6.10.3.3 Contaminant Medium

No contaminants are identified at the test locations at a concentration above applicable site condition standards.

6.10.3.4 Reasons for Discharge

No contaminants are identified at the test locations at a concentration above applicable site condition standards.

6.10.3.5 Migration of Contaminants

No contaminants are identified at the test locations at a concentration above applicable site condition standards.

6.10.4 Potential Exposure Pathways and Receptors

Since no contaminants are identified at the test locations at a concentration above the applicable site condition standard (Table 1 Standards), no potential exposure pathways and receptors are identified.



7.0 CONCLUSIONS

The purpose of the Phase Two Environmental Site Assessment (Phase Two ESA) was to determine the soil and groundwater quality at the subject site, as related to the following Areas of Potential Environmental Concern (APECs) identified in our Phase One Environmental Site Assessment (Phase One ESA):

APEC 1: Potential soil impact due to former agricultural activities at the western-middle portions of the subject site.

APEC 2: Potential soil impact due to former agricultural activities at the eastern portion of the subject site

APEC 3: Potential impact in fill material of unknown quality.

APEC 4: Potential soil and groundwater impact at the middle-eastern portions of the subject site due to former railway tracks on 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 seventeen (17) boreholes (designated as BH1 to BH17) to depths ranging from 3.0 to 6.9 mbgs and six (6) hand-dug test pits to a depth of 0.3 mbgs. Three (3) monitoring wells (designated as MW3, MW6, and MW10) were installed at the borehole locations.
- The subsoil conditions at the borehole locations indicate a layer of fill material consisting of sandy silt and silty clay underlain by silty clay till at various depths and locations.
- The soil and groundwater samples retrieved from the borehole and monitoring well locations were examined for visual and olfactory evidence of potential contamination. No evidence of potential contamination was documented in any of the retrieved soil and groundwater samples.
- 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 parts per million by volume (ppm). Soil vapour readings, ranging from non-detected to 80 ppm were recorded for the collected soil.



- Based on the soil vapour measurements and visual and/or olfactory observations, representative “worst case” soil samples were selected from each sampling location for chemical analyses of petroleum hydrocarbon compounds (PHCs), benzene, toluene, ethylbenzene and xylenes (BTEX), organochlorine pesticides (OCs), volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), and/or Metals and Inorganic parameters.
- No visible sheen or odours were recorded in the groundwater at the monitoring well installed at the subject site. Groundwater samples collected from the monitoring wells were submitted for PHCs, VOCs, PAHs, and Metals and Inorganic parameters.
- As part of the quality assurance/quality control (QA/QC) program for the investigation, QC samples in the form of field duplicate and trip blank samples were analysed. Field duplicate samples were collected in the field for the analyses of metals, PHC F1 and BTEX, VOCs, and PAHs in soil, and PHC F1 and BTEX in groundwater. One trip blank for PHC F1 and BTEX was shipped with the batch of the groundwater samples submitted for analysis.
- The analytical test results were reviewed using the MECP Table 1, Full Depth Background Site Condition Standards, for Residential/Parkland/Institutional/Industrial/ Commercial/Community Property Use (Table 1 Standards), in accordance with “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 concentration of tested parameters at the test locations meet Table 1 Standards.
- The result of the analysis of the duplicate samples is similar to the results for the original sample, and the result of the trip blank sample was below the detection limit.



A review of the analytical test results of soil and groundwater samples indicates the tested parameters at the test locations meet the Table 1 Standards. Consequently, there are no contaminants identified at the subject site at a concentration above the applicable site condition standards (Table 1 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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8.0 REFERENCES

MECP. "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.

MECP. "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.

MECP. "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act" (EPA), April 15, 2011.



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TABLES

REFERENCE NO. 2005-E074



Table I: Monitoring Well Installation

Monitoring Well ID.	Bottom of Monitoring	Screen Length (m)	Screen Interval (mbgs)	Filter Pack (mbgs)	Bentonite Plug (mbgs)
BH/MW3	5.46	3	2.46-5.46	1.86-5.46	0-1.85
BH/MW6	6.08	3	3.08-6.08	2.48-6.08	0-2.48
BH/MW10	7.05	3	4.05-7.05	3.45-7.05	0-3.45

mbgs – metres below ground surface



Table II: Groundwater Levels

Monitoring Well ID.	Ground Elevation (masl)	Depth to Groundwater (mbg)	Elevation of Groundwater (masl)	Field Observations		
				Odour	Colour	Sheen or Free Product
BH/MW3	280.58	3.40	277.18	None	Clear	None
BH/MW6	280.06	4.18	275.88	None	Clear	None
BH/MW10	282.48	3.35	279.13	None	Clear	None

mbgs – metres below ground surface

masl – metres above sea level

Table III-A: Soil Analysis Data - O. Reg. 153(511)
Metals and Inorganic Parameters

Sample ID	Unit	TP1	TP2	TP3	TP4	TP5	TP6	BH2/2	BH2/3	BH13/1	Table 1 Standards	RDL
Sample Depth (mbgs)		0-0.3	0-0.3	0-0.3	0-0.3	0-0.3	0-0.3	0.75-1.5	1.5-2.25	0-0.75		
Sample Date		Feb 14, 19	Feb 14, 19	Feb 14, 19	Feb 14, 19	Feb 14, 19	Feb 14, 19	May 21, 20	May 21, 20	May 21, 20		
Laboratory ID		9904796	9904797	9904800	9904801	9904802	9904804	MRS768	MRS769	MRS770		
Antimony	µg/g	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.20	-	<0.20	1.3	0.2
Arsenic	µg/g	3	3	4	4	3	5	3	-	1.8	18	1
Barium	µg/g	83	156	90	85	100	108	59	-	71	220	0.5
Beryllium	µg/g	0.7	0.9	0.6	0.7	0.8	0.8	0.37	-	0.43	2.5	0.2
Boron (Hot Water Soluble)	µg/g	0.29	0.27	0.28	0.24	0.28	0.45	0.21	-	0.39	NV	0.05
Cadmium	µg/g	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.10	-	<0.10	1.2	0.1
Chromium	µg/g	21	27	21	21	22	25	13	-	18	70	1
Chromium VI	µg/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.18	-	<0.18	0.66	0.2
Cobalt	µg/g	7.1	8.1	6.9	8.4	7.9	9.6	6.8	-	7.1	21	0.1
Copper	µg/g	13	16	12	13	13	19	16	-	13	92	0.5
Lead	µg/g	13	15	12	14	13	15	8.9	-	6.8	120	1
Mercury	µg/g	<0.10	0.11	<0.10	<0.10	<0.10	<0.10	<0.050	-	<0.050	0.27	0.05
Molybdenum	µg/g	<0.5	0.5	<0.5	1.2	<0.5	<0.5	<0.50	-	<0.50	2	0.5
Nickel	µg/g	14	17	13	17	15	19	16	-	15	82	0.5
Selenium	µg/g	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.50	-	<0.50	1.5	0.5
Silver	µg/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	-	<0.20	0.5	0.2
Thallium	µg/g	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	0.13	-	0.12	1	0.05
Vanadium	µg/g	32	40	31	34	35	38	21	-	27	86	5
Zinc	µg/g	69	71	56	55	59	74	31	-	37	290	5
pH	-	7.12	7.09	7.18	7.29	7.25	6.28	7.65	7.8	7.91	NV	
Conductivity (ms/cm)	ms/cm	0.286	0.299	0.223	0.213	0.233	0.149	0.3	-	0.4	0.57	0.01
Sodium Adsorption Ratio	-	0.193	0.320	0.140	0.088	0.099	0.108	0.35	-	1	2.4	5
Cyanide, Free	µg/g	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.01	-	<0.01	0.051	
Boron (Total)	µg/g	8	7	8	7	7	8	6.1	-	7.1	36	
Uranium	µg/g	0.8	0.7	0.7	0.8	0.8	1.0	0.57	-	0.57	2.5	0.05

Table 1, Full Depth Background Site Condition Standards for Residential/Parkland/Institutional/Commercial/Community Property Use

mbgs: metres below ground surface

RDL: Reported Detection Limit



Cont's of Table III-A: Soil Analysis Data - O. Reg. 153(511)

Metals and Inorganic Parameters

Sample ID	Unit	BH16/3	BH14/2	BH14/4	BH1/2	BH3/1	BH17/1	BH17/4	BH4/1	BH5/2	Table 1 Standards	RDL
Sample Depth (mbgs)		1.5-2.25	0.75-1.5	2.25-3.0	0.75-1.5	0-0.75	0-0.75	2.25-3.0	0-0.75	0.75-1.5		
Sample Date		May 21, 20	May 21, 20	May 21, 20	May 21, 20	May 21, 20	May 21, 20	May 21, 20	May 22, 20	May 22, 20		
Laboratory ID		MRS773	MRS774	MRS775	MRS779	MRS781	MRS783	MRS787	MSI630	MSI634		
Antimony	µg/g	<0.20	<0.20	-	<0.20	<0.20	<0.20	-	<0.20	<0.20	1.3	0.2
Arsenic	µg/g	2	1.1	-	1.6	1.5	1.8	-	1.7	1.3	18	1
Barium	µg/g	67	43	-	59	51	62	-	71	49	220	0.5
Beryllium	µg/g	0.45	0.28	-	0.36	0.31	0.4	-	0.42	0.3	2.5	0.2
Boron (Hot Water Soluble)	µg/g	0.22	0.077	-	0.18	0.14	0.22	-	0.32	<0.050	NV	0.05
Cadmium	µg/g	<0.10	<0.10	-	<0.10	0.14	<0.10	-	<0.10	<0.10	1.2	0.1
Chromium	µg/g	18	11	-	14	13	15	-	17	11	70	1
Chromium VI	µg/g	<0.18	<0.18	-	<0.18	<0.18	<0.18	-	<0.18	<0.18	0.66	0.2
Cobalt	µg/g	6.7	3.6	-	5.6	5	5.7	-	6	4.8	21	0.1
Copper	µg/g	13	7.3	-	11	10	12	-	12	9.1	92	0.5
Lead	µg/g	6.7	4.1	-	5.9	4.9	6.5	-	6.2	5	120	1
Mercury	µg/g	<0.050	<0.050	-	<0.050	<0.050	<0.050	-	<0.050	<0.050	0.27	0.05
Molybdenum	µg/g	<0.50	<0.50	-	<0.50	<0.50	<0.50	-	<0.50	<0.50	2	0.5
Nickel	µg/g	14	7.5	-	12	11	12	-	13	9.6	82	0.5
Selenium	µg/g	<0.50	<0.50	-	<0.50	<0.50	<0.50	-	<0.50	<0.50	1.5	0.5
Silver	µg/g	<0.20	<0.20	-	<0.20	<0.20	<0.20	-	<0.20	<0.20	0.5	0.2
Thallium	µg/g	0.11	0.063	-	0.1	0.074	0.1	-	0.1	0.082	1	0.05
Vanadium	µg/g	27	20	-	24	21	25	-	25	21	86	5
Zinc	µg/g	37	24	-	31	44	31	-	34	27	290	5
pH	-	8.08	7.66	8.07	7.9	8.08	7.97	7.79	7.95	7.62	NV	
Conductivity (ms/cm)	mS/cm	0.32	0.37	-	0.35	0.24	0.39	-	0.37	0.086	0.57	0.01
Sodium Adsorption Ratio	-	0.64	1.1	-	0.71	0.42	0.65	-	1	0.34	2.4	5
Cyanide, Free	µg/g	<0.01	<0.01	-	<0.01	<0.01	<0.01	-	<0.01	<0.01	0.051	
Boron (Total)	µg/g	6.1	<5.0	-	<5.0	<5.0	5.2	-	7.4	<5.0	36	
Uranium	µg/g	0.58	0.47	-	0.56	0.55	0.65	-	0.63	0.4	2.5	0.05

Table 1, Full Depth Background Site Condition Standards for Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use

mbgs: metres below ground surface

RDL: Reported Detection Limit



Cont's of Table III-A: Soil Analysis Data - O. Reg. 153(511)

Metals and Inorganic Parameters

Sample ID	Unit	BH6/1	BH6/5	BH7/1	BH8/4	BH9/2	BH10/2	BH10/5	BH11/3	BH12/2	Table 1 Standards	RDL
Sample Depth (mbgs)		0-0.75	3-3.75	0-0.75	2.25-3.0	0.75-1.5	0.75-1.5	3-3.75	1.5-2.25	0.75-1.5		
Sample Date		May 22, 20	May 22, 20	May 22, 20	May 25, 20	May 22, 20	May 25, 20	May 25, 20	May 22, 20	May 25, 20		
Laboratory ID		MSI635	MSI636	MSI637	MSI640	MSI641	MSI643	MSI645	MSI648	MSI649		
Antimony	µg/g	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	1.3	0.2
Arsenic	µg/g	1.4	2.4	1.7	1.5	1.5	2.1	1.8	1.4	1.7	18	1
Barium	µg/g	54	29	75	41	52	86	37	57	77	220	0.5
Beryllium	µg/g	0.33	0.25	0.41	0.29	0.3	0.54	0.25	0.31	0.48	2.5	0.2
Boron (Hot Water Soluble)	µg/g	0.22	-	0.29	0.2	0.17	0.13	-	0.19	0.12	NV	0.05
Cadmium	µg/g	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	1.2	0.1
Chromium	µg/g	13	10	17	13	13	19	20	13	18	70	1
Chromium VI	µg/g	<0.18	-	<0.18	<0.18	<0.18	<0.18	-	<0.18	<0.18	0.66	0.2
Cobalt	µg/g	5.1	4.3	6.2	4.3	4.6	7.8	4.1	4.6	6.8	21	0.1
Copper	µg/g	11	12	15	9.5	9.9	17	12	10	13	92	0.5
Lead	µg/g	5.1	5.7	5.7	5.4	4.8	11	4.7	4.8	6.7	120	1
Mercury	µg/g	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.27	0.05
Molybdenum	µg/g	<0.50	0.68	<0.50	0.68	<0.50	<0.50	2.3	<0.50	<0.50	2	0.5
Nickel	µg/g	11	22	14	9.2	9.7	18	9.5	9.9	15	82	0.5
Selenium	µg/g	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.5	0.5
Silver	µg/g	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.5	0.2
Thallium	µg/g	0.078	0.087	0.11	0.072	0.074	0.15	0.055	0.081	0.13	1	0.05
Vanadium	µg/g	22	17	26	21	22	28	19	22	28	86	5
Zinc	µg/g	27	23	32	25	25	43	30	26	36	290	5
pH	-	7.85	7.84	7.76	7.81	7.94	7.77	7.9	8.04	7.73	NV	
Conductivity (ms/cm)	ms/cm	0.37	-	0.35	0.28	0.31	0.29	-	0.32	0.28	0.57	0.01
Sodium Adsorption Ratio	-	0.74	-	0.75	0.61	0.61	0.71	-	0.72	0.32	2.4	5
Cyanide, Free	µg/g	<0.01	-	<0.01	<0.01	<0.01	<0.01	-	<0.01	<0.01	0.051	
Boron (Total)	µg/g	5.2	<5.0	6.8	<5.0	5.2	7.4	<5.0	5.3	6.8	36	
Uranium	µg/g	0.47	0.58	0.58	0.49	0.52	0.77	0.46	0.55	0.5	2.5	0.05

Table 1. Full Depth Background Site Condition Standards for Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use

mbgs: metres below ground surface

RDL: Reported Detection Limit



Cont's of Table III-A: Soil Analysis Data - O. Reg. 153(511)
Metals and Inorganic Parameters

Sample ID	Unit	BH15/3	DUP-S2 (original sample ID BH17/1)	DUP-S4 (original sample ID BH8/4)	BH10A/5	BH10B/5	Table 1 Standards	RDL
Sample Depth (mbgs)		1.5-2.25	0-0.75	2.25-3.0	3-3.75	3-3.75		
Sample Date		May 22, 20	May 21, 20	May 25, 20	Jun 23, 20	Jun 23, 20		
Laboratory ID		MSI651	MRS786	MSI653	MYE243	MYE244		
Antimony	µg/g	<0.20	<0.20	<0.20	<0.20	<0.20	1.3	0.2
Arsenic	µg/g	1.7	1.7	1.9	2.2	2.3	18	1
Barium	µg/g	59	61	44	55	67	220	0.5
Beryllium	µg/g	0.36	0.36	0.28	0.41	0.49	2.5	0.2
Boron (Hot Water Soluble)	µg/g	0.14	-	-	-	-	NV	0.05
Cadmium	µg/g	<0.10	<0.10	<0.10	0.14	0.11	1.2	0.1
Chromium	µg/g	15	16	11	16	19	70	1
Chromium VI	µg/g	<0.18	-	-	-	-	0.66	0.2
Cobalt	µg/g	5.5	5.8	4.2	6.1	7.1	21	0.1
Copper	µg/g	11	11	9.3	10	12	92	0.5
Lead	µg/g	6.6	6.4	4.7	8.9	8.5	120	1
Mercury	µg/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.27	0.05
Molybdenum	µg/g	<0.50	<0.50	<0.50	<0.50	<0.50	2	0.5
Nickel	µg/g	13	13	9.3	11	15	82	0.5
Selenium	µg/g	<0.50	<0.50	<0.50	<0.50	<0.50	1.5	0.5
Silver	µg/g	<0.20	<0.20	<0.20	<0.20	<0.20	0.5	0.2
Thallium	µg/g	0.11	0.087	0.08	0.1	0.14	1	0.05
Vanadium	µg/g	25	27	19	27	30	86	5
Zinc	µg/g	31	33	22	39	40	290	5
pH	-	7.75	-	-	-	-	NV	
Conductivity (ms/cm)	mS/cm	0.22	-	-	-	-	0.57	0.01
Sodium Adsorption Ratio	-	0.43	-	-	-	-	2.4	5
Cyanide, Free	µg/g	<0.01	-	-	-	-	0.051	
Boron (Total)	µg/g	5.3	8.1	<5.0	<5.0	<5.0	36	
Uranium	µg/g	0.5	0.57	0.47	0.42	0.52	2.5	0.05

Table 1, Full Depth Background Site Condition Standards for Residential/Parkland/Institutional/Commercial/Community Property Use

mbgs: metres below ground surface

RDL: Reported Detection Limit



Table III-B: Soil Analysis Data - O. Reg. 153(511) -
Petroleum Hydrocarbon Compounds (PHCs F1 - F4) and BTEX

Sample ID	Unit	BH14/4	DUP-S6 (original sample ID BH11/2)	BH17/2	BH4/3	BH6/5	BH8/4	BH9/4A	BH10/2	Table 1 Standards	RDL
Sample Depth (mbgs)											
Sample Date											
Laboratory ID											
Benzene	µg/g	2.25-3.0 May 21, 20 MRS775	0.75-1.5 May, 25, 20 MSI655	0.75-1.5 May 21, 20 MRS784	1.5-2.25 May, 22, 20 MSI632	3.0-3.75 May, 22, 20 MSI636	2.25-3.0 May, 25, 20 MSI640	2.25-2.6 May, 22, 20 MSI642	0.75-1.5 May, 25, 20 MSI643		
Toluene	µg/g	-	<0.020	<0.020	<0.020	<0.020	-	<0.020	<0.020	0.02	0.02
Ethylbenzene	µg/g	-	<0.020	<0.020	<0.020	<0.020	-	<0.020	<0.020	0.2	0.02
m/p xylenes	µg/g	-	<0.040	<0.040	<0.040	<0.040	-	<0.040	<0.040	0.05	0.02
o xylene	µg/g	-	<0.020	<0.020	<0.020	<0.020	-	<0.020	<0.020	NV	0.04
Total Xylenes	µg/g	-	<0.040	<0.040	<0.040	<0.040	-	<0.040	<0.040	NV	0.02
F1 (C6-C10)	µg/g	<10	-	<10	<10	<10	<10	<10	<10	0.05	0.04
F1 (C6-C10) - BTEX	µg/g	<10	-	<10	<10	<10	<10	<10	<10	25	10
F2 (C10-C16)	µg/g	<10	-	<10	<10	<10	<10	<10	<10	25	10
F3 (C16-C34)	µg/g	<50	-	<50	<50	83	<50	54	<50	10	10
F4 (C34-C50)	µg/g	<50	-	<50	<50	<50	<50	<50	<50	240	50

Sample ID	Unit	BH10/5	DUP-S1 (original sample ID BH1/3)	BH11/2	BH1/3	TP4	TP5	BH11A/2	BH11B/2	Table 1 Standards	RDL
Sample Depth (mbgs)											
Sample Date											
Laboratory ID											
Benzene	µg/g	3.0-3.75 May, 25, 20 MSI645	1.5-2.25 May 21, 20 MRS785	0.75-1.5 May, 25, 20 MSI647	1.5-2.25 May 21, 20 MRS780	0-0.3 Feb 14, 19 9904801	0-0.3 Feb 14, 19 9904802	0.75-1.5 Jun 23, 20 MYE270	0.75-1.5 Jun 23, 20 MYE271		
Toluene	µg/g	<0.020	<0.020	<0.020	-	<0.02	<0.02	<0.020	<0.020	0.02	0.02
Ethylbenzene	µg/g	<0.020	<0.020	<0.020	-	<0.05	<0.05	<0.020	<0.020	0.2	0.02
m/p xylenes	µg/g	<0.040	<0.040	<0.040	-	<0.05	<0.05	<0.020	<0.020	0.05	0.02
o xylene	µg/g	<0.020	<0.020	<0.020	-	-	-	<0.040	<0.040	NV	0.04
Total Xylenes	µg/g	<0.040	<0.040	<0.040	-	<0.05	<0.05	<0.020	<0.020	NV	0.02
F1 (C6-C10)	µg/g	<10	-	<10	<10	<5	<5	<0.040	<0.040	0.05	0.04
F1 (C6-C10) - BTEX	µg/g	<10	-	<10	<10	<5	<5	<10	<10	25	10
F2 (C10-C16)	µg/g	<10	-	16	<10	<10	<10	<10	<10	25	10
F3 (C16-C34)	µg/g	<50	-	69	<50	<50	<50	<50	<50	10	10
F4 (C34-C50)	µg/g	<50	-	<50	<50	<50	<50	<50	<50	240	50

Table 1, Full Depth Background Site Condition Standards for Residential/Parkland/Institutional/Commercial/Community Property Use

mbgs: metres below ground surface

RDL: Reported Detection Limit

Table III-C: Soil Analysis Data -

[illegible]



Content's of Table III-C: Soil Analysis Data -
O. Reg. 153(S11) - Volatile Organic Compounds (VOCs)

Sample ID	Unit	BH13/3	BH14/4	BH1/3	BH3/3	BH5/2	BH7/2	BH8/4	BH12/2	BH15/3	DUP-S5 (BH12/2)	Table 1 Standards	RDL
Sample Depth (mbgs)													
Sample Date													
Laboratory ID													
Tetrachloroethylene	µg/g	1.5-2.25 May 21, 20 MRS771	2.25-3.0 May 21, 20 MRS775	1.5-2.25 May 21, 20 MRS780	1.5-2.25 May 21, 20 MRS782	0.75-1.5 May 22, 20 MSI634	0.75-1.5 May 22, 20 MSI638	2.25-3.0 May 25, 20 MSI640	0.75-1.5 May, 25, 20 MSI649	1.5-2.25 May 22, 20 MSI651	0.75-1.5 May, 25, 20 MSI654		
1,1,1-Trichloroethane	µg/g	<0.040	<0.050	<0.050	<0.040	<0.040	<0.040	<0.050	<0.040	<0.040	<0.040	0.05	0.05
1,1,2-Trichloroethane	µg/g	<0.040	<0.050	<0.050	<0.040	<0.040	<0.040	<0.050	<0.040	<0.040	<0.040	0.05	0.05
Trichloroethylene	µg/g	<0.010	<0.050	<0.050	<0.010	<0.010	<0.010	<0.050	<0.010	<0.010	<0.010	0.05	0.05
Vinyl Chloride	µg/g	<0.019	<0.020	<0.020	<0.019	<0.019	<0.019	<0.020	<0.019	<0.019	<0.019	0.02	0.02
m-Xylene & p-Xylene	µg/g	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	NV	0.02
o-Xylene	µg/g	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	NV	0.02
Total Xylenes	µg/g	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.05	0.02
Dichlorodifluoromethane	µg/g	<0.040	<0.050	<0.050	<0.040	<0.040	<0.040	<0.050	<0.040	<0.040	<0.040	0.05	0.05
Hexane(n)	µg/g	<0.040	<0.050	<0.050	<0.040	<0.040	<0.040	<0.050	<0.040	<0.040	<0.040	0.05	0.05
Trichlorofluoromethane	µg/g	<0.040	<0.050	<0.050	<0.040	<0.040	<0.040	<0.050	<0.040	<0.040	<0.040	0.25	0.05
1,3-Dichloropropene (cis + trans)	µg/g	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.05	0.05

Table 1, Full Depth Background Site Condition Standards for
Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use

mbgs: metres below ground surface
RDL: Reported Detection Limit

Table III-D: Soil Analysis Data - O. Reg. 153(S11)
Polychlorinated Biphenyls (PCBs)

Sample ID	Unit	BH2/1	BH13/1	BH4/2	BH11/1	RDL
Sample Depth (mbgs)						
Sample Date						
Laboratory ID						
Total PCB	µg/g	0-0.75 May 21, 20 MRS767	0-0.75 May 21, 20 MRS770	0.75-1.5 May, 22, 20 MSI631	0-0.75 May, 25, 20 MSI646	0.01

Table 1, Full Depth Background Site Condition Standards for
Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use

mbgs: metres below ground surface
RDL: Reported Detection Limit

Table III-E: Soil Analysis Data - O. Reg. 153(511)
Polycyclic Aromatic Hydrocarbons (PAHs)

Sample ID	Unit	BH2/1	BH16/1	BH1/1	BH3/3	BH17/1	BH5/1	BH6/5	BH7/2	BH8/1	Table 1 Standards	RDL
Sample Depth (mbgs)		0-0.75	0-0.75	0-0.75	1.5-2.25	0-0.75	0-0.75	3.0-3.75	0.75-1.5	0-0.75		
Sample Date		May 21, 20	May 21, 20	May 21, 20	May 21, 20	May 21, 20	May 22, 20	May 22, 20	May 22, 20	May 25, 20		
Laboratory ID		MRS767	MRS772	MRS776	MRS782	MRS783	MRS633	MRS636	MRS638	MRS639		
Acenaphthene	µg/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.072	0.005
Acenaphthylene	µg/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.093	0.005
Anthracene	µg/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.16	0.005
Benzo(a)anthracene	µg/g	<0.0050	0.0073	<0.0050	<0.0050	0.005	0.0052	<0.0050	<0.0050	<0.0050	0.36	0.005
Benzo(a)pyrene	µg/g	<0.0050	0.014	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.3	0.005
Benzo(b/j)fluoranthene	µg/g	<0.0050	0.016	<0.0050	<0.0050	0.0063	0.0084	<0.0050	<0.0050	<0.0050	0.47	0.005
Benzo(ghi)perylene	µg/g	<0.0050	0.019	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.68	0.005
Benzo(k)fluoranthene	µg/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.48	0.005
Chrysene	µg/g	<0.0050	0.0075	<0.0050	<0.0050	0.0063	0.009	0.0073	<0.0050	<0.0050	2.8	0.005
Dibenzo(a,h)anthracene	µg/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.1	0.005
Fluoranthene	µg/g	<0.0050	0.017	<0.0050	<0.0050	0.012	0.015	<0.0050	<0.0050	<0.0050	0.56	0.005
Fluorene	µg/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.12	0.005
Indeno(1,2,3-cd)pyrene	µg/g	<0.0050	0.014	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.23	0.005
1-Methyl-naphthalene	µg/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.59	0.005
2-Methyl-naphthalene	µg/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.59	0.005
Naphthalene	µg/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.09	0.005
Phenanthrene	µg/g	<0.0050	0.0081	<0.0050	<0.0050	<0.0050	0.013	<0.0050	<0.0050	<0.0050	0.69	0.005
Pyrene	µg/g	<0.0050	0.017	<0.0050	<0.0050	0.011	0.016	<0.0050	<0.0050	<0.0050	1	0.005
Methyl-naphthalene, 2-(1-)	µg/g	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	0.59	0.0071

Table 1, Full Depth Background Site Condition Standards for
Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use

mbgs: metres below ground surface

RDL: Reported Detection Limit

Cont's of Table III-E: Soil Analysis Data - O. Reg. 153(511)
Polycyclic Aromatic Hydrocarbons (PAHs)

Sample ID	Unit	BH10/4B	BH11/1	BH15/1	DUP-S3 (original sample ID BH16/1)	Table 1 Standards	RDL
Sample Depth (mbgs)		2.6-3.0	0-0.75	0-0.75	0-0.75		
Sample Date		May, 25, 20	May, 25, 20	May, 22, 20	May, 22, 20		
Laboratory ID		MSI644	MSI646	MSI650	MSI652		
Acenaphthene	µg/g	<0.0050	<0.0050	<0.0050	<0.0050	0.072	0.005
Acenaphthylene	µg/g	<0.0050	<0.0050	<0.0050	<0.0050	0.093	0.005
Anthracene	µg/g	<0.0050	<0.0050	<0.0050	0.0065	0.16	0.005
Benzo(a)anthracene	µg/g	<0.0050	<0.0050	<0.0050	0.013	0.36	0.005
Benzo(a)pyrene	µg/g	<0.0050	<0.0050	<0.0050	0.011	0.3	0.005
Benzo(b)fluoranthene	µg/g	<0.0050	0.005	<0.0050	0.017	0.47	0.005
Benzo(ghi)perylene	µg/g	<0.0050	<0.0050	<0.0050	<0.0050	0.68	0.005
Benzo(k)fluoranthene	µg/g	<0.0050	<0.0050	<0.0050	0.0051	0.48	0.005
Chrysene	µg/g	<0.0050	<0.0050	<0.0050	0.015	2.8	0.005
Dibenzo(a,h)anthracene	µg/g	<0.0050	<0.0050	<0.0050	<0.0050	0.1	0.005
Fluoranthene	µg/g	<0.0050	0.009	<0.0050	0.039	0.56	0.005
Fluorene	µg/g	<0.0050	<0.0050	<0.0050	<0.0050	0.12	0.005
Indeno(1,2,3-cd)pyrene	µg/g	<0.0050	<0.0050	<0.0050	<0.0050	0.23	0.005
1-Methylnaphthalene	µg/g	<0.0050	<0.0050	<0.0050	<0.0050	0.59	0.005
2-Methylnaphthalene	µg/g	<0.0050	<0.0050	<0.0050	<0.0050	0.59	0.005
Naphthalene	µg/g	<0.0050	<0.0050	<0.0050	<0.0050	0.09	0.005
Phenanthrene	µg/g	<0.0050	0.0081	<0.0050	0.029	0.69	0.005
Pyrene	µg/g	<0.0050	0.0088	<0.0050	0.032	1	0.005
Methylnaphthalene, 2-(1-)	µg/g	<0.0071	<0.0071	<0.0071	<0.0071	0.59	0.0071

Table 1, Full Depth Background Site Condition Standards for Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use

mbgs: metres below ground surface

RDL: Reported Detection Limit



Table III-F: Soil Analysis Data - O. Reg. 153(511)
Organochlorine Pesticides (OCs)

Sample ID	Unit	TP2	TP4	TP5	TP6	Table 1 Standards	RDL
Sample Depth (mbgs)		0-0.3	0-0.3	0-0.3	0-0.3		
Sample Date		Feb 14, 19	Feb 14, 19	Feb 14, 19	Feb 14, 19		
Laboratory ID		9904797	9904801	9904802	9904804		
Hexachloroethane	µg/g	<0.01	<0.01	<0.01	<0.01	0.01	0.01
Gamma-Hexachlorocyclohexane (Lindane)	µg/g	<0.005	<0.005	<0.005	<0.005	0.01	0.005
Heptachlor	µg/g	<0.005	<0.005	<0.005	<0.005	0.05	0.005
Aldrin	µg/g	<0.005	<0.005	<0.005	<0.005	0.05	0.005
Heptachlor Epoxide	µg/g	<0.005	<0.005	<0.005	<0.005	0.05	0.005
Endosulfan	µg/g	<0.005	<0.005	<0.005	<0.005	0.04	0.005
Chlordane	µg/g	<0.007	<0.007	<0.007	<0.007	0.05	0.007
DDE	µg/g	<0.007	<0.007	0.011	0.017	0.05	0.007
DDD	µg/g	<0.007	<0.007	<0.007	0.023	0.05	0.007
DDT	µg/g	<0.007	<0.007	<0.007	<0.007	1.4	0.007
Dieldrin	µg/g	<0.005	<0.005	<0.005	<0.005	0.05	0.005
Endrin	µg/g	<0.005	<0.005	<0.005	<0.005	0.04	0.005
Methoxychlor	µg/g	<0.005	<0.005	<0.005	<0.005	0.05	0.005
Hexachlorobenzene	µg/g	<0.005	<0.005	<0.005	<0.005	0.01	0.005
Hexachlorobutadiene	µg/g	<0.01	<0.01	<0.01	<0.01	0.01	0.01

Table 1, Full Depth Background Site Condition Standards for
Residential/Parkland/Institutional/Commercial/Community Property Use

mbgs: metres below ground surface

RDL: Reported Detection Limit



Table IV-A: Groundwater Analysis Data - O. Reg. 153(511) -
Petroleum Hydrocarbon Compounds (PHCs F1 - F4) and BTEX

Sample ID		Unit	MW6	MW10	DUP-W1 (original)	TRIP BLANK	Table 1 Standards	RDL
Sample Depth/Screen Depth (mbgs)	3.08-6.08		4.05-7.05	4.05-7.05	-			
Sample Date	May 27, 20		May 27, 20	May 27, 20	May 27, 20			
Laboratory ID	MST345		MST346	MST347	MST348			
Benzene		µg/L	<0.20	<0.20	<0.20	<0.20	0.5	0.2
Toluene		µg/L	<0.20	0.33	0.39	<0.20	0.8	0.2
Ethylbenzene		µg/L	<0.20	<0.20	<0.20	<0.20	0.5	0.2
m/p xylenes		µg/L	<0.20	<0.20	<0.40	<0.40	NV	0.4
o xylene		µg/L	<0.20	<0.20	<0.20	<0.20	NV	0.2
Total Xylenes		µg/L	<0.20	<0.20	<0.40	<0.40	72	0.4
F1 (C6-C10)		µg/L	<25	<25	<25	<25	420	25
F1 (C6-C10) - BTEX		µg/L	<25	<25	<25	<25	420	25
F2 (C10-C16)		µg/L	<100	<100	-	-	150	100
F3 (C16-C34)		µg/L	<200	<200	-	-	500	200
F4 (C34-C50)		µg/L	<200	<200	-	-	500	200

Table 1, Full Depth Background Site Condition Standards for All Types Property Use

mbgs: metres below ground surface

RDL: Reported Detection Limit



Table IV-B: Groundwater Analysis Data -
O. Reg. 153(511) - Volatile Organic Compounds (VOCs)

Sample ID		Unit	MW6				MW10		Table 1 Standards		RDL				
Sample Depth/Screen Depth (mbgs)	Sample Date		Laboratory ID	µg/L	3.08-6.08 May 27, 20 MST345	4.05-7.05 May 27, 20 MST346	11	2700							
Acetone		µg/L		<10						10					
Benzene		µg/L		<0.20					0.5	0.2					
Bromodichloromethane		µg/L		<0.50					2	0.5					
Bromoform		µg/L		<1.0					5	1					
Bromomethane		µg/L		<0.50					0.89	0.5					
Carbon Tetrachloride		µg/L		<0.20					0.2	0.2					
Chlorobenzene		µg/L		<0.20					0.5	0.2					
Chloroform		µg/L		<0.20					2	0.2					
Dibromochloromethane		µg/L		<0.50					2	0.5					
1,2-Dichlorobenzene		µg/L		<0.50					0.5	0.5					
1,3-Dichlorobenzene		µg/L		<0.50					0.5	0.5					
1,4-Dichlorobenzene		µg/L		<0.50					0.5	0.5					
1,1-Dichloroethane		µg/L		<0.20					0.5	0.2					
1,2-Dichloroethane		µg/L		<0.50					0.5	0.5					
1,1-Dichloroethylene		µg/L		<0.20					0.5	0.2					
Cis-1,2-Dichloroethylene		µg/L		<0.50					1.6	0.5					
Trans-1,2-Dichloroethylene		µg/L		<0.50					1.6	0.5					
1,2-Dichloropropane		µg/L		<0.20					0.5	0.2					
Cis-1,3-Dichloropropylene		µg/L		<0.30					NV	0.3					
Trans-1,3-Dichloropropylene		µg/L		<0.40					NV	0.4					
Ethylbenzene		µg/L		<0.20					0.5	0.2					
Ethylene Dibromide		µg/L		<0.20					0.2	0.2					
Methyl Ethyl Ketone		µg/L		<10					400	10					
Methylene Chloride		µg/L		<2.0					5	2					
Methyl Isobutyl Ketone		µg/L		<5.0					640	5					
Methyl-t-Butyl Ether		µg/L		<0.50					15	0.5					
Styrene		µg/L		<0.50					0.5	0.5					
1,1,1,2-Tetrachloroethane		µg/L		<0.50					1.1	0.5					
1,1,2,2-Tetrachloroethane		µg/L		<0.50					0.5	0.5					
Toluene		µg/L		<0.20					0.8	0.2					



Cont's of Table IV-B: Groundwater Analysis Data -
O. Reg. 153(511) - Volatile Organic Compounds (VOCs)

Sample ID	Sample Depth/Screen Depth (mbgs)	Unit	MW6	MW10	Table 1 Standards	RDL
Sample Date			3.08-6.08	4.05-7.05		
Laboratory ID			May 27, 20	May 27, 20		
			MST345	MST346		
Tetrachloroethylene		µg/L	<0.20	<0.20	0.5	0.2
1,1,1-Trichloroethane		µg/L	<0.20	<0.20	0.5	0.2
1,1,2-Trichloroethane		µg/L	<0.50	<0.50	0.5	0.5
Trichloroethylene		µg/L	<0.20	<0.20	0.5	0.2
Vinyl Chloride		µg/L	<0.20	<0.20	0.5	0.2
m-Xylene & p-Xylene		µg/L	<0.20	<0.20	NV	0.2
o-Xylene		µg/L	<0.20	<0.20	NV	0.2
Total Xylenes		µg/L	<0.20	<0.20	72	0.2
Dichlorodifluoromethane		µg/L	<1.0	<1.0	590	1
Hexane(n)		µg/L	<1.0	<1.0	5	1
Trichlorofluoromethane		µg/L	<0.50	<0.50	150	0.5
1,3-Dichloropropene (cis + trans)		µg/L	<0.50	<0.50	0.5	0.5

Table 1, Full Depth Background Site Condition Standards for All Types Property Use

mbgs: metres below ground surface

RDL: Reported Detection Limit



Table IV-C: Groundwater Analysis Data - O. Reg. 153(511)
Metals and/or Inorganic Parameters

Metals and Inorganics		Unit	MW6		MW10	MW6A	MW6B	Table 1 Standards	RDL
Sample Depth/Screen Depth (mbgs)	Laboratory ID		3.08-6.08	4.05-7.05	3.08-6.08	3.08-6.08			
Sample Date			May 27, 20	May 27, 20	Jun 16, 20	Jul 16, 20			
			MST345	MST346	MZB147	NDB046			
Antimony		µg/L	<0.50	<0.50		-	-	1.5	0.5
Arsenic		µg/L	<1.0	<1.0		-	-	13	1
Barium		µg/L	62	80		-	-	610	2
Beryllium		µg/L	<0.50	<0.50		-	-	0.5	0.5
Boron		µg/L	99	36		-	-	1700	10
Cadmium		µg/L	<0.10	<0.10		-	-	0.5	0.1
Chromium		µg/L	<5.0	<5.0		-	-	11	5
Chromium VI		µg/L	<0.50	<0.50		-	-	25	0.5
Cobalt		µg/L	1.5	<0.50		-	-	3.8	0.5
Copper		µg/L	<1.0	<1.0		-	-	5	1
Lead		µg/L	<0.50	<0.50		-	-	1.9	0.5
Mercury		µg/L	<0.10	<0.10		-	-	0.1	0.1
Molybdenum		µg/L	11	9.9		-	-	23	0.5
Nickel		µg/L	4.9	<1.0		-	-	14	1
Sodium		µg/L	140000	8300		-	-	490000	100
Selenium		µg/L	<2.0	<2.0		-	-	5	2
Silver		µg/L	<0.10	<0.10		-	-	0.3	0.1
Thallium		µg/L	<0.050	<0.050		-	-	0.5	0.05
Vanadium		µg/L	<0.50	<0.50		-	-	3.9	0.5
Zinc		µg/L	<5.0	<5.0		-	-	160	5
Cyanide, Free		µg/L	45	1		<1	<1	5	1
Uranium		µg/L	3.4	0.42		-	-	8.9	0.1

Table 1, Full Depth Background Site Condition Standards for All Types Property Use

mbgs: metres below ground surface

RDL: Reported Detection Limit



Table IV-E: Groundwater Analysis Data - O. Reg. 153(511)
Polycyclic Aromatic Hydrocarbons (PAHs)

Metals and Inorganics		Unit	MW6		Table 1 Standards	RDL
Sample Depth/Screen Depth (mbgs)	Laboratory ID		3.08-6.08	MW10		
Sample Date			May 27, 20	May 27, 20		
			MST345	MST346		
Acenaphthene		µg/L	<0.050	<0.050	4.1	0.05
Acenaphthylene		µg/L	<0.050	<0.050	1	0.05
Anthracene		µg/L	<0.050	<0.050	0.1	0.05
Benzo(a)anthracene		µg/L	<0.050	<0.050	0.2	0.05
Benzo(a)pyrene		µg/L	<0.010	<0.010	0.01	0.01
Benzo(b/f)fluoranthene		µg/L	<0.050	<0.050	0.1	0.05
Benzo(ghi)perylene		µg/L	<0.050	<0.050	0.2	0.05
Benzo(k)fluoranthene		µg/L	<0.050	<0.050	0.1	0.05
Chrysene		µg/L	<0.050	<0.050	0.1	0.05
Dibenzo(a,h)anthracene		µg/L	<0.050	<0.050	0.2	0.05
Fluoranthene		µg/L	<0.050	<0.050	0.4	0.05
Fluorene		µg/L	<0.050	<0.050	120	0.05
Indeno(1,2,3-cd)pyrene		µg/L	<0.050	<0.050	0.2	0.05
1-Methylnaphthalene		µg/L	<0.050	<0.050	2	0.05
2-Methylnaphthalene		µg/L	<0.050	<0.050	2	0.05
Naphthalene		µg/L	<0.050	<0.050	7	0.05
Phenanthrene		µg/L	<0.030	<0.030	0.1	0.03
Pyrene		µg/L	<0.050	<0.050	0.2	0.05
Methylnaphthalene, 2-(1-)		µg/L	<0.071	<0.071	2	0.071

Table 1, Full Depth Background Site Condition Standards for All Types Property Use

mbgs: metres below ground surface

RDL: Reported Detection Limit

Table V – Maximum Concentration (Soil)
Summary of Metal and Inorganic Parameters

Parameter	Unit	Max. Conc.	Sample ID	Sampling Depth (mbgs)
Antimony	µg/g	<0.20	-	-
Arsenic	µg/g	5	TP6	0-0.3
Barium	µg/g	156	TP2	0-0.3
Beryllium	µg/g	0.9	TP2	0-0.3
Boron (Hot Water Soluble)	µg/g	0.45	TP6	0-0.3
Cadmium	µg/g	0.14	BH3/1	0-0.75
Chromium	µg/g	27	TP2	0-0.3
Chromium VI	µg/g	<0.18	-	-
Cobalt	µg/g	9.6	TP6	0-0.3
Copper	µg/g	19	TP6	0-0.3
Lead	µg/g	15	TP6	0-0.3
Mercury	µg/g	0.11	TP2	0-0.3
Molybdenum	µg/g	1.2	TP4	0-0.3
Nickel	µg/g	22	BH6/5	3-3.75
Selenium	µg/g	<0.50	-	-
Silver	µg/g	<0.20	-	-
Thallium	µg/g	0.15	BH10/2	0.75-1.5
Vanadium	µg/g	40	TP2	0-0.3
Zinc	µg/g	74	TP6	0-0.3
pH (pH Units)	-	8.08	BH16/3	1.5-2.25
Conductivity (ms/cm)	mS/cm	0.4	BH13/1	0-0.75
Sodium Adsorption Ratio	-	1.1	BH14/2	0.75-1.5
Cyanide, Free	µg/g	<0.01	-	-
Boron (Total)	µg/g	8.1	BH17/1	0-0.75
Uranium	µg/g	1	TP6	0-0.3

Max. Conc. - Maximum Concentration
mbgs: Metres below ground surface



Table V – Maximum Concentration (Soil)
Summary of PHCs (F1-F4) and BTEX

Parameter	Unit	Max. Conc.	Sample ID	Sampling Depth (mbgs)
Benzene	µg/g	<0.020	-	-
Toluene	µg/g	<0.020	-	-
Ethylbenzene	µg/g	<0.020	-	-
m/p xylenes	µg/g	<0.040	-	-
o xylene	µg/g	<0.020	-	-
Total Xylenes	µg/g	<0.040	-	-
F1 (C6-C10)	µg/g	<10	-	-
F1 (C6-C10) - BTEX	µg/g	<10	-	-
F2 (C10-C16)	µg/g	<10	-	-
F3 (C16-C34)	µg/g	83	BH6/5	3.0-3.75
F4 (C34-C50)	µg/g	<50	-	-

Max. Conc. - Maximum Concentration

mbgs: Metres below ground surface

Table V – Maximum Concentration (Soil)
Summary of VOCs

Parameter	Unit	Max. Conc.	Sample ID	Sampling Depth (mbgs)
Acetone	µg/g	<0.49	-	-
Benzene	ug/g	<0.0060	-	-
Bromodichloromethane	ug/g	<0.040	-	-
Bromoform	ug/g	<0.040	-	-
Bromomethane	ug/g	<0.040	-	-
Carbon Tetrachloride	ug/g	<0.040	-	-
Chlorobenzene	ug/g	<0.040	-	-
Chloroform	ug/g	<0.040	-	-
Dibromochloromethane	ug/g	<0.040	-	-
1,2-Dichlorobenzene	ug/g	<0.040	-	-
1,3-Dichlorobenzene	ug/g	<0.040	-	-
1,4-Dichlorobenzene	ug/g	<0.040	-	-
1,1-Dichloroethane	ug/g	<0.040	-	-
1,2-Dichloroethane	ug/g	<0.040	-	-
1,1-Dichloroethylene	ug/g	<0.040	-	-
Cis-1,2-Dichloroethylene	ug/g	<0.040	-	-
Trans-1,2-Dichloroethylene	ug/g	<0.040	-	-
1,2-Dichloropropane	ug/g	<0.040	-	-
Cis-1,3-Dichloropropylene	ug/g	<0.030	-	-
Trans-1,3-Dichloropropylene	ug/g	<0.040	-	-
Ethylbenzene	ug/g	<0.010	-	-
Ethylene Dibromide	ug/g	<0.040	-	-
Methyl Ethyl Ketone	ug/g	<0.40	-	-
Methylene Chloride	ug/g	<0.049	-	-
Methyl Isobutyl Ketone	ug/g	<0.40	-	-
Methyl-t-Butyl Ether	ug/g	<0.040	-	-
Styrene	ug/g	<0.040	-	-
1,1,1,2-Tetrachloroethane	ug/g	<0.040	-	-
1,1,2,2-Tetrachloroethane	ug/g	<0.040	-	-
Toluene	ug/g	<0.020	-	-



Cont's of Table V -- Maximum Concentration (Soil)
Summary of VOCs

Parameter	Unit	Max. Conc.	Sample ID	Sampling Depth (mbgs)
Tetrachloroethylene	ug/g	<0.040	-	-
1,1,1-Trichloroethane	ug/g	<0.040	-	-
1,1,2-Trichloroethane	ug/g	<0.040	-	-
Trichloroethylene	ug/g	<0.010	-	-
Vinyl Chloride	ug/g	<0.019	-	-
m-Xylene & p-Xylene	ug/g	<0.020	-	-
o-Xylene	ug/g	<0.020	-	-
Total Xylenes	ug/g	<0.020	-	-
Dichlorodifluoromethane	ug/g	<0.040	-	-
Hexane(n)	ug/g	<0.040	-	-
Trichlorofluoromethane	ug/g	<0.040	-	-
1,3-Dichloropropene (cis + trans)	µg/g	<0.050	-	-

Max. Conc. - Maximum Concentration

mbgs: Metres below ground surface



Table V – Maximum Concentration (Soil)
Summary of PAHs

Parameter	Unit	Max. Conc.	Sample ID	Sampling Depth (mbgs)
Acenaphthene	µg/g	<0.0050	-	-
Acenaphthylene	µg/g	<0.0050	-	-
Anthracene	µg/g	0.0065	BH16/1	0-0.75
Benzo(a)anthracene	µg/g	0.013	BH16/1	0-0.75
Benzo(a)pyrene	µg/g	0.014	BH16/1	0-0.75
Benzo(b/f)fluoranthene	µg/g	0.017	BH16/1	0-0.75
Benzo(ghi)perylene	µg/g	0.019	BH16/1	0-0.75
Benzo(k)fluoranthene	µg/g	0.0051	BH16/1	0-0.75
Chrysene	µg/g	0.015	BH16/1	0-0.75
Dibenzo(a,h)anthracene	µg/g	<0.0050	-	-
Fluoranthene	µg/g	0.039	BH16/1	0-0.75
Fluorene	µg/g	<0.0050	-	-
Indeno(1,2,3-cd)pyrene	µg/g	0.014	BH16/1	0-0.75
1-Methylnaphthalene	µg/g	<0.0050	-	-
2-Methylnaphthalene	µg/g	<0.0050	-	-
Naphthalene	µg/g	<0.0050	-	-
Phenanthrene	µg/g	0.029	BH16/1	0-0.75
Pyrene	µg/g	0.032	BH16/1	0-0.75
Methylnaphthalene, 2-(1-)	µg/g	<0.0071	-	-

Max. Conc. - Maximum Concentration
mbgs: Metres below ground surface

Table V – Maximum Concentration (Soil)
Summary of PCBs

Parameter	Unit	Max. Conc.	Sample ID	Sampling Depth (mbgs)
Total PCB	µg/g	<0.010	-	-

Max. Conc. - Maximum Concentration
mbgs: Metres below ground surface



Table V – Maximum Concentration (Soil)

Summary of PCBs

Parameter	Unit	Max. Conc.	Sample ID	Sampling Depth (mbgs)
Hexachloroethane	µg/g	<0.01	-	-
Gamma-Hexachlorocyclohexane (Lindane)	µg/g	<0.005	-	-
Heptachlor	µg/g	<0.005	-	-
Aldrin	µg/g	<0.005	-	-
Heptachlor Epoxide	µg/g	<0.005	-	-
Endosulfan	µg/g	<0.005	-	-
Chlordane	µg/g	<0.007	-	-
DDE	µg/g	0.017	TP6	0-0.3
DDD	µg/g	0.023	TP6	0-0.3
DDT	µg/g	<0.007	-	-
Dieldrin	µg/g	<0.005	-	-
Endrin	µg/g	<0.005	-	-
Methoxychlor	µg/g	<0.005	-	-
Hexachlorobenzene	µg/g	<0.005	-	-
Hexachlorobutadiene	µg/g	<0.01	-	-

Max. Conc. - Maximum Concentration

mbgs: Metres below ground surface



Table VI – Maximum Concentration (Groundwater)
Summary of Metals and Inorganic Parameters

Parameter	Unit	Max.	Conc.	Sample ID	Borehole No.	Sampling Depth (mbgs)
Antimony	µg/L	<0.50		-	-	-
Arsenic	µg/L	<1.0		-	-	-
Barium	µg/L	80		MW10	MW10	4.05-7.05
Beryllium	µg/L	<0.50		-	-	-
Boron	µg/L	99		MW6	MW6	3.08-6.08
Cadmium	µg/L	<0.10		-	-	-
Chromium	µg/L	<5.0		-	-	-
Chromium VI	µg/L	<0.50		-	-	-
Cobalt	µg/L	1.5		MW6	MW6	3.08-6.08
Copper	µg/L	<1.0		-	-	-
Lead	µg/L	<0.50		-	-	-
Mercury	µg/L	<0.10		-	-	-
Molybdenum	µg/L	11		MW6	MW6	3.08-6.08
Nickel	µg/L	4.9		MW6	MW6	3.08-6.08
Sodium	µg/L	140000		MW6	MW6	3.08-6.08
Selenium	µg/L	<2.0		-	-	-
Silver	µg/L	<0.10		-	-	-
Thallium	µg/L	<0.050		-	-	-
Vanadium	µg/L	<0.50		-	-	-
Zinc	µg/L	<5.0		-	-	-
Cyanide, Free	µg/L	1		MW10	MW10	4.05-7.05
Uranium	mg/L	3.4		MW6	MW6	3.08-6.08

Max. Conc. - Maximum Concentration
mbgs: metres below ground surface



Table VI – Maximum Concentration (Groundwater)
Summary of PHCs (F1 - F4)

Parameter	Unit	Max.	Conc.	Sample ID	Borehole No.	Sampling Depth (mbgs)
Benzene	µg/L	<0.20		-	-	-
Toluene	µg/L	0.39		MW10	MW10	4.05-7.05
Ethylbenzene	µg/L	<0.20		-	-	-
m/p xylenes	µg/L	<0.40		-	-	-
o xylene	µg/L	<0.20		-	-	-
Total Xylenes	µg/L	<0.40		-	-	-
F1 (C6-C10)	µg/L	<25		-	-	-
F1 (C6-C10) - BTEX	µg/L	<25		-	-	-
F2 (C10-C16)	µg/L	<100		-	-	-
F3 (C16-C34)	µg/L	<200		-	-	-
F4 (C34-C50)	µg/L	<200		-	-	-

Max. Conc. - Maximum Concentration

mbgs: metres below ground surface

Table VI – Maximum Concentration (Groundwater)
Summary of VOCs

Parameter	Unit	Max. Conc.	Sample ID	Borehole No.	Sampling Depth (mbgs)
Acetone	µg/L	11	MW10	MW10	4.05-7.05
Benzene	µg/L	<0.20	-	-	-
Bromodichloromethane	µg/L	<0.50	-	-	-
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	-	-	-
Methylene Chloride	µg/L	<2.0	-	-	-
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	0.33	MW10	MW10	4.05-7.05



Cont's of Table VI – Maximum Concentration (Groundwater)
Summary of VOCs

Parameter	Unit	Max.	Conc.	Sample ID	Borehole No.	Sampling Depth (mbgs)
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	<0.20		-	-	-
o-Xylene	µg/L	<0.20		-	-	-
Total Xylenes	µg/L	<0.20		-	-	-
Dichlorodifluoromethane	µg/L	<1.0		-	-	-
Hexane(n)	µg/L	<1.0		-	-	-
Trichlorofluoromethane	µg/L	<0.50		-	-	-
1,3-Dichloropropene (cis + trans)	µg/L	<0.50		-	-	-

Max. Conc. - Maximum Concentration
mbgs: metres below ground surface

Table VI – Maximum Concentration (Groundwater)
Summary of PAHs

Parameter	Unit	Max. Conc.	Sample ID	Borehole No.	Sampling Depth (mbgs)
Acenaphthene	µg/L	<0.050	-	-	-
Acenaphthylene	µg/L	<0.050	-	-	-
Anthracene	µg/L	<0.050	-	-	-
Benzo(a)anthracene	µg/L	<0.050	-	-	-
Benzo(a)pyrene	µg/L	<0.010	-	-	-
Benzo(b/j)fluoranthene	µg/L	<0.050	-	-	-
Benzo(ghi)perylene	µg/L	<0.050	-	-	-
Benzo(k)fluoranthene	µg/L	<0.050	-	-	-
Chrysene	µg/L	<0.050	-	-	-
Dibenzo(a,h)anthracene	µg/L	<0.050	-	-	-
Fluoranthene	µg/L	<0.050	-	-	-
Fluorene	µg/L	<0.050	-	-	-
Indeno(1,2,3-cd)pyrene	µg/L	<0.050	-	-	-
1-Methylnaphthalene	µg/L	<0.050	-	-	-
2-Methylnaphthalene	µg/L	<0.050	-	-	-
Naphthalene	µg/L	<0.050	-	-	-
Phenanthrene	µg/L	<0.030	-	-	-
Pyrene	µg/L	<0.050	-	-	-
Methylnaphthalene, 2-(1-)	µg/L	<0.071	-	-	-

Max. Conc. - Maximum Concentration

mbgs: metres below ground surface



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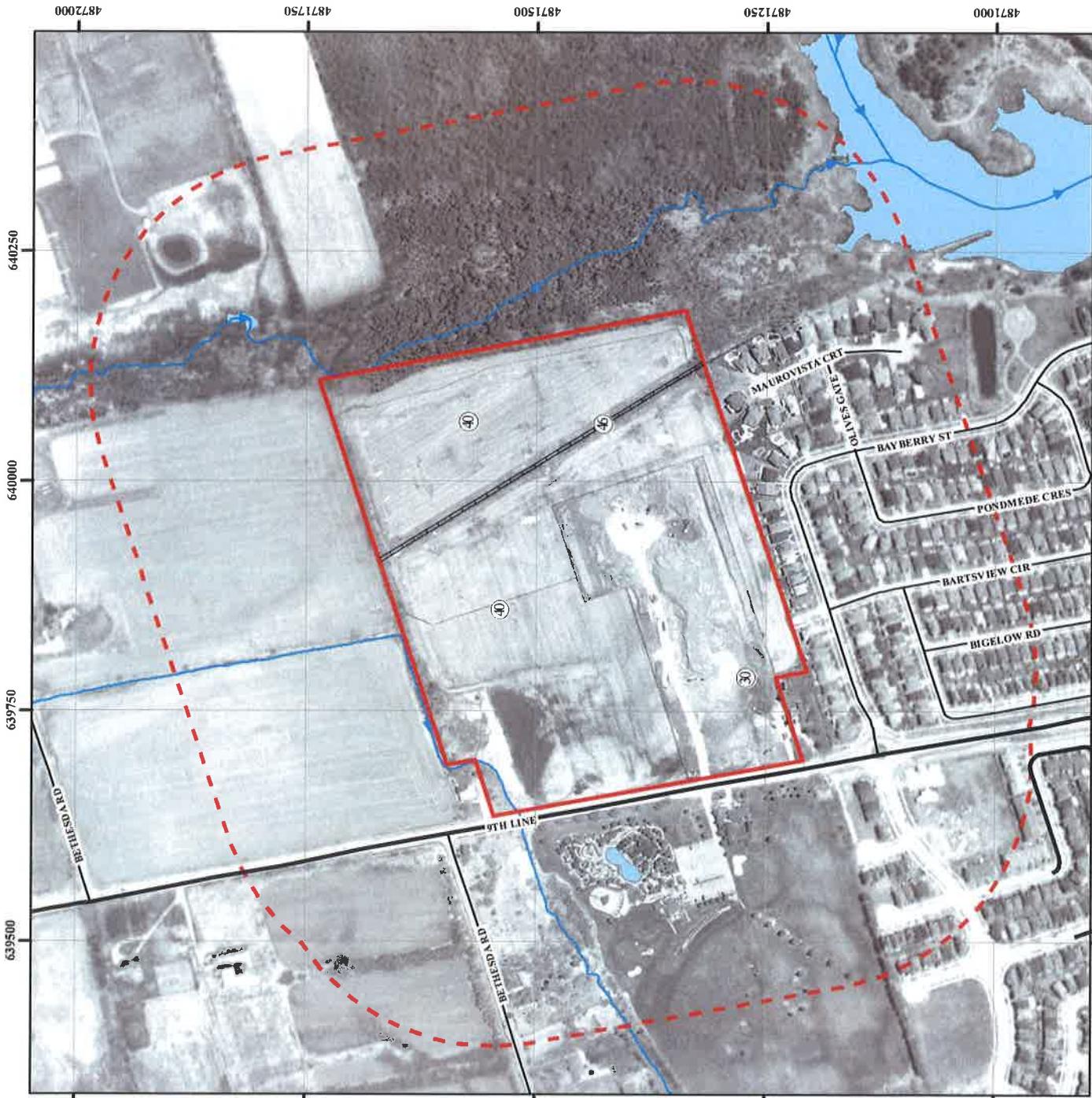
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DRAWINGS

REFERENCE NO. 2005-E074



- Subject Site
- Phase One Study Area
- Watercourse
- Major Road
- Local Road
- Former Railway Tracks
- Borehole with Monitoring Well
- Borehole
- Hand-Dug Test Pit

Potentially Contaminating Activities (PCAs)

- Importation of Fill Material of Unknown Quality
- Pesticides Manufacturing, Processing, Bulk Storage and Applications
- Rail Yards, Tracks and Spurs



Title: Soil Exceedance Plan

Project:

Proposed Residential Development
12785 Ninth Line
Town of Whitchurch-Stouffville

Reference No. 2005-E074

Date: May 28, 2020



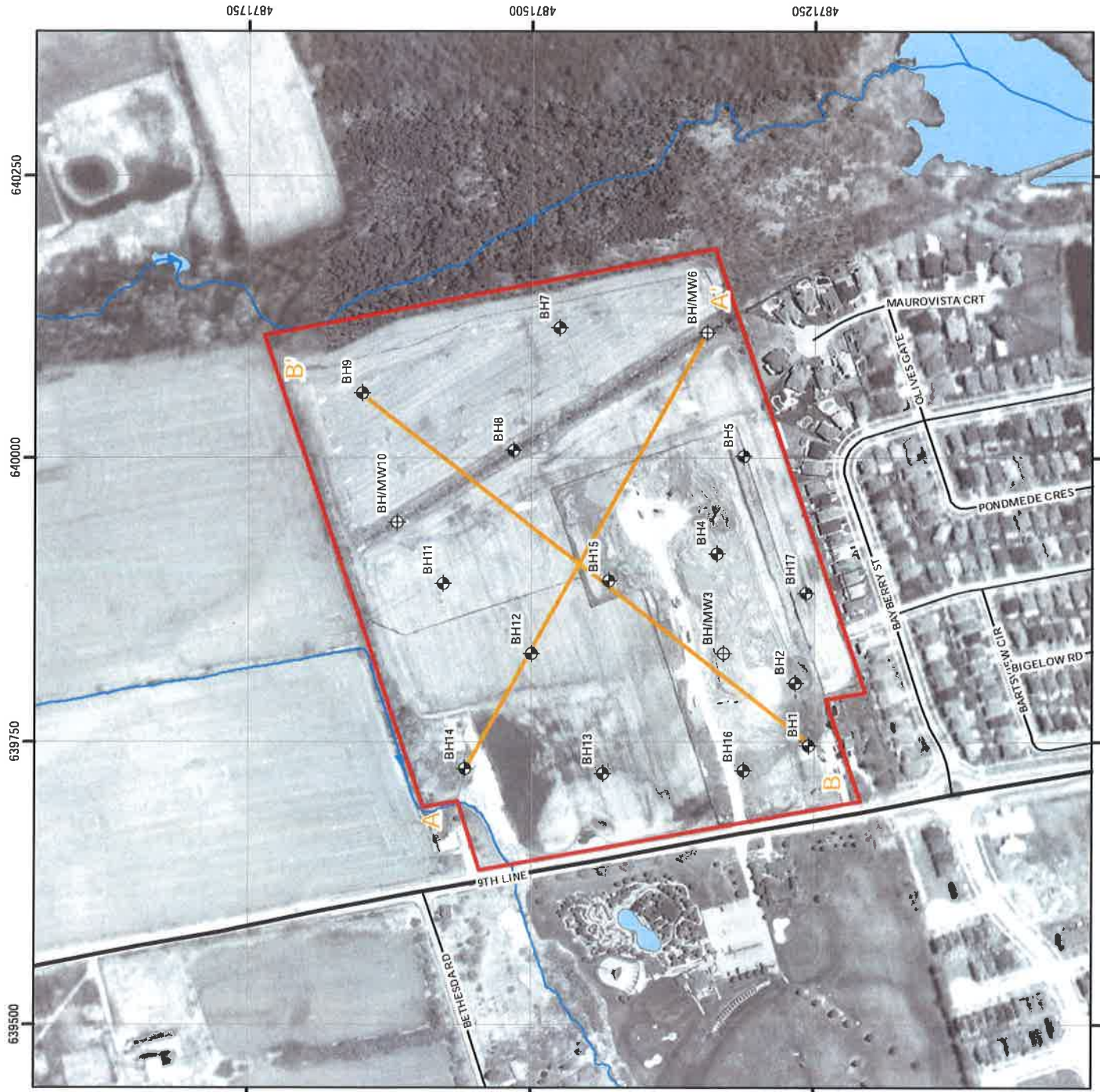
Drawing No. 1



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Subject Site Water Body Major Road Local Road Former Railway Tracks Borehole with Monitoring Well Borehole Hand-Dug Test Pit	Area of Potential Environmental Concern (APEC) APEC 1 and 2 APEC 3 APEC 4
Soil Engineers Ltd.	
Title: Sampling Location Plan	
Project: Proposed Residential Development 12785 Ninth Line Town of Whitchurch-Stouffville	
Reference No. 2005-E074	
Date: June 10, 2020	
Scale: 	
Drawing No. 2	

Source: Water Body, Ontario Ministry of Natural Resources and Forestry, 2015
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 Source: Water Course, Ontario Ministry of Natural Resources and Forestry, 2015
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- Subject Site
- Major Road
- Local Road
- Water Body
- Borehole with Monitoring Well
- Borehole
- Cross-Section Direction



Soil Engineers Ltd.

Title: Cross-Section Key Plan

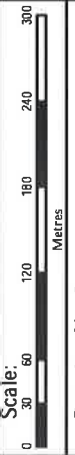
Project:

Proposed Residential Development
12785 Ninth Line
Town of Whitchurch-Stouffville

Reference No. 2005-E074

Date: June 10, 2020

Scale:



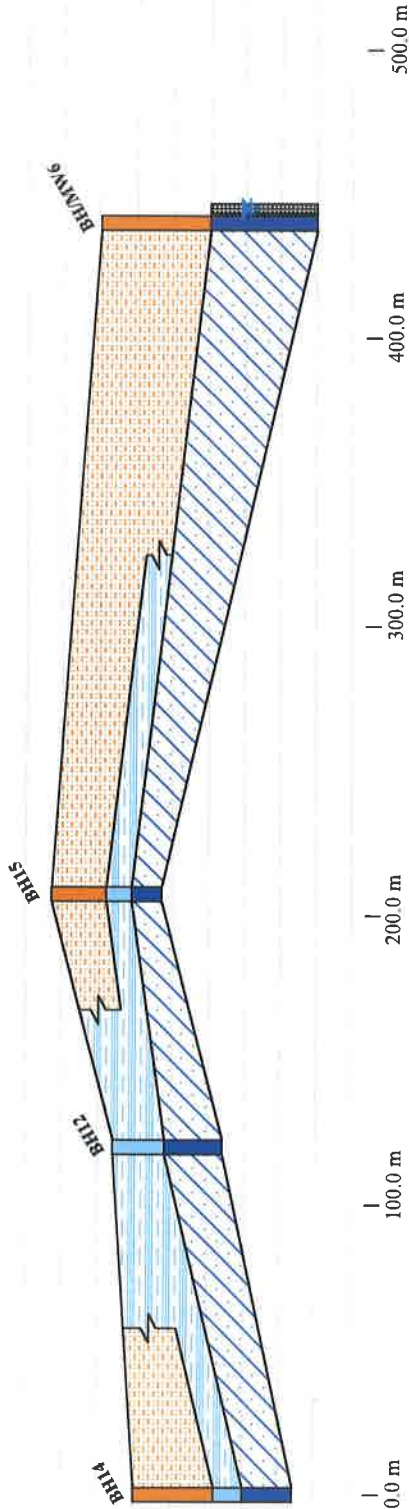
Drawing No. 3

Source: Water Body, Ontario Ministry of Natural Resources and Forestry, 2015
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Source: Water Course, Ontario Ministry of Natural Resources and Forestry, 2015
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Southwest
A'

Northwest
A

Elevation (masl)
282.0 m
281.0 m
280.0 m
279.0 m
278.0 m
277.0 m
276.0 m
275.0 m
274.0 m
273.0 m

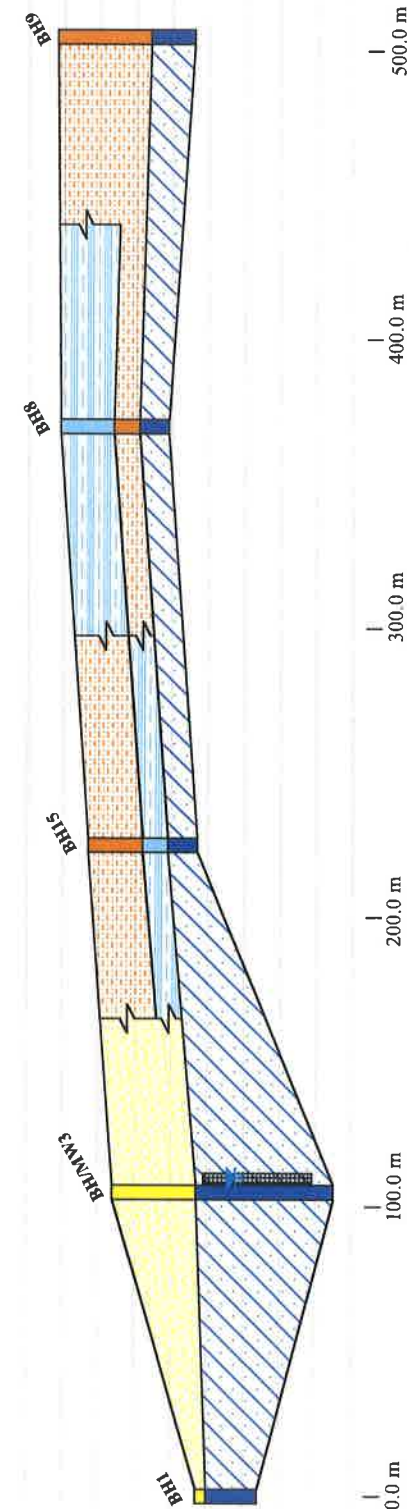


SECTION A-A'

Southwest
B'

Northwest
B

Elevation (masl)
283.0 m
282.0 m
281.0 m
280.0 m
279.0 m
278.0 m
277.0 m
276.0 m
275.0 m
274.0 m



SECTION B-B'

Water Table



Screen



Sandy Silt, Fill



Silty Clay, Fill



Silty Sand, Fill



Silty Clay, Till



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CONSULTING SOIL FOUNDATION & ENVIRONMENTAL ENGINEERS

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

Project: Proposed Residential Development
12785 Ninth Line
Town of Whitchurch-Stouffville

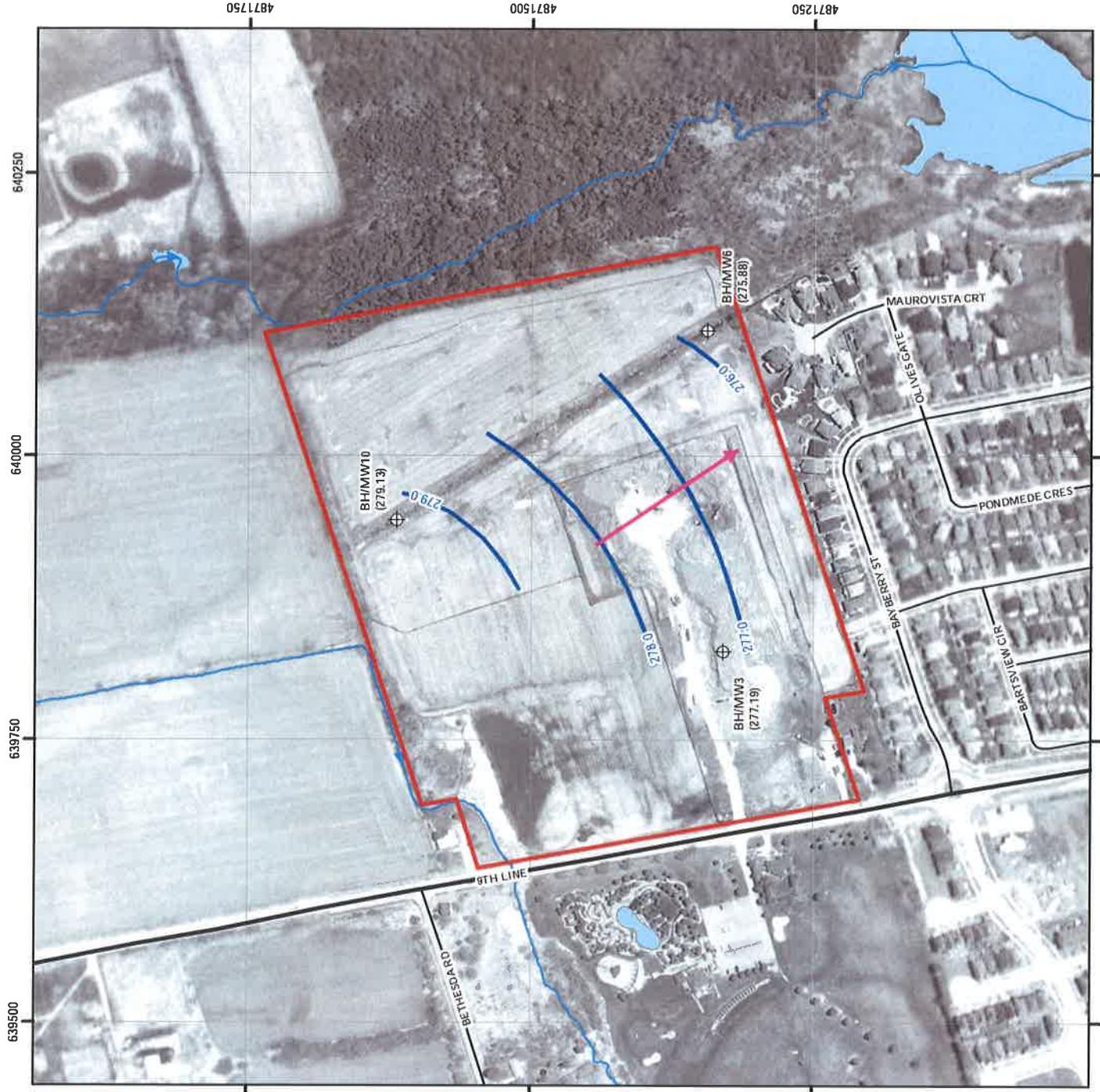
Reference No:
2005-E074

Date:
June 10, 2020

Scale: V
1:200

Scale: H
1:2500

Drawing No.
4



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- Subject Site
- Water Body
- Major Road
- Local Road
- Borehole with Monitoring Well
- Interpreted Shallow Groundwater Flow Direction
- Groundwater Elevation Contour (masl)



Soil Engineers Ltd.

Title: Shallow Groundwater Contour Map

Project:

Proposed Residential Development
12785 Ninth Line
Town of Whitchurch-Stouffville

Reference No. 2005-E074

Date: June 10, 2020

Scale:



Drawing No. 5

Source: Water Body, Ontario Ministry of Natural Resources and Forestry, 2015
Source: Queen's Printer for Ontario, 2015
Source: Water Courses, Ontario Ministry of Natural Resources and Forestry, 2015
Source: Queen's Printer for Ontario, 2015



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APPENDIX 'A'

SAMPLING AND ANALYSIS PLAN

REFERENCE NO. 2005-E074



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 Phase Two Property is located at 12785 Ninth Line, in the Town of Whitchurch-Stouffville (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. 2005-E074, dated May 18, 2020).

1) **OBJECTIVE**

The objective of the initial investigation of the Phase Two ESA was to determine the soil and groundwater quality at the subject site, as related to the following Areas of Potential Environmental Concerns (APECs) at the subject site:

APEC 1: Potential soil impact due to former agricultural activities at the western-middle portions of the subject site.

APEC 2: Potential soil impact due to former agricultural activities at the eastern portion of the subject site

APEC 3: Potential impact in fill material of unknown quality.

APEC 4: Potential soil and groundwater impact at the middle-eastern portions of the subject site due to former railway tracks on the subject site.



2) **SCOPE OF WORK**

The scope of work for the initial investigation of the Phase Two ESA includes:

- Locate the underground and overhead utilities.
- Conduct seventeen (17) boreholes (designated as BH1 to BH17) at depths ranging from 3.0 to 6.9 mbgs and three (3) hand dug test pits to a depth of 0.3 mbgs.
- Collect representative soil samples from the 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.
- Install monitoring wells in three (3) selected boreholes for groundwater sampling and testing.
- Conduct groundwater monitoring and collect groundwater samples for chemical testing.
- Carry out analytical testing program on selected soil samples and groundwater samples (including QA/QC samples) for one or more of the following parameters: petroleum hydrocarbons (PHCs), benzene, toluene, ethylbenzene and xylenes (BTEX), volatile organics compounds (VOCs), organochlorine pesticides (OCs), polychlorinated biphenyls (PCBs), and/or metals and inorganics parameters.
- Review analytical testing results of submitted soil and groundwater samples using applicable Site Condition Standards.
- Prepare a Phase Two ESA report containing 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 / Monitoring Well ID.
APEC 1: Potential soil impact due to former agricultural activities at the western-middle portions of the subject site.	TP1, TP2, TP3, TP5
APEC 2: Potential soil impact due to former agricultural activities at the eastern portion of the subject site.	TP4, TP6
APEC 3: Potential impact in fill material of unknown quality.	BH1 to BH17
APEC 4: Potential soil and groundwater impact at the middle-eastern portions of the subject site due to former railway tracks on the subject site.	BH/MW6, BH8, and BH/MW10

The location of proposed sampling locations for the Phase Two ESA is shown in Drawing No. 2.



4) **SOIL AND GROUNDWATER 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	Metals and Inorganics	OCs	PHCs, BTEX	PAHs	PCBs	VOCs
Soil Sample (QA/QC samples)						
BH1	1	-	1	1	-	1
BH2	1 + 1 (pH)	-	-	1	1	-
BH3	1	-	-	1	-	1
BH4	1	-	1	-	1	-
BH5	1	-	-	1	-	1
BH6	2	-	1	1	-	-
BH7	1	-	-	1	-	1
BH8	1	-	1	1	-	1
BH9	1	-	1	-	-	-
BH10	2	-	1	1	-	-
BH11	1	-	1	1	1	-
BH12	1	-	-	-	-	1
BH13	1	-	-	-	1	1
BH14	1 + 1 (pH)	-	1	-	-	1
BH15	1	-	-	1	-	1
BH16	1	-	-	1	-	-
BH17	1 + 1 (pH)	-	1	1	-	-
TP1	1	-	-	-	-	-
TP2	1	1	-	-	-	-
TP3	1	-	-	-	-	-
TP4	1	1	1	-	-	-
TP5	1	1	1	-	-	-
TP6	1	1	-	-	-	-
Duplicate Soil Sample	2	-	-	1	-	1
Groundwater Sample (QA/QC samples)						
BH/MW3	For Monitoring Purposes					
BH/MW6	1	-	1	1	-	1
BH/MW10	1	-	1	1	-	1
Duplicate GW Sample	-	-	1	-	-	-
Trip Blank	-	-	1	-	-	-

It should be noted that based on the analytical results of the submitted soil samples, if further activities of Phase Two ESA such as re-sampling and testing are 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 split-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 Polychlorinated Biphenyls, Polyaromatic Hydrocarbons, 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, Well Development/Purging and Groundwater Sampling

7.3.1) Monitoring Well Installation

7.3.1.1) 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 are equipped with threaded end caps. The appropriate number of risers are 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.

7.3.1.2) 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.



7.3.1.3) 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

7.3.2) Monitoring Well Development/Purging

Installed monitoring wells will have to be developed to remove any fluids that may have been introduced into the well during drilling and to remove particles that may have become entrained in the well and filter pack (a minimum of three (3) well casing volumes of groundwater from each well will have to be developed).

Prior to each groundwater sampling event, groundwater will be purged from each monitoring well utilizing the three well casing volumes method. The monitoring wells will be instrumented with dedicated low-density polyethylene tubing to facilitate well development, purging and sampling requirements. Purged water will be contained and stored at the site for future disposal.

7.3.3) Water Level Measurements and Field Observation/Measurement of Water Quality Parameters

Water level measurements and water temperature will be taken using a water level meter (Dipper-T) equipped with a thermometer. Groundwater observations will be recorded for colour, clarity, the presence or absence of any free product/surface sheen and any odours present during



purging the wells. The water level measuring device will be 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.

7.3.4) Groundwater Sampling

Prior to each groundwater sampling event, groundwater will have to be purged from each monitoring well utilizing the three well casing volumes method. The monitoring wells will be instrumented with dedicated low-density polyethylene tubing to facilitate well development, purging and sampling requirements. Purged water will be contained and stored at the site for future disposal.

Groundwater sampling will be conducted after purging and allowing the water to stabilize. The groundwater purging and sampling activities will be carried out using dedicated low-density polyethylene tubing. Groundwater samples will be collected into laboratory-supplied containers, prepared with preservative for the analysis being conducted. The samples scheduled for analysis of metals will be passed through a 0.45 micron filter as part of the sampling process.



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APPENDIX 'B'

BOREHOLE LOGS

REFERENCE NO. 2005-E074

JOB NO.: 2005-E074

LOG OF BOREHOLE NO.: BH1

FIGURE NO.: 1

PROJECT DESCRIPTION: Proposed Residential Development**METHOD OF BORING:** Direct Push**PROJECT LOCATION:** 12785 Ninth Line,
Town of Whitchurch-Stouffville**DRILLING DATE:** May 21, 2020

El. (masl) Depth (mbgs)	SOIL DESCRIPTION	SAMPLES				Depth Scale (mbgs)	X Penetration Resistance (blows/30 cm) 5 15 25 35 45 ● Combustible Headspace Reading (ppm) 20 60 100 140 180		REMARKS	WATER LEVEL
		Number	Type	Combustible Headspace Reading	PID					
280.33	Ground									
0.00	Brown, dry SILTY SAND, Fill traces of organics and wood	1	DO	25		0			BH1/1: PAHs	
		2	DO	15		1			BH1/2: Metal and Inorganics	
		3	DO	20		2			BH1/3: VOCs, PHCs, BTEX	
278.03										
2.30	Brown, dry SILTY CLAY, Till some sand a trace of gravel occ. Sand and clay seams and layers	4	DO	10		3				
		5	DO	15		4				
276.58										
3.75	END OF BOREHOLE									
						5				
						6				
						7				
						8				

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JOB NO.: 2005-E074

LOG OF BOREHOLE NO.: BH2

FIGURE NO.: 2

PROJECT DESCRIPTION: Proposed Residential Development**METHOD OF BORING:** Direct Push**PROJECT LOCATION:** 12785 Ninth Line,
Town of Whitchurch-Stouffville**DRILLING DATE:** May 21, 2020

El. (masl) Depth (mbgs)	SOIL DESCRIPTION	SAMPLES				Depth Scale (mbgs)	X Penetration Resistance (blows/30 cm) 5 15 25 35 45 ● Combustible Headspace Reading (ppm) 20 60 100 140 180	REMARKS	WATER LEVEL
		Number	Type	Combustible Headspace Reading	PID				
279.26	Ground								
0.00	Brown, dry SAND, Fill topsoil inclusions	1	DO	5		0		BH2/1: PAHs, PCBs	
277.76		2	DO	0		1		BH2/2: Metal and inorganics	
1.50	Brown, dry SILTY CLAY, Till some sand a trace of gravel occ. Sand and clay seams and layers	3	DO	0		2		BH2/3: pH	
276.26		4	DO	0		3			
3.00	END OF BOREHOLE					4			
						5			
						6			
						7			
						8			

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JOB NO.: 2005-E074

LOG OF BOREHOLE NO.: BH/MW3 **FIGURE NO.: 3****PROJECT DESCRIPTION:** Proposed Residential Development**METHOD OF BORING:** Direct Push**PROJECT LOCATION:** 12785 Ninth Line,
Town of Whitchurch-Stouffville**DRILLING DATE:** May 21, 2020

El. (masl) Depth (mbgs)	SOIL DESCRIPTION	SAMPLES				Depth Scale (mbgs)	X Penetration Resistance (blows/30 cm) 5 15 25 35 45 ● Combustible Headspace Reading (ppm) 20 60 100 140 180		REMARKS	WATER LEVEL
		Number	Type	Combustible Headspace Reading	PID					
280.58	Ground									
0.00	Brown, dry to moist SILTY SAND, Fill topsoil and peat inclusions occ. Bricks and asphalt debris	1	DO	0		0			BH3/1: Metal and Inorganics	 W.L. @ 3.4 mbgs on May 27, 2020
		2	DO	0		1				
		3	DO	0		2			BH3/3: PAHs, VOCs	
278.28										
2.30	Brown, dry SILTY CLAY, Till some sand a trace of gravel occ. Sand and clay seams and layers	4	DO	0		3				
		5	DO	0		4				
		6	DO	0		5				
		7	DO	0		6				
		8	DO	0		7				
274.48										
6.10	END OF BOREHOLE Installed 51 mm standpipe to 5.46 m. Bentonite seal from 0 to 1.85 m. Sand backfill from 1.85 to 5.46 m. 3.0 m screen from 2.46 to 5.46 m. Provided with monument protective casing.					8				

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JOB NO.: 2005-E074

LOG OF BOREHOLE NO.: BH5

FIGURE NO.: 5

PROJECT DESCRIPTION: Proposed Residential Development**METHOD OF BORING:** Direct Push**PROJECT LOCATION:** 12785 Ninth Line,
Town of Whitchurch-Stouffville**DRILLING DATE:** May 22, 2020

El. (masl) Depth (mbgs)	SOIL DESCRIPTION	SAMPLES				Depth Scale (mbgs)	X Penetration Resistance (blows/30 cm) ● Combustible Headspace Reading (ppm)	REMARKS	WATER LEVEL
		Number	Type	Combustible Headspace Reading	PID				
280.48	Ground								
0.00	Brown, dry SANDY SILT, Fill a trace of gravel	1	DO	20		0	●	BH5/1: PAHs	
		2	DO	30		1	●	BH5/2: Metal and Inorganics, VOCs	
278.98									
1.50	Brown, dry SILTY CLAY, Till some sand a trace of gravel occ. Sand and clay seams and layers	3	DO	15		2	●		
		4	DO	10		2.5	●		
277.48						3			
3.00	END OF BOREHOLE								
						4			
						5			
						6			
						7			
						8			

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JOB NO.: 2005-E074

LOG OF BOREHOLE NO.: BH/MW6 FIGURE NO.: 6**PROJECT DESCRIPTION:** Proposed Residential Development**METHOD OF BORING:** Direct Push**PROJECT LOCATION:** 12785 Ninth Line,
Town of Whitchurch-Stouffville**DRILLING DATE:** May 22, 2020

El. (masl) Depth (mbgs)	SOIL DESCRIPTION	SAMPLES				Depth Scale (mbgs)	X Penetration Resistance (blows/30 cm)		REMARKS	WATER LEVEL
		Number	Type	Combustible Headspace Reading	PID		5 15 25 35 45	● Combustible Headspace Reading (ppm)		
280.06 0.00	Ground									
	Brown, dry SANDY SILT, Fill traces of gravel and clay	1	DO	40		0			BH6/1: Metal and Inorganics	

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JOB NO.: 2005-E074

LOG OF BOREHOLE NO.: BH7

FIGURE NO.: 7

PROJECT DESCRIPTION: Proposed Residential Development**METHOD OF BORING:** Direct Push**PROJECT LOCATION:** 12785 Ninth Line,
Town of Whitchurch-Stouffville**DRILLING DATE:** May 22, 2020

El. (masl) Depth (mbgs)	SOIL DESCRIPTION	SAMPLES				Depth Scale (mbgs)	X Penetration Resistance (blows/30 cm) 5 15 25 35 45 ● Combustible Headspace Reading (ppm) 20 60 100 140 180	REMARKS	WATER LEVEL
		Number	Type	Combustible Headspace Reading	PID				
281.14	Ground								
0.00	Brown, dry SILTY SAND TO SANDY SILT , Fill a trace of gravel	1	DO	20		0	●	BH7/1: Metal and Inorganics	
		2	DO	20		1	●	BH7/2: VOCs, PAHs	
279.64									
1.50	Brown, dry SILTY CLAY, Till some sand a trace of gravel occ. Sand and clay seams and layers	3	DO	10		2	●		
		4	DO	5		2.5	●		
278.14						3			
3.00	END OF BOREHOLE								
						4			
						5			
						6			
						7			
						8			

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JOB NO.: 2005-E074

LOG OF BOREHOLE NO.: BH8

FIGURE NO.: 8

PROJECT DESCRIPTION: Proposed Residential Development**METHOD OF BORING:** Direct Push**PROJECT LOCATION:** 12785 Ninth Line,
Town of Whitchurch-Stouffville**DRILLING DATE:** May 25, 2020

El. (masl) Depth (mbgs)	SOIL DESCRIPTION	SAMPLES				Depth Scale (mbgs)	X Penetration Resistance (blows/30 cm) 5 15 25 35 45 ● Combustible Headspace Reading (ppm) 20 60 100 140 180	REMARKS	WATER LEVEL
		Number	Type	Combustible Headspace Reading	PID				
282.14	Ground								
0.00	Brown, dry SILTY CLAY, Fill a trace of gravel	1	DO	0		0		BH8/1: PAHs	
280.64		2	DO	0		1			
1.50	Brown, dry SANDY SILT, Fill a trace of clay	3	DO	0		2		BH8/4: Metal and Inorganics VOCs, PHCs, BTEX	
279.89		4	DO	0		2.25			
279.14	Brown, dry SILTY CLAY, Till some sand a trace of gravel occ. Sand and clay seams and layers					3			
3.00	END OF BOREHOLE								

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JOB NO.: 2005-E074

LOG OF BOREHOLE NO.: BH9

FIGURE NO.: 9

PROJECT DESCRIPTION: Proposed Residential Development**METHOD OF BORING:** Direct Push**PROJECT LOCATION:** 12785 Ninth Line,
Town of Whitchurch-Stouffville**DRILLING DATE:** May 22, 2020

El. (masl) Depth (mbgs)	SOIL DESCRIPTION	SAMPLES				Depth Scale (mbgs)	X Penetration Resistance (blows/30 cm)		REMARKS	WATER LEVEL
		Number	Type	Combustible Headspace Reading	PID		5 15 25 35 45	● Combustible Headspace Reading (ppm)		
282.20 0.00	Ground									
279.60 2.60	Brown, dry SANDY SILT, Fill a trace of clay	1	DO	10		0	●		BH9/2: Metal and Inorganics	
		2	DO	0		1	●			
		3	DO	0		2	●			
		4A	DO	0			●			
278.45 3.75	Brown, dry SILTY CLAY, Till some sand a trace of gravel occ. Sand and clay seams and layers	4B	DO	0		3	●		BH9/4A: PHCs, BTEX	
		5	DO	0			●			
	END OF BOREHOLE					4				
						5				
						6				
						7				
						8				

**Soil Engineers Ltd.**

JOB NO.: 2005-E074

LOG OF BOREHOLE NO.: BH/MW10 FIGURE NO.: 10**PROJECT DESCRIPTION:** Proposed Residential Development**METHOD OF BORING:** Direct Push**PROJECT LOCATION:** 12785 Ninth Line,
Town of Whitchurch-Stouffville**DRILLING DATE:** May 25, 2020

El. (masl) Depth (mbgs)	SOIL DESCRIPTION	SAMPLES				Depth Scale (mbgs)	X Penetration Resistance (blows/30 cm) ● Combustible Headspace Reading (ppm)		REMARKS	WATER LEVEL
		Number	Type	Combustible Headspace Reading	PID		5 15 25 35 45 20 60 100 140 180			
282.48	Ground									
0.00	Brown, dry SANDY SILT, Fill a trace of clay	1	DO	0		0	●		BH10/2: Metal and Inorganics PHCs, BTEX	

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JOB NO.: 2005-E074

LOG OF BOREHOLE NO.: BH12

FIGURE NO.: 12

PROJECT DESCRIPTION: Proposed Residential Development**METHOD OF BORING:** Direct Push**PROJECT LOCATION:** 12785 Ninth Line,
Town of Whitchurch-Stouffville**DRILLING DATE:** May 25, 2020

El. (masl) Depth (mbgs)	SOIL DESCRIPTION	SAMPLES				Depth Scale (mbgs)	X Penetration Resistance (blows/30 cm) ● Combustible Headspace Reading (ppm)	REMARKS	WATER LEVEL
		Number	Type	Combustible Headspace Reading	PID				
279.64	Ground								
0.00	Brown, dry SILTY CLAY, Fill a trace of gravel	1	DO	5		0		BH12/2: Metal and Inorganics, VOCs	
		2	DO	10		1			
278.14									
1.50	Brown, dry SILTY CLAY, Till some sand a trace of gravel occ. Sand and clay seams and layers	3	DO	5		2			
		4	DO	0					
276.64									
3.00	END OF BOREHOLE					3			
						4			
						5			
						6			
						7			
						8			

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JOB NO.: 2005-E074

LOG OF BOREHOLE NO.: BH13

FIGURE NO.: 13

PROJECT DESCRIPTION: Proposed Residential Development**METHOD OF BORING:** Direct Push**PROJECT LOCATION:** 12785 Ninth Line,
Town of Whitchurch-Stouffville**DRILLING DATE:** May 21, 2020

El. (masl) Depth (mbgs)	SOIL DESCRIPTION	SAMPLES				Depth Scale (mbgs)	X Penetration Resistance (blows/30 cm) ● Combustible Headspace Reading (ppm)	REMARKS	WATER LEVEL
		Number	Type	Combustible Headspace Reading	PID				
279.18	Ground								
0.00	Brown, dry SILTY CLAY, Fill a trace of gravel	1	DO	5		0		BH13/1: Metal and Inorganics, PCBs BH13/3: VOCs	
		2	DO	5		1			
277.68									
1.50	Brown, dry SANDY SILT, Fill a trace of clay	3	DO	25		2			
276.98									
2.20	Brown, dry SILTY CLAY, Till some sand a trace of gravel occ. Sand and clay seams and layers	4	DO	5		3			
3.00	END OF BOREHOLE					4			
						5			
						6			
						7			
						8			

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JOB NO.: 2005-E074

LOG OF BOREHOLE NO.: BH14

FIGURE NO.: 14

PROJECT DESCRIPTION: Proposed Residential Development**METHOD OF BORING:** Direct Push**PROJECT LOCATION:** 12785 Ninth Line,
Town of Whitchurch-Stouffville**DRILLING DATE:** May 21, 2020

El. (masl) Depth (mbgs)	SOIL DESCRIPTION	SAMPLES				Depth Scale (mbgs)	X Penetration Resistance (blows/30 cm)		REMARKS	WATER LEVEL			
		Number	Type	Combustible Headspace Reading	PID		5	15			25	35	45
							● Combustible Headspace Reading (ppm)						
279.03	Ground						20	60	100	140	180		
0.00	Brown, dry SANDY SILT, Fill a trace of clay	1	DO	15		0	●						BH14/2: Metal and Inorganics
		2	DO	25		1	●						
		3	DO	25		2	●						
276.78	Brown, dry SILTY CLAY, Fill a trace of gravel	4	DO	45				●					BH14/4: VOCs, PHCs, BTEX, pH
276.03						3							
3.00	Brown, dry SILTY CLAY, Till some sand a trace of gravel occ. Sand and clay seams and layers	5	DO	15			●						
		6	DO	10		4	●						
274.53	END OF BOREHOLE					5							
4.50						6							
						7							
						8							

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JOB NO.: 2005-E074

LOG OF BOREHOLE NO.: BH15

FIGURE NO.: 15

PROJECT DESCRIPTION: Proposed Residential Development**METHOD OF BORING:** Direct Push**PROJECT LOCATION:** 12785 Ninth Line,
Town of Whitchurch-Stouffville**DRILLING DATE:** May 22, 2020

EI, (masl) Depth (mbgs)	SOIL DESCRIPTION	SAMPLES				Depth Scale (mbgs)	Penetration Resistance (blows/30 cm)		REMARKS	WATER LEVEL
		Number	Type	Combustible Headspace Reading	PID		515253545	Combustible Headspace Reading (ppm)		
281.31	Ground									
0.00	Brown, dry SANDY SILT, Fill a trace of clay	1	DO	25		0			BH15/1: PAHs	
		2	DO	15		1				
279.81									BH15/3: Metal and Inorganics, VOCs	
1.50	Brown, dry SILTY CLAY, Fill a trace of gravel	3	DO	25		2				
279.11										
2.20	Brown, dry SILTY CLAY, Till some sand a trace of gravel	4	DO	20						
278.31	occ. Sand and clay seams and layers									
3.00	END OF BOREHOLE					3				
						4				
						5				
						6				
						7				
						8				

**Soil Engineers Ltd.**

PROJECT DESCRIPTION: Proposed Residential Development

METHOD OF BORING: Direct Push

PROJECT LOCATION: 12785 Ninth Line,
Town of Whitchurch-Stouffville

DRILLING DATE: May 21, 2020

[illegible]

Soil Engineers Ltd.

JOB NO.: 2005-E074

LOG OF BOREHOLE NO.: BH17

FIGURE NO.: 17

PROJECT DESCRIPTION: Proposed Residential Development**METHOD OF BORING:** Direct Push**PROJECT LOCATION:** 12785 Ninth Line,
Town of Whitchurch-Stouffville**DRILLING DATE:** May 21, 2020

El. (masl) Depth (mbgs)	SOIL DESCRIPTION	SAMPLES				Depth Scale (mbgs)	X Penetration Resistance (blows/30 cm) 5 15 25 35 45 ● Combustible Headspace Reading (ppm) 20 60 100 140 180	REMARKS	WATER LEVEL
		Number	Type	Combustible Headspace Reading	PID				
280.70	Ground								
0.00	Brown, dry SILTY CLAY, Fill a trace of gravel	1	DO	5		0	●	BH17/1: Metal and Inorganics, PAHs	
		2	DO	0		1	●	BH17/2: PHCs, BTEX	
279.20									
1.50	Brown, dry SILTY CLAY, Till some sand a trace of gravel occ. Sand and clay seams and layers	3	DO	0		2	●		
		4	DO	0		3	●	BH17/4: pH	
		5	DO	0		4	●		
276.95									
3.75	END OF BOREHOLE					5			
						6			
						7			
						8			

**Soil Engineers Ltd.**



Soil Engineers Ltd.

CONSULTING ENGINEERS

GEOTECHNICAL • ENVIRONMENTAL • HYDROGEOLOGICAL • BUILDING SCIENCE

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TEL: (705) 684-4242
FAX: (705) 684-8522

HAMILTON
TEL: (905) 777-7956
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APPENDIX 'C'

CERTIFICATE OF ANALYSIS (SOIL SAMPLES)

REFERENCE NO. 2005-E074



Your Project #: 2005-E074
Your C.O.C. #: na

Attention: Hamid Rezaei

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

Report Date: 2020/06/01
Report #: R6193875
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0C5657

Received: 2020/05/23, 16:05

Sample Matrix: Soil
Samples Received: 19

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Methylnaphthalene Sum	3	N/A	2020/05/28	CAM SOP-00301	EPA 8270D m
Methylnaphthalene Sum	2	N/A	2020/05/30	CAM SOP-00301	EPA 8270D m
Hot Water Extractable Boron	7	2020/05/26	2020/05/27	CAM SOP-00408	R153 Ana. Prot. 2011
1,3-Dichloropropene Sum	1	N/A	2020/05/27		EPA 8260C m
1,3-Dichloropropene Sum	1	N/A	2020/05/28		EPA 8260C m
1,3-Dichloropropene Sum	2	N/A	2020/05/29		EPA 8260C m
Free (WAD) Cyanide	4	2020/05/26	2020/05/27	CAM SOP-00457	OMOE E3015 m
Free (WAD) Cyanide	3	2020/05/27	2020/05/28	CAM SOP-00457	OMOE E3015 m
Conductivity	4	2020/05/26	2020/05/26	CAM SOP-00414	OMOE E3530 v1 m
Conductivity	3	2020/05/28	2020/05/28	CAM SOP-00414	OMOE E3530 v1 m
Hexavalent Chromium in Soil by IC (1)	4	2020/05/26	2020/05/26	CAM SOP-00436	EPA 3060/7199 m
Hexavalent Chromium in Soil by IC (1)	3	2020/05/27	2020/05/27	CAM SOP-00436	EPA 3060/7199 m
Petroleum Hydro. CCME F1 & BTEX in Soil (2)	2	N/A	2020/05/28	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Soil (3)	1	2020/05/26	2020/05/27	CAM SOP-00316	CCME CWS m
Petroleum Hydrocarbons F2-F4 in Soil (3)	2	2020/05/27	2020/05/28	CAM SOP-00316	CCME CWS m
Strong Acid Leachable Metals by ICPMS	4	2020/05/26	2020/05/27	CAM SOP-00447	EPA 6020B m
Strong Acid Leachable Metals by ICPMS	3	2020/05/26	2020/05/28	CAM SOP-00447	EPA 6020B m
Strong Acid Leachable Metals by ICPMS	1	2020/05/26	2020/05/29	CAM SOP-00447	EPA 6020B m
Moisture	12	N/A	2020/05/25	CAM SOP-00445	Carter 2nd ed 51.2 m
Moisture	4	N/A	2020/05/26	CAM SOP-00445	Carter 2nd ed 51.2 m
PAH Compounds in Soil by GC/MS (SIM)	1	2020/05/26	2020/05/26	CAM SOP-00318	EPA 8270D m
PAH Compounds in Soil by GC/MS (SIM)	2	2020/05/26	2020/05/27	CAM SOP-00318	EPA 8270D m
PAH Compounds in Soil by GC/MS (SIM)	2	2020/05/28	2020/05/28	CAM SOP-00318	EPA 8270D m
Polychlorinated Biphenyl in Soil	2	2020/05/25	2020/05/26	CAM SOP-00309	EPA 8082A m
pH CaCl2 EXTRACT	10	2020/05/26	2020/05/26	CAM SOP-00413	EPA 9045 D m
Sodium Adsorption Ratio (SAR)	7	N/A	2020/05/29	CAM SOP-00102	EPA 6010C
Volatile Organic Compounds and F1 PHCs	1	N/A	2020/05/26	CAM SOP-00230	EPA 8260C m
Volatile Organic Compounds and F1 PHCs	1	N/A	2020/05/28	CAM SOP-00230	EPA 8260C m
Volatile Organic Compounds in Soil	2	N/A	2020/05/27	CAM SOP-00228	EPA 8260C m



Your Project #: 2005-E074
Your C.O.C. #: na

Attention: Hamid Rezaei

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

Report Date: 2020/06/01
Report #: R6193875
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0C5657

Received: 2020/05/23, 16:05

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

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

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs 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 BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

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

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

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

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

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

(1) 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 Bureau Veritas Laboratories conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following "Alberta Environment's Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Validation of Performance-Based Alternative Methods September 2003". Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

Encryption Key

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

Antonella Brasil, Senior Project Manager

Email: Antonella.Brasil@bvlabs.com

Phone# (905)817-5817

=====

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Total Cover Pages : 2

Page 2 of 33

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.



BV Labs Job #: C0C5657
Report Date: 2020/06/01

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

O.REG 153 ICPMS METALS (SOIL)

BV Labs ID		MRS786		
Sampling Date		2020/05/21		
COC Number		na		
	UNITS	DUP-S2	RDL	QC Batch
Metals				
Acid Extractable Antimony (Sb)	ug/g	<0.20	0.20	6749970
Acid Extractable Arsenic (As)	ug/g	1.7	1.0	6749970
Acid Extractable Barium (Ba)	ug/g	61	0.50	6749970
Acid Extractable Beryllium (Be)	ug/g	0.36	0.20	6749970
Acid Extractable Boron (B)	ug/g	8.1	5.0	6749970
Acid Extractable Cadmium (Cd)	ug/g	<0.10	0.10	6749970
Acid Extractable Chromium (Cr)	ug/g	16	1.0	6749970
Acid Extractable Cobalt (Co)	ug/g	5.8	0.10	6749970
Acid Extractable Copper (Cu)	ug/g	11	0.50	6749970
Acid Extractable Lead (Pb)	ug/g	6.4	1.0	6749970
Acid Extractable Molybdenum (Mo)	ug/g	<0.50	0.50	6749970
Acid Extractable Nickel (Ni)	ug/g	13	0.50	6749970
Acid Extractable Selenium (Se)	ug/g	<0.50	0.50	6749970
Acid Extractable Silver (Ag)	ug/g	<0.20	0.20	6749970
Acid Extractable Thallium (Tl)	ug/g	0.087	0.050	6749970
Acid Extractable Uranium (U)	ug/g	0.57	0.050	6749970
Acid Extractable Vanadium (V)	ug/g	27	5.0	6749970
Acid Extractable Zinc (Zn)	ug/g	33	5.0	6749970
Acid Extractable Mercury (Hg)	ug/g	<0.050	0.050	6749970
RDL = Reportable Detection Limit				
QC Batch = Quality Control Batch				



BV Labs Job #: C0C5657
Report Date: 2020/06/01

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

O.REG 153 METALS & INORGANICS PKG (SOIL)

BV Labs ID		MRS768			MRS770			MRS773	MRS774		
Sampling Date		2020/05/21			2020/05/21			2020/05/21	2020/05/21		
COC Number		na			na			na	na		
	UNITS	BH2/2	RDL	QC Batch	BH13/1	RDL	QC Batch	BH16/3	BH14/2	RDL	QC Batch
Calculated Parameters											
Sodium Adsorption Ratio	N/A	0.35		6746296	1.0		6746296	0.64	1.1		6746296
Inorganics											
Conductivity	mS/cm	0.30	0.002	6749930	0.40	0.002	6749930	0.32	0.37	0.002	6749930
Moisture	%	21	1.0	6746832				12	14	1.0	6746832
Available (CaCl ₂) pH	pH	7.65		6749446	7.91		6749446	8.08	7.66		6749446
WAD Cyanide (Free)	ug/g	<0.01	0.01	6749384	<0.01	0.01	6749384	<0.01	<0.01	0.01	6749384
Chromium (VI)	ug/g	<0.18	0.18	6749088	<0.18	0.18	6749088	<0.18	<0.18	0.18	6749088
Metals											
Hot Water Ext. Boron (B)	ug/g	0.21	0.050	6749191	0.39	0.050	6749191	0.22	0.077	0.050	6749191
Acid Extractable Antimony (Sb)	ug/g	<0.20	0.20	6749112	<0.20	0.20	6749112	<0.20	<0.20	0.20	6749112
Acid Extractable Arsenic (As)	ug/g	3.0	1.0	6749112	1.8	1.0	6749112	2.0	1.1	1.0	6749112
Acid Extractable Barium (Ba)	ug/g	59	0.50	6749112	71	0.50	6749112	67	43	0.50	6749112
Acid Extractable Beryllium (Be)	ug/g	0.37	0.20	6749112	0.43	0.20	6749112	0.45	0.28	0.20	6749112
Acid Extractable Boron (B)	ug/g	6.1	5.0	6749112	7.1	5.0	6749112	6.1	<5.0	5.0	6749112
Acid Extractable Cadmium (Cd)	ug/g	<0.10	0.10	6749112	<0.10	0.10	6749112	<0.10	<0.10	0.10	6749112
Acid Extractable Chromium (Cr)	ug/g	13	1.0	6749112	18	1.0	6749112	18	11	1.0	6749112
Acid Extractable Cobalt (Co)	ug/g	6.8	0.10	6749112	7.1	0.10	6749112	6.7	3.6	0.10	6749112
Acid Extractable Copper (Cu)	ug/g	16	0.50	6749112	13	0.50	6749112	13	7.3	0.50	6749112
Acid Extractable Lead (Pb)	ug/g	8.9	1.0	6749112	6.8	1.0	6749112	6.7	4.1	1.0	6749112
Acid Extractable Molybdenum (Mo)	ug/g	<0.50	0.50	6749112	<0.50	0.50	6749112	<0.50	<0.50	0.50	6749112
Acid Extractable Nickel (Ni)	ug/g	16	0.50	6749112	15	0.50	6749112	14	7.5	0.50	6749112
Acid Extractable Selenium (Se)	ug/g	<0.50	0.50	6749112	<0.50	0.50	6749112	<0.50	<0.50	0.50	6749112
Acid Extractable Silver (Ag)	ug/g	<0.20	0.20	6749112	<0.20	0.20	6749112	<0.20	<0.20	0.20	6749112
Acid Extractable Thallium (Tl)	ug/g	0.13	0.050	6749112	0.12	0.050	6749112	0.11	0.063	0.050	6749112
Acid Extractable Uranium (U)	ug/g	0.57	0.050	6749112	0.57	0.050	6749112	0.58	0.47	0.050	6749112
Acid Extractable Vanadium (V)	ug/g	21	5.0	6749112	27	5.0	6749112	27	20	5.0	6749112
Acid Extractable Zinc (Zn)	ug/g	31	5.0	6749112	37	5.0	6749112	37	24	5.0	6749112
Acid Extractable Mercury (Hg)	ug/g	<0.050	0.050	6749112	<0.050	0.050	6749112	<0.050	<0.050	0.050	6749112
RDL = Reportable Detection Limit											
QC Batch = Quality Control Batch											



**BUREAU
VERITAS**

BV Labs Job #: C0C5657
Report Date: 2020/06/01

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

O.REG 153 METALS & INORGANICS PKG (SOIL)

BV Labs ID		MRS779	MRS781			MRS783		
Sampling Date		2020/05/21	2020/05/21			2020/05/21		
COC Number		na	na			na		
	UNITS	BH1/2	BH3/1	RDL	QC Batch	BH17/1	RDL	QC Batch
Calculated Parameters								
Sodium Adsorption Ratio	N/A	0.71	0.42		6746500	0.65		6746500
Inorganics								
Conductivity	mS/cm	0.35	0.24	0.002	6756619	0.39	0.002	6756619
Moisture	%	9.6	7.5	1.0	6746727			
Available (CaCl ₂) pH	pH	7.90	8.08		6749561	7.97		6749561
WAD Cyanide (Free)	ug/g	<0.01	<0.01	0.01	6753060	<0.01	0.01	6753060
Chromium (VI)	ug/g	<0.18	<0.18	0.18	6752397	<0.18	0.18	6752397
Metals								
Hot Water Ext. Boron (B)	ug/g	0.18	0.14	0.050	6750171	0.22	0.050	6750171
Acid Extractable Antimony (Sb)	ug/g	<0.20	<0.20	0.20	6750401	<0.20	0.20	6750401
Acid Extractable Arsenic (As)	ug/g	1.6	1.5	1.0	6750401	1.8	1.0	6750401
Acid Extractable Barium (Ba)	ug/g	59	51	0.50	6750401	62	0.50	6750401
Acid Extractable Beryllium (Be)	ug/g	0.36	0.31	0.20	6750401	0.40	0.20	6750401
Acid Extractable Boron (B)	ug/g	<5.0	<5.0	5.0	6750401	5.2	5.0	6750401
Acid Extractable Cadmium (Cd)	ug/g	<0.10	0.14	0.10	6750401	<0.10	0.10	6750401
Acid Extractable Chromium (Cr)	ug/g	14	13	1.0	6750401	15	1.0	6750401
Acid Extractable Cobalt (Co)	ug/g	5.6	5.0	0.10	6750401	5.7	0.10	6750401
Acid Extractable Copper (Cu)	ug/g	11	10	0.50	6750401	12	0.50	6750401
Acid Extractable Lead (Pb)	ug/g	5.9	4.9	1.0	6750401	6.5	1.0	6750401
Acid Extractable Molybdenum (Mo)	ug/g	<0.50	<0.50	0.50	6750401	<0.50	0.50	6750401
Acid Extractable Nickel (Ni)	ug/g	12	11	0.50	6750401	12	0.50	6750401
Acid Extractable Selenium (Se)	ug/g	<0.50	<0.50	0.50	6750401	<0.50	0.50	6750401
Acid Extractable Silver (Ag)	ug/g	<0.20	<0.20	0.20	6750401	<0.20	0.20	6750401
Acid Extractable Thallium (Tl)	ug/g	0.10	0.074	0.050	6750401	0.10	0.050	6750401
Acid Extractable Uranium (U)	ug/g	0.56	0.55	0.050	6750401	0.65	0.050	6750401
Acid Extractable Vanadium (V)	ug/g	24	21	5.0	6750401	25	5.0	6750401
Acid Extractable Zinc (Zn)	ug/g	31	44	5.0	6750401	31	5.0	6750401
Acid Extractable Mercury (Hg)	ug/g	<0.050	<0.050	0.050	6750401	<0.050	0.050	6750401
RDL = Reportable Detection Limit								
QC Batch = Quality Control Batch								



BUREAU VERITAS

BV Labs Job #: C0C5657
Report Date: 2020/06/01

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

O.REG 153 PAHS (SOIL)

BV Labs ID		MRS767		MRS772	MRS776			MRS782		
Sampling Date		2020/05/21		2020/05/21	2020/05/21			2020/05/21		
COC Number		na		na	na			na		
	UNITS	BH2/1	QC Batch	BH16/1	BH1/1	RDL	QC Batch	BH3/3	RDL	QC Batch

Inorganics

Moisture	%	7.9	6746727	8.0	7.6	1.0	6746727			
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Calculated Parameters

Methylnaphthalene, 2-(1-)	ug/g	<0.0071	6745378	<0.0071	<0.0071	0.0071	6746433	<0.0071	0.0071	6746433
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Polyaromatic Hydrocarbons

Acenaphthene	ug/g	<0.0050	6750099	<0.0050	<0.0050	0.0050	6750099	<0.0050	0.0050	6756738
Acenaphthylene	ug/g	<0.0050	6750099	<0.0050	<0.0050	0.0050	6750099	<0.0050	0.0050	6756738
Anthracene	ug/g	<0.0050	6750099	<0.0050	<0.0050	0.0050	6750099	<0.0050	0.0050	6756738
Benzo(a)anthracene	ug/g	<0.0050	6750099	0.0073	<0.0050	0.0050	6750099	<0.0050	0.0050	6756738
Benzo(a)pyrene	ug/g	<0.0050	6750099	0.014	<0.0050	0.0050	6750099	<0.0050	0.0050	6756738
Benzo(b,j)fluoranthene	ug/g	<0.0050	6750099	0.016	<0.0050	0.0050	6750099	<0.0050	0.0050	6756738
Benzo(g,h,i)perylene	ug/g	<0.0050	6750099	0.019	<0.0050	0.0050	6750099	<0.0050	0.0050	6756738
Benzo(k)fluoranthene	ug/g	<0.0050	6750099	<0.0050	<0.0050	0.0050	6750099	<0.0050	0.0050	6756738
Chrysene	ug/g	<0.0050	6750099	0.0075	<0.0050	0.0050	6750099	<0.0050	0.0050	6756738
Dibenzo(a,h)anthracene	ug/g	<0.0050	6750099	<0.0050	<0.0050	0.0050	6750099	<0.0050	0.0050	6756738
Fluoranthene	ug/g	<0.0050	6750099	0.017	<0.0050	0.0050	6750099	<0.0050	0.0050	6756738
Fluorene	ug/g	<0.0050	6750099	<0.0050	<0.0050	0.0050	6750099	<0.0050	0.0050	6756738
Indeno(1,2,3-cd)pyrene	ug/g	<0.0050	6750099	0.014	<0.0050	0.0050	6750099	<0.0050	0.0050	6756738
1-Methylnaphthalene	ug/g	<0.0050	6750099	<0.0050	<0.0050	0.0050	6750099	<0.0050	0.0050	6756738
2-Methylnaphthalene	ug/g	<0.0050	6750099	<0.0050	<0.0050	0.0050	6750099	<0.0050	0.0050	6756738
Naphthalene	ug/g	<0.0050	6750099	<0.0050	<0.0050	0.0050	6750099	<0.0050	0.0050	6756738
Phenanthrene	ug/g	<0.0050	6750099	0.0081	<0.0050	0.0050	6750099	<0.0050	0.0050	6756738
Pyrene	ug/g	<0.0050	6750099	0.017	<0.0050	0.0050	6750099	<0.0050	0.0050	6756738

Surrogate Recovery (%)

D10-Anthracene	%	112	6750099	111	113		6750099	103		6756738
D14-Terphenyl (FS)	%	94	6750099	97	99		6750099	99		6756738
D8-Acenaphthylene	%	117	6750099	116	118		6750099	98		6756738

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch



BV Labs Job #: C0C5657
Report Date: 2020/06/01

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

O.REG 153 PAHS (SOIL)

BV Labs ID		MRS783		
Sampling Date		2020/05/21		
COC Number		na		
	UNITS	BH17/1	RDL	QC Batch
Inorganics				
Moisture	%	9.7	1.0	6749434
Calculated Parameters				
Methylnaphthalene, 2-(1-)	ug/g	<0.0071	0.0071	6746433
Polyaromatic Hydrocarbons				
Acenaphthene	ug/g	<0.0050	0.0050	6756738
Acenaphthylene	ug/g	<0.0050	0.0050	6756738
Anthracene	ug/g	<0.0050	0.0050	6756738
Benzo(a)anthracene	ug/g	0.0050	0.0050	6756738
Benzo(a)pyrene	ug/g	<0.0050	0.0050	6756738
Benzo(b,j)fluoranthene	ug/g	0.0063	0.0050	6756738
Benzo(g,h,i)perylene	ug/g	<0.0050	0.0050	6756738
Benzo(k)fluoranthene	ug/g	<0.0050	0.0050	6756738
Chrysene	ug/g	0.0063	0.0050	6756738
Dibenzo(a,h)anthracene	ug/g	<0.0050	0.0050	6756738
Fluoranthene	ug/g	0.012	0.0050	6756738
Fluorene	ug/g	<0.0050	0.0050	6756738
Indeno(1,2,3-cd)pyrene	ug/g	<0.0050	0.0050	6756738
1-Methylnaphthalene	ug/g	<0.0050	0.0050	6756738
2-Methylnaphthalene	ug/g	<0.0050	0.0050	6756738
Naphthalene	ug/g	<0.0050	0.0050	6756738
Phenanthrene	ug/g	0.0082	0.0050	6756738
Pyrene	ug/g	0.011	0.0050	6756738
Surrogate Recovery (%)				
D10-Anthracene	%	100		6756738
D14-Terphenyl (FS)	%	98		6756738
D8-Acenaphthylene	%	96		6756738
RDL = Reportable Detection Limit				
QC Batch = Quality Control Batch				



BV Labs Job #: C0C5657
Report Date: 2020/06/01

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

O.REG 153 PCBS (SOIL)

BV Labs ID		MRS767			MRS770		
Sampling Date		2020/05/21			2020/05/21		
COC Number		na			na		
	UNITS	BH2/1	RDL	QC Batch	BH13/1	RDL	QC Batch
Inorganics							
Moisture	%				9.3	1.0	6746832
PCBs							
Aroclor 1242	ug/g	<0.010	0.010	6746716	<0.010	0.010	6746716
Aroclor 1248	ug/g	<0.010	0.010	6746716	<0.010	0.010	6746716
Aroclor 1254	ug/g	<0.010	0.010	6746716	<0.010	0.010	6746716
Aroclor 1260	ug/g	<0.010	0.010	6746716	<0.010	0.010	6746716
Total PCB	ug/g	<0.010	0.010	6746716	<0.010	0.010	6746716
Surrogate Recovery (%)							
Decachlorobiphenyl	%	101		6746716	103		6746716
RDL = Reportable Detection Limit							
QC Batch = Quality Control Batch							



BV Labs Job #: C0C5657
Report Date: 2020/06/01

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

O.REG 153 PHCS, BTEX/F1-F4 (SOIL)

BV Labs ID		MRS784		
Sampling Date		2020/05/21		
COC Number		na		
	UNITS	BH17/2	RDL	QC Batch
Inorganics				
Moisture	%	13	1.0	6749517
BTEX & F1 Hydrocarbons				
Benzene	ug/g	<0.020	0.020	6756359
Toluene	ug/g	<0.020	0.020	6756359
Ethylbenzene	ug/g	<0.020	0.020	6756359
o-Xylene	ug/g	<0.020	0.020	6756359
p+m-Xylene	ug/g	<0.040	0.040	6756359
Total Xylenes	ug/g	<0.040	0.040	6756359
F1 (C6-C10)	ug/g	<10	10	6756359
F1 (C6-C10) - BTEX	ug/g	<10	10	6756359
F2-F4 Hydrocarbons				
F2 (C10-C16 Hydrocarbons)	ug/g	<10	10	6753863
F3 (C16-C34 Hydrocarbons)	ug/g	<50	50	6753863
F4 (C34-C50 Hydrocarbons)	ug/g	<50	50	6753863
Reached Baseline at C50	ug/g	Yes		6753863
Surrogate Recovery (%)				
1,4-Difluorobenzene	%	96		6756359
4-Bromofluorobenzene	%	109		6756359
D10-o-Xylene	%	90		6756359
D4-1,2-Dichloroethane	%	96		6756359
o-Terphenyl	%	99		6753863
RDL = Reportable Detection Limit				
QC Batch = Quality Control Batch				



BV LABS
VERITAS

BV Labs Job #: C0C5657

Report Date: 2020/06/01

Soil Engineers Ltd

Client Project #: 2005-E074

Sampler Initials: OG

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

BV Labs ID		MRS775			MRS775			MRS780		
Sampling Date		2020/05/21			2020/05/21			2020/05/21		
COC Number		na			na			na		
	UNITS	BH14/4	RDL	QC Batch	BH14/4 Lab-Dup	RDL	QC Batch	BH1/3	RDL	QC Batch
Inorganics										
Moisture	%	7.7	1.0	6746727				10	1.0	6749517
Calculated Parameters										
1,3-Dichloropropene (cis+trans)	ug/g	<0.050	0.050	6746434				<0.050	0.050	6746434
Volatile Organics										
Acetone (2-Propanone)	ug/g	<0.50	0.50	6749023	<0.50	0.50	6749023	<0.50	0.50	6753242
Benzene	ug/g	<0.020	0.020	6749023	<0.020	0.020	6749023	<0.020	0.020	6753242
Bromodichloromethane	ug/g	<0.050	0.050	6749023	<0.050	0.050	6749023	<0.050	0.050	6753242
Bromoform	ug/g	<0.050	0.050	6749023	<0.050	0.050	6749023	<0.050	0.050	6753242
Bromomethane	ug/g	<0.050	0.050	6749023	<0.050	0.050	6749023	<0.050	0.050	6753242
Carbon Tetrachloride	ug/g	<0.050	0.050	6749023	<0.050	0.050	6749023	<0.050	0.050	6753242
Chlorobenzene	ug/g	<0.050	0.050	6749023	<0.050	0.050	6749023	<0.050	0.050	6753242
Chloroform	ug/g	<0.050	0.050	6749023	<0.050	0.050	6749023	<0.050	0.050	6753242
Dibromochloromethane	ug/g	<0.050	0.050	6749023	<0.050	0.050	6749023	<0.050	0.050	6753242
1,2-Dichlorobenzene	ug/g	<0.050	0.050	6749023	<0.050	0.050	6749023	<0.050	0.050	6753242
1,3-Dichlorobenzene	ug/g	<0.050	0.050	6749023	<0.050	0.050	6749023	<0.050	0.050	6753242
1,4-Dichlorobenzene	ug/g	<0.050	0.050	6749023	<0.050	0.050	6749023	<0.050	0.050	6753242
Dichlorodifluoromethane (FREON 12)	ug/g	<0.050	0.050	6749023	<0.050	0.050	6749023	<0.050	0.050	6753242
1,1-Dichloroethane	ug/g	<0.050	0.050	6749023	<0.050	0.050	6749023	<0.050	0.050	6753242
1,2-Dichloroethane	ug/g	<0.050	0.050	6749023	<0.050	0.050	6749023	<0.050	0.050	6753242
1,1-Dichloroethylene	ug/g	<0.050	0.050	6749023	<0.050	0.050	6749023	<0.050	0.050	6753242
cis-1,2-Dichloroethylene	ug/g	<0.050	0.050	6749023	<0.050	0.050	6749023	<0.050	0.050	6753242
trans-1,2-Dichloroethylene	ug/g	<0.050	0.050	6749023	<0.050	0.050	6749023	<0.050	0.050	6753242
1,2-Dichloropropane	ug/g	<0.050	0.050	6749023	<0.050	0.050	6749023	<0.050	0.050	6753242
cis-1,3-Dichloropropene	ug/g	<0.030	0.030	6749023	<0.030	0.030	6749023	<0.030	0.030	6753242
trans-1,3-Dichloropropene	ug/g	<0.040	0.040	6749023	<0.040	0.040	6749023	<0.040	0.040	6753242
Ethylbenzene	ug/g	<0.020	0.020	6749023	<0.020	0.020	6749023	<0.020	0.020	6753242
Ethylene Dibromide	ug/g	<0.050	0.050	6749023	<0.050	0.050	6749023	<0.050	0.050	6753242
Hexane	ug/g	<0.050	0.050	6749023	<0.050	0.050	6749023	<0.050	0.050	6753242
Methylene Chloride(Dichloromethane)	ug/g	<0.050	0.050	6749023	<0.050	0.050	6749023	<0.050	0.050	6753242
Methyl Ethyl Ketone (2-Butanone)	ug/g	<0.50	0.50	6749023	<0.50	0.50	6749023	<0.50	0.50	6753242
Methyl Isobutyl Ketone	ug/g	<0.50	0.50	6749023	<0.50	0.50	6749023	<0.50	0.50	6753242
Methyl t-butyl ether (MTBE)	ug/g	<0.050	0.050	6749023	<0.050	0.050	6749023	<0.050	0.050	6753242
Styrene	ug/g	<0.050	0.050	6749023	<0.050	0.050	6749023	<0.050	0.050	6753242
1,1,1,2-Tetrachloroethane	ug/g	<0.050	0.050	6749023	<0.050	0.050	6749023	<0.050	0.050	6753242
1,1,2,2-Tetrachloroethane	ug/g	<0.050	0.050	6749023	<0.050	0.050	6749023	<0.050	0.050	6753242
RDL = Reportable Detection Limit										
QC Batch = Quality Control Batch										
Lab-Dup = Laboratory Initiated Duplicate										



BV Labs Job #: C0C5657
Report Date: 2020/06/01

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

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

EV Labs ID		MRS775			MRS775			MRS780		
Sampling Date		2020/05/21			2020/05/21			2020/05/21		
COC Number		na			na			na		
	UNITS	BH14/4	RDL	QC Batch	BH14/4 Lab-Dup	RDL	QC Batch	BH1/3	RDL	QC Batch
Tetrachloroethylene	ug/g	<0.050	0.050	6749023	<0.050	0.050	6749023	<0.050	0.050	6753242
Toluene	ug/g	<0.020	0.020	6749023	<0.020	0.020	6749023	<0.020	0.020	6753242
1,1,1-Trichloroethane	ug/g	<0.050	0.050	6749023	<0.050	0.050	6749023	<0.050	0.050	6753242
1,1,2-Trichloroethane	ug/g	<0.050	0.050	6749023	<0.050	0.050	6749023	<0.050	0.050	6753242
Trichloroethylene	ug/g	<0.050	0.050	6749023	<0.050	0.050	6749023	<0.050	0.050	6753242
Trichlorofluoromethane (FREON 11)	ug/g	<0.050	0.050	6749023	<0.050	0.050	6749023	<0.050	0.050	6753242
Vinyl Chloride	ug/g	<0.020	0.020	6749023	<0.020	0.020	6749023	<0.020	0.020	6753242
p+m-Xylene	ug/g	<0.020	0.020	6749023	<0.020	0.020	6749023	<0.020	0.020	6753242
o-Xylene	ug/g	<0.020	0.020	6749023	<0.020	0.020	6749023	<0.020	0.020	6753242
Total Xylenes	ug/g	<0.020	0.020	6749023	<0.020	0.020	6749023	<0.020	0.020	6753242
F1 (C6-C10)	ug/g	<10	10	6749023	<10	10	6749023	<10	10	6753242
F1 (C6-C10) - BTEX	ug/g	<10	10	6749023	<10	10	6749023	<10	10	6753242
F2-F4 Hydrocarbons										
F2 (C10-C16 Hydrocarbons)	ug/g	<10	10	6750458				<10	10	6753863
F3 (C16-C34 Hydrocarbons)	ug/g	<50	50	6750458				<50	50	6753863
F4 (C34-C50 Hydrocarbons)	ug/g	<50	50	6750458				<50	50	6753863
Reached Baseline at C50	ug/g	Yes		6750458				Yes		6753863
Surrogate Recovery (%)										
o-Terphenyl	%	97		6750458				95		6753863
4-Bromofluorobenzene	%	81		6749023	80		6749023	93		6753242
D10-o-Xylene	%	93		6749023	93		6749023	100		6753242
D4-1,2-Dichloroethane	%	119		6749023	121		6749023	97		6753242
D8-Toluene	%	97		6749023	96		6749023	95		6753242
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate										



BV Labs Job #: C0C5657
Report Date: 2020/06/01

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

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

BV Labs ID		MRS780		
Sampling Date		2020/05/21		
COC Number		na		
	UNITS	BH1/3 Lab-Dup	RDL	QC Batch
Inorganics				
Moisture	%	9.7	1.0	6749517
RDL = Reportable Detection Limit				
QC Batch = Quality Control Batch				
Lab-Dup = Laboratory Initiated Duplicate				



BV Labs Job #: C0C5657
Report Date: 2020/06/01

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

O.REG 153 VOCs BY HS (SOIL)

BV Labs ID		MRS771		MRS782		
Sampling Date		2020/05/21		2020/05/21		
COC Number		na		na		
	UNITS	BH13/3	QC Batch	BH3/3	RDL	QC Batch
Inorganics						
Moisture	%	9.2	6746832	12	1.0	6749434
Calculated Parameters						
1,3-Dichloropropene (cis+trans)	ug/g	<0.050	6745867	<0.050	0.050	6746434
Volatile Organics						
Acetone (2-Propanone)	ug/g	<0.49	6749084	<0.49	0.49	6749084
Benzene	ug/g	<0.0060	6749084	<0.0060	0.0060	6749084
Bromodichloromethane	ug/g	<0.040	6749084	<0.040	0.040	6749084
Bromoform	ug/g	<0.040	6749084	<0.040	0.040	6749084
Bromomethane	ug/g	<0.040	6749084	<0.040	0.040	6749084
Carbon Tetrachloride	ug/g	<0.040	6749084	<0.040	0.040	6749084
Chlorobenzene	ug/g	<0.040	6749084	<0.040	0.040	6749084
Chloroform	ug/g	<0.040	6749084	<0.040	0.040	6749084
Dibromochloromethane	ug/g	<0.040	6749084	<0.040	0.040	6749084
1,2-Dichlorobenzene	ug/g	<0.040	6749084	<0.040	0.040	6749084
1,3-Dichlorobenzene	ug/g	<0.040	6749084	<0.040	0.040	6749084
1,4-Dichlorobenzene	ug/g	<0.040	6749084	<0.040	0.040	6749084
Dichlorodifluoromethane (FREON 12)	ug/g	<0.040	6749084	<0.040	0.040	6749084
1,1-Dichloroethane	ug/g	<0.040	6749084	<0.040	0.040	6749084
1,2-Dichloroethane	ug/g	<0.040	6749084	<0.040	0.040	6749084
1,1-Dichloroethylene	ug/g	<0.040	6749084	<0.040	0.040	6749084
cis-1,2-Dichloroethylene	ug/g	<0.040	6749084	<0.040	0.040	6749084
trans-1,2-Dichloroethylene	ug/g	<0.040	6749084	<0.040	0.040	6749084
1,2-Dichloropropane	ug/g	<0.040	6749084	<0.040	0.040	6749084
cis-1,3-Dichloropropene	ug/g	<0.030	6749084	<0.030	0.030	6749084
trans-1,3-Dichloropropene	ug/g	<0.040	6749084	<0.040	0.040	6749084
Ethylbenzene	ug/g	<0.010	6749084	<0.010	0.010	6749084
Ethylene Dibromide	ug/g	<0.040	6749084	<0.040	0.040	6749084
Hexane	ug/g	<0.040	6749084	<0.040	0.040	6749084
Methylene Chloride(Dichloromethane)	ug/g	<0.049	6749084	<0.049	0.049	6749084
Methyl Ethyl Ketone (2-Butanone)	ug/g	<0.40	6749084	<0.40	0.40	6749084
Methyl Isobutyl Ketone	ug/g	<0.40	6749084	<0.40	0.40	6749084
Methyl t-butyl ether (MTBE)	ug/g	<0.040	6749084	<0.040	0.040	6749084
Styrene	ug/g	<0.040	6749084	<0.040	0.040	6749084
1,1,1,2-Tetrachloroethane	ug/g	<0.040	6749084	<0.040	0.040	6749084
1,1,2,2-Tetrachloroethane	ug/g	<0.040	6749084	<0.040	0.040	6749084
Tetrachloroethylene	ug/g	<0.040	6749084	<0.040	0.040	6749084
RDL = Reportable Detection Limit						
QC Batch = Quality Control Batch						



BUREAU
VERITAS

BV Labs Job #: C0C5657
Report Date: 2020/06/01

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

O.REG 153 VOCs BY HS (SOIL)

BV Labs ID		MRS771		MRS782		
Sampling Date		2020/05/21		2020/05/21		
COC Number		na		na		
	UNITS	BH13/3	QC Batch	BH3/3	RDL	QC Batch
Toluene	ug/g	<0.020	6749084	<0.020	0.020	6749084
1,1,1-Trichloroethane	ug/g	<0.040	6749084	<0.040	0.040	6749084
1,1,2-Trichloroethane	ug/g	<0.040	6749084	<0.040	0.040	6749084
Trichloroethylene	ug/g	<0.010	6749084	<0.010	0.010	6749084
Trichlorofluoromethane (FREON 11)	ug/g	<0.040	6749084	<0.040	0.040	6749084
Vinyl Chloride	ug/g	<0.019	6749084	<0.019	0.019	6749084
p+m-Xylene	ug/g	<0.020	6749084	<0.020	0.020	6749084
o-Xylene	ug/g	<0.020	6749084	<0.020	0.020	6749084
Total Xylenes	ug/g	<0.020	6749084	<0.020	0.020	6749084
Surrogate Recovery (%)						
4-Bromofluorobenzene	%	99	6749084	99		6749084
D10-o-Xylene	%	106	6749084	106		6749084
D4-1,2-Dichloroethane	%	97	6749084	96		6749084
D8-Toluene	%	100	6749084	101		6749084
RDL = Reportable Detection Limit						
QC Batch = Quality Control Batch						



BV Labs Job #: C0C5657
Report Date: 2020/06/01

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

RESULTS OF ANALYSES OF SOIL

BV Labs ID		MRS769	MRS775		MRS785			MRS787	
Sampling Date		2020/05/21	2020/05/21		2020/05/21			2020/05/21	
COC Number		na	na		na			na	
	UNITS	BH2/3	BH14/4	QC Batch	DUP-S1	RDL	QC Batch	BH17/4	QC Batch
Inorganics									
Moisture	%				8.0	1.0	6746994		
Available (CaCl2) pH	pH	7.80	8.07	6749446				7.79	6749561
RDL = Reportable Detection Limit									
QC Batch = Quality Control Batch									



BV Labs Job #: C0C5657
Report Date: 2020/06/01

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

PETROLEUM HYDROCARBONS (CCME)

BV Labs ID		MRS785		
Sampling Date		2020/05/21		
COC Number		na		
	UNITS	DUP-S1	RDL	QC Batch
BTEX & F1 Hydrocarbons				
Benzene	ug/g	<0.020	0.020	6756359
Toluene	ug/g	<0.020	0.020	6756359
Ethylbenzene	ug/g	<0.020	0.020	6756359
o-Xylene	ug/g	<0.020	0.020	6756359
p+m-Xylene	ug/g	<0.040	0.040	6756359
Total Xylenes	ug/g	<0.040	0.040	6756359
Surrogate Recovery (%)				
1,4-Difluorobenzene	%	97		6756359
4-Bromofluorobenzene	%	109		6756359
D10-o-Xylene	%	88		6756359
D4-1,2-Dichloroethane	%	96		6756359
RDL = Reportable Detection Limit				
QC Batch = Quality Control Batch				



BV Labs Job #: C0C5657
Report Date: 2020/06/01

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

TEST SUMMARY

BV Labs ID: MRS767
Sample ID: BH2/1
Matrix: Soil

Collected: 2020/05/21
Shipped:
Received: 2020/05/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6745378	N/A	2020/05/28	Automated Statchk
Moisture	BAL	6746727	N/A	2020/05/25	Min Yang
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	6750099	2020/05/26	2020/05/26	Mitesh Raj
Polychlorinated Biphenyl in Soil	GC/ECD	6746716	2020/05/25	2020/05/26	Li Peng

BV Labs ID: MRS768
Sample ID: BH2/2
Matrix: Soil

Collected: 2020/05/21
Shipped:
Received: 2020/05/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hot Water Extractable Boron	ICP	6749191	2020/05/26	2020/05/27	Archana Patel
Free (WAD) Cyanide	TECH	6749384	2020/05/26	2020/05/27	Louise Harding
Conductivity	AT	6749930	2020/05/26	2020/05/26	Yogesh Patel
Hexavalent Chromium in Soil by IC	IC/SPEC	6749088	2020/05/26	2020/05/26	Violeta Porcila
Strong Acid Leachable Metals by ICPMS	ICP/MS	6749112	2020/05/26	2020/05/27	Viviana Canzonieri
Moisture	BAL	6746832	N/A	2020/05/25	Gurpreet Kaur (ONT)
pH CaCl ₂ EXTRACT	AT	6749446	2020/05/26	2020/05/26	Surinder Rai
Sodium Adsorption Ratio (SAR)	CALC/MET	6746296	N/A	2020/05/29	Automated Statchk

BV Labs ID: MRS769
Sample ID: BH2/3
Matrix: Soil

Collected: 2020/05/21
Shipped:
Received: 2020/05/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
pH CaCl ₂ EXTRACT	AT	6749446	2020/05/26	2020/05/26	Surinder Rai

BV Labs ID: MRS770
Sample ID: BH13/1
Matrix: Soil

Collected: 2020/05/21
Shipped:
Received: 2020/05/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hot Water Extractable Boron	ICP	6749191	2020/05/26	2020/05/27	Archana Patel
Free (WAD) Cyanide	TECH	6749384	2020/05/26	2020/05/27	Louise Harding
Conductivity	AT	6749930	2020/05/26	2020/05/26	Yogesh Patel
Hexavalent Chromium in Soil by IC	IC/SPEC	6749088	2020/05/26	2020/05/26	Violeta Porcila
Strong Acid Leachable Metals by ICPMS	ICP/MS	6749112	2020/05/26	2020/05/27	Viviana Canzonieri
Moisture	BAL	6746832	N/A	2020/05/25	Gurpreet Kaur (ONT)
Polychlorinated Biphenyl in Soil	GC/ECD	6746716	2020/05/25	2020/05/26	Li Peng
pH CaCl ₂ EXTRACT	AT	6749446	2020/05/26	2020/05/26	Surinder Rai
Sodium Adsorption Ratio (SAR)	CALC/MET	6746296	N/A	2020/05/29	Automated Statchk



BV Labs Job #: C0C5657
Report Date: 2020/06/01

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

TEST SUMMARY

BV Labs ID: MRS771
Sample ID: BH13/3
Matrix: Soil

Collected: 2020/05/21
Shipped:
Received: 2020/05/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	6745867	N/A	2020/05/28	Automated Statchk
Moisture	BAL	6746832	N/A	2020/05/25	Gurpreet Kaur (ONT)
Volatile Organic Compounds in Soil	GC/MS	6749084	N/A	2020/05/27	Blair Gannon

BV Labs ID: MRS772
Sample ID: BH16/1
Matrix: Soil

Collected: 2020/05/21
Shipped:
Received: 2020/05/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6746433	N/A	2020/05/28	Automated Statchk
Moisture	BAL	6746727	N/A	2020/05/25	Min Yang
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	6750099	2020/05/26	2020/05/27	Mitesh Raj

BV Labs ID: MRS773
Sample ID: BH16/3
Matrix: Soil

Collected: 2020/05/21
Shipped:
Received: 2020/05/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hot Water Extractable Boron	ICP	6749191	2020/05/26	2020/05/27	Archana Patel
Free (WAD) Cyanide	TECH	6749384	2020/05/26	2020/05/27	Louise Harding
Conductivity	AT	6749930	2020/05/26	2020/05/26	Yogesh Patel
Hexavalent Chromium in Soil by IC	IC/SPEC	6749088	2020/05/26	2020/05/26	Violeta Porcila
Strong Acid Leachable Metals by ICPMS	ICP/MS	6749112	2020/05/26	2020/05/27	Viviana Canzonieri
Moisture	BAL	6746832	N/A	2020/05/25	Gurpreet Kaur (ONT)
pH CaCl ₂ EXTRACT	AT	6749446	2020/05/26	2020/05/26	Surinder Rai
Sodium Adsorption Ratio (SAR)	CALC/MET	6746296	N/A	2020/05/29	Automated Statchk

BV Labs ID: MRS774
Sample ID: BH14/2
Matrix: Soil

Collected: 2020/05/21
Shipped:
Received: 2020/05/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hot Water Extractable Boron	ICP	6749191	2020/05/26	2020/05/27	Archana Patel
Free (WAD) Cyanide	TECH	6749384	2020/05/26	2020/05/27	Louise Harding
Conductivity	AT	6749930	2020/05/26	2020/05/26	Yogesh Patel
Hexavalent Chromium in Soil by IC	IC/SPEC	6749088	2020/05/26	2020/05/26	Violeta Porcila
Strong Acid Leachable Metals by ICPMS	ICP/MS	6749112	2020/05/26	2020/05/27	Viviana Canzonieri
Moisture	BAL	6746832	N/A	2020/05/25	Gurpreet Kaur (ONT)
pH CaCl ₂ EXTRACT	AT	6749446	2020/05/26	2020/05/26	Surinder Rai
Sodium Adsorption Ratio (SAR)	CALC/MET	6746296	N/A	2020/05/29	Automated Statchk



BV Labs Job #: C0C5657
Report Date: 2020/06/01

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

TEST SUMMARY

BV Labs ID: MRS775
Sample ID: BH14/4
Matrix: Soil

Collected: 2020/05/21
Shipped:
Received: 2020/05/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	6746434	N/A	2020/05/27	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	6750458	2020/05/26	2020/05/27	Jeevaraj Jeevaratnam
Moisture	BAL	6746727	N/A	2020/05/25	Min Yang
pH CaCl2 EXTRACT	AT	6749446	2020/05/26	2020/05/26	Surinder Rai
Volatile Organic Compounds and F1 PHCs	GC/MSFD	6749023	N/A	2020/05/26	Xueming Jiang

BV Labs ID: MRS775 Dup
Sample ID: BH14/4
Matrix: Soil

Collected: 2020/05/21
Shipped:
Received: 2020/05/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Volatile Organic Compounds and F1 PHCs	GC/MSFD	6749023	N/A	2020/05/26	Xueming Jiang

BV Labs ID: MRS776
Sample ID: BH1/1
Matrix: Soil

Collected: 2020/05/21
Shipped:
Received: 2020/05/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6746433	N/A	2020/05/28	Automated Statchk
Moisture	BAL	6746727	N/A	2020/05/25	Min Yang
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	6750099	2020/05/26	2020/05/27	Mitesh Raj

BV Labs ID: MRS779
Sample ID: BH1/2
Matrix: Soil

Collected: 2020/05/21
Shipped:
Received: 2020/05/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hot Water Extractable Boron	ICP	6750171	2020/05/26	2020/05/27	Archana Patel
Free (WAD) Cyanide	TECH	6753060	2020/05/27	2020/05/28	Gnana Thomas
Conductivity	AT	6756619	2020/05/28	2020/05/28	Yogesh Patel
Hexavalent Chromium in Soil by IC	IC/SPEC	6752397	2020/05/27	2020/05/27	Violeta Porcila
Strong Acid Leachable Metals by ICPMS	ICP/MS	6750401	2020/05/26	2020/05/28	Viviana Canzonieri
Moisture	BAL	6746727	N/A	2020/05/25	Min Yang
pH CaCl2 EXTRACT	AT	6749561	2020/05/26	2020/05/26	Surinder Rai
Sodium Adsorption Ratio (SAR)	CALC/MET	6746500	N/A	2020/05/29	Automated Statchk

BV Labs ID: MRS780
Sample ID: BH1/3
Matrix: Soil

Collected: 2020/05/21
Shipped:
Received: 2020/05/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	6746434	N/A	2020/05/29	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	6753863	2020/05/27	2020/05/28	Ksenia Trofimova
Moisture	BAL	6749517	N/A	2020/05/26	Gurpreet Kaur (ONT)
Volatile Organic Compounds and F1 PHCs	GC/MSFD	6753242	N/A	2020/05/28	Denis Reid



BV Labs Job #: C0C5657
Report Date: 2020/06/01

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

TEST SUMMARY

BV Labs ID: MRS780 Dup
Sample ID: BH1/3
Matrix: Soil

Collected: 2020/05/21
Shipped:
Received: 2020/05/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	6749517	N/A	2020/05/26	Gurpreet Kaur (ONT)

BV Labs ID: MRS781
Sample ID: BH3/1
Matrix: Soil

Collected: 2020/05/21
Shipped:
Received: 2020/05/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hot Water Extractable Boron	ICP	6750171	2020/05/26	2020/05/27	Archana Patel
Free (WAD) Cyanide	TECH	6753060	2020/05/27	2020/05/28	Gnana Thomas
Conductivity	AT	6756619	2020/05/28	2020/05/28	Yogesh Patel
Hexavalent Chromium in Soil by IC	IC/SPEC	6752397	2020/05/27	2020/05/27	Violeta Porcila
Strong Acid Leachable Metals by ICPMS	ICP/MS	6750401	2020/05/26	2020/05/28	Viviana Canzonieri
Moisture	BAL	6746727	N/A	2020/05/25	Min Yang
pH CaCl ₂ EXTRACT	AT	6749561	2020/05/26	2020/05/26	Surinder Rai
Sodium Adsorption Ratio (SAR)	CALC/MET	6746500	N/A	2020/05/29	Automated Statchk

BV Labs ID: MRS782
Sample ID: BH3/3
Matrix: Soil

Collected: 2020/05/21
Shipped:
Received: 2020/05/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6746433	N/A	2020/05/30	Automated Statchk
1,3-Dichloropropene Sum	CALC	6746434	N/A	2020/05/29	Automated Statchk
Moisture	BAL	6749434	N/A	2020/05/26	Gurpreet Kaur (ONT)
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	6756738	2020/05/28	2020/05/28	Jett Wu
Volatile Organic Compounds in Soil	GC/MS	6749084	N/A	2020/05/27	Blair Gannon

BV Labs ID: MRS783
Sample ID: BH17/1
Matrix: Soil

Collected: 2020/05/21
Shipped:
Received: 2020/05/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6746433	N/A	2020/05/30	Automated Statchk
Hot Water Extractable Boron	ICP	6750171	2020/05/26	2020/05/27	Archana Patel
Free (WAD) Cyanide	TECH	6753060	2020/05/27	2020/05/28	Gnana Thomas
Conductivity	AT	6756619	2020/05/28	2020/05/28	Yogesh Patel
Hexavalent Chromium in Soil by IC	IC/SPEC	6752397	2020/05/27	2020/05/27	Violeta Porcila
Strong Acid Leachable Metals by ICPMS	ICP/MS	6750401	2020/05/26	2020/05/28	Viviana Canzonieri
Moisture	BAL	6749434	N/A	2020/05/26	Gurpreet Kaur (ONT)
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	6756738	2020/05/28	2020/05/28	Jett Wu
pH CaCl ₂ EXTRACT	AT	6749561	2020/05/26	2020/05/26	Surinder Rai
Sodium Adsorption Ratio (SAR)	CALC/MET	6746500	N/A	2020/05/29	Automated Statchk



BV Labs Job #: C0C5657
Report Date: 2020/06/01

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

TEST SUMMARY

BV Labs ID: MRS784
Sample ID: BH17/2
Matrix: Soil

Collected: 2020/05/21
Shipped:
Received: 2020/05/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	6756359	N/A	2020/05/28	Haibin Wu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	6753863	2020/05/27	2020/05/28	Ksenia Trofimova
Moisture	BAL	6749517	N/A	2020/05/26	Gurpreet Kaur (ONT)

BV Labs ID: MRS785
Sample ID: DUP-S1
Matrix: Soil

Collected: 2020/05/21
Shipped:
Received: 2020/05/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	6756359	N/A	2020/05/28	Haibin Wu
Moisture	BAL	6746994	N/A	2020/05/25	Gurpreet Kaur (ONT)

BV Labs ID: MRS786
Sample ID: DUP-S2
Matrix: Soil

Collected: 2020/05/21
Shipped:
Received: 2020/05/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6749970	2020/05/26	2020/05/29	Viviana Canzonieri

BV Labs ID: MRS787
Sample ID: BH17/4
Matrix: Soil

Collected: 2020/05/21
Shipped:
Received: 2020/05/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
pH CaCl2 EXTRACT	AT	6749561	2020/05/26	2020/05/26	Surinder Rai



BV Labs Job #: C0C5657
Report Date: 2020/06/01

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

GENERAL COMMENTS

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

Package 1	2.0°C
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Results relate only to the items tested.



BV Labs Job #: C0C5657
Report Date: 2020/06/01

QUALITY ASSURANCE REPORT

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6746716	Decachlorobiphenyl	2020/05/25	90	60 - 130	95	60 - 130	91	%		
6749023	4-Bromofluorobenzene	2020/05/26	95	60 - 140	95	60 - 140	82	%		
6749023	D10-o-Xylene	2020/05/26	107	60 - 130	106	60 - 130	86	%		
6749023	D4-1,2-Dichloroethane	2020/05/26	111	60 - 140	113	60 - 140	118	%		
6749023	D8-Toluene	2020/05/26	104	60 - 140	105	60 - 140	98	%		
6749084	4-Bromofluorobenzene	2020/05/27	100	60 - 140	101	60 - 140	100	%		
6749084	D10-o-Xylene	2020/05/27	107	60 - 130	102	60 - 130	102	%		
6749084	D4-1,2-Dichloroethane	2020/05/27	96	60 - 140	99	60 - 140	101	%		
6749084	D8-Toluene	2020/05/27	101	60 - 140	99	60 - 140	99	%		
6750099	D10-Anthracene	2020/05/26	110	50 - 130	111	50 - 130	110	%		
6750099	D14-Terphenyl (FS)	2020/05/26	107	50 - 130	90	50 - 130	88	%		
6750099	D8-Acenaphthylene	2020/05/26	112	50 - 130	114	50 - 130	112	%		
6750458	o-Terphenyl	2020/05/27	102	60 - 130	101	60 - 130	101	%		
6753242	4-Bromofluorobenzene	2020/05/28	95	60 - 140	96	60 - 140	89	%		
6753242	D10-o-Xylene	2020/05/28	101	60 - 130	103	60 - 130	93	%		
6753242	D4-1,2-Dichloroethane	2020/05/28	106	60 - 140	108	60 - 140	106	%		
6753242	D8-Toluene	2020/05/28	103	60 - 140	103	60 - 140	95	%		
6753863	o-Terphenyl	2020/05/28	98	60 - 130	92	60 - 130	97	%		
6756359	1,4-Difluorobenzene	2020/05/28	93	60 - 140	96	60 - 140	98	%		
6756359	4-Bromofluorobenzene	2020/05/28	109	60 - 140	109	60 - 140	109	%		
6756359	D10-o-Xylene	2020/05/28	93	60 - 140	95	60 - 140	85	%		
6756359	D4-1,2-Dichloroethane	2020/05/28	92	60 - 140	94	60 - 140	97	%		
6756738	D10-Anthracene	2020/05/28	86	50 - 130	100	50 - 130	96	%		
6756738	D14-Terphenyl (FS)	2020/05/28	85	50 - 130	99	50 - 130	90	%		
6756738	D8-Acenaphthylene	2020/05/28	80	50 - 130	96	50 - 130	88	%		
6746716	Aroclor 1242	2020/05/26					<0.010	ug/g	NC	50
6746716	Aroclor 1248	2020/05/26					<0.010	ug/g	NC	50
6746716	Aroclor 1254	2020/05/26					<0.010	ug/g	NC	50
6746716	Aroclor 1260	2020/05/26	129	30 - 130	108	30 - 130	<0.010	ug/g	NC	50
6746716	Total PCB	2020/05/26	129	30 - 130	108	30 - 130	<0.010	ug/g	NC	50
6746727	Moisture	2020/05/25							8.5	20



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BV Labs Job #: C0C5657
Report Date: 2020/06/01

QUALITY ASSURANCE REPORT(CONT'D)

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6746832	Moisture	2020/05/25							1.3	20
6749023	1,1,1,2-Tetrachloroethane	2020/05/26	100	60 - 140	97	60 - 130	<0.050	ug/g	NC	50
6749023	1,1,1-Trichloroethane	2020/05/26	101	60 - 140	97	60 - 130	<0.050	ug/g	NC	50
6749023	1,1,2,2-Tetrachloroethane	2020/05/26	105	60 - 140	105	60 - 130	<0.050	ug/g	NC	50
6749023	1,1,2-Trichloroethane	2020/05/26	117	60 - 140	116	60 - 130	<0.050	ug/g	NC	50
6749023	1,1-Dichloroethane	2020/05/26	100	60 - 140	100	60 - 130	<0.050	ug/g	NC	50
6749023	1,1-Dichloroethylene	2020/05/26	119	60 - 140	112	60 - 130	<0.050	ug/g	NC	50
6749023	1,2-Dichlorobenzene	2020/05/26	100	60 - 140	96	60 - 130	<0.050	ug/g	NC	50
6749023	1,2-Dichloroethane	2020/05/26	110	60 - 140	108	60 - 130	<0.050	ug/g	NC	50
6749023	1,2-Dichloropropane	2020/05/26	97	60 - 140	93	60 - 130	<0.050	ug/g	NC	50
6749023	1,3-Dichlorobenzene	2020/05/26	100	60 - 140	95	60 - 130	<0.050	ug/g	NC	50
6749023	1,4-Dichlorobenzene	2020/05/26	111	60 - 140	105	60 - 130	<0.050	ug/g	NC	50
6749023	Acetone (2-Propanone)	2020/05/26	120	60 - 140	120	60 - 140	<0.50	ug/g	NC	50
6749023	Benzene	2020/05/26	101	60 - 140	96	60 - 130	<0.020	ug/g	NC	50
6749023	Bromodichloromethane	2020/05/26	98	60 - 140	95	60 - 130	<0.050	ug/g	NC	50
6749023	Bromoform	2020/05/26	94	60 - 140	93	60 - 130	<0.050	ug/g	NC	50
6749023	Bromomethane	2020/05/26	97	60 - 140	88	60 - 140	<0.050	ug/g	NC	50
6749023	Carbon Tetrachloride	2020/05/26	96	60 - 140	91	60 - 130	<0.050	ug/g	NC	50
6749023	Chlorobenzene	2020/05/26	97	60 - 140	93	60 - 130	<0.050	ug/g	NC	50
6749023	Chloroform	2020/05/26	93	60 - 140	94	60 - 130	<0.050	ug/g	NC	50
6749023	cis-1,2-Dichloroethylene	2020/05/26	71	60 - 140	91	60 - 130	<0.050	ug/g	NC	50
6749023	cis-1,3-Dichloropropene	2020/05/26	97	60 - 140	83	60 - 130	<0.030	ug/g	NC	50
6749023	Dibromochloromethane	2020/05/26	101	60 - 140	100	60 - 130	<0.050	ug/g	NC	50
6749023	Dichlorodifluoromethane (FREON 12)	2020/05/26	104	60 - 140	88	60 - 140	<0.050	ug/g	NC	50
6749023	Ethylbenzene	2020/05/26	100	60 - 140	96	60 - 130	<0.020	ug/g	NC	50
6749023	Ethylene Dibromide	2020/05/26	103	60 - 140	102	60 - 130	<0.050	ug/g	NC	50
6749023	F1 (C6-C10) - BTEX	2020/05/26					<10	ug/g	NC	30
6749023	F1 (C6-C10)	2020/05/26	94	60 - 140	95	80 - 120	<10	ug/g	NC	30
6749023	Hexane	2020/05/26	112	60 - 140	110	60 - 130	<0.050	ug/g	NC	50
6749023	Methyl Ethyl Ketone (2-Butanone)	2020/05/26	104	60 - 140	121	60 - 140	<0.50	ug/g	NC	50
6749023	Methyl Isobutyl Ketone	2020/05/26	103	60 - 140	103	60 - 130	<0.50	ug/g	NC	50

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Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5W 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.



BV Labs Job #: C0C5657
Report Date: 2020/06/01

QUALITY ASSURANCE REPORT(CONT'D)

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6749023	Methyl t-butyl ether (MTBE)	2020/05/26	98	60 - 140	95	60 - 130	<0.050	ug/g	NC	50
6749023	Methylene Chloride(Dichloromethane)	2020/05/26	95	60 - 140	91	60 - 130	<0.050	ug/g	NC	50
6749023	o-Xylene	2020/05/26	104	60 - 140	100	60 - 130	<0.020	ug/g	NC	50
6749023	p+m-Xylene	2020/05/26	109	60 - 140	103	60 - 130	<0.020	ug/g	NC	50
6749023	Styrene	2020/05/26	83	60 - 140	80	60 - 130	<0.050	ug/g	NC	50
6749023	Tetrachloroethylene	2020/05/26	89	60 - 140	84	60 - 130	<0.050	ug/g	NC	50
6749023	Toluene	2020/05/26	99	60 - 140	95	60 - 130	<0.020	ug/g	NC	50
6749023	Total Xylenes	2020/05/26					<0.020	ug/g	NC	50
6749023	trans-1,2-Dichloroethylene	2020/05/26	99	60 - 140	93	60 - 130	<0.050	ug/g	NC	50
6749023	trans-1,3-Dichloropropene	2020/05/26	104	60 - 140	89	60 - 130	<0.040	ug/g	NC	50
6749023	Trichloroethylene	2020/05/26	96	60 - 140	90	60 - 130	<0.050	ug/g	NC	50
6749023	Trichlorofluoromethane (FREON 11)	2020/05/26	111	60 - 140	104	60 - 130	<0.050	ug/g	NC	50
6749023	Vinyl Chloride	2020/05/26	106	60 - 140	98	60 - 130	<0.020	ug/g	NC	50
6749084	1,1,1,2-Tetrachloroethane	2020/05/27	104	60 - 140	109	60 - 130	<0.040	ug/g	NC	50
6749084	1,1,1-Trichloroethane	2020/05/27	100	60 - 140	100	60 - 130	<0.040	ug/g	NC	50
6749084	1,1,2,2-Tetrachloroethane	2020/05/27	91	60 - 140	104	60 - 130	<0.040	ug/g	NC	50
6749084	1,1,2-Trichloroethane	2020/05/27	97	60 - 140	103	60 - 130	<0.040	ug/g	NC	50
6749084	1,1-Dichloroethane	2020/05/27	96	60 - 140	97	60 - 130	<0.040	ug/g	NC	50
6749084	1,1-Dichloroethylene	2020/05/27	108	60 - 140	107	60 - 130	<0.040	ug/g	NC	50
6749084	1,2-Dichlorobenzene	2020/05/27	88	60 - 140	92	60 - 130	<0.040	ug/g	NC	50
6749084	1,2-Dichloroethane	2020/05/27	89	60 - 140	94	60 - 130	<0.040	ug/g	NC	50
6749084	1,2-Dichloropropane	2020/05/27	90	60 - 140	94	60 - 130	<0.040	ug/g	NC	50
6749084	1,3-Dichlorobenzene	2020/05/27	92	60 - 140	94	60 - 130	<0.040	ug/g	NC	50
6749084	1,4-Dichlorobenzene	2020/05/27	96	60 - 140	98	60 - 130	<0.040	ug/g	NC	50
6749084	Acetone (2-Propanone)	2020/05/27	88	60 - 140	100	60 - 140	<0.49	ug/g	NC	50
6749084	Benzene	2020/05/27	97	60 - 140	98	60 - 130	<0.0060	ug/g	NC	50
6749084	Bromodichloromethane	2020/05/27	98	60 - 140	102	60 - 130	<0.040	ug/g	NC	50
6749084	Bromoform	2020/05/27	100	60 - 140	110	60 - 130	<0.040	ug/g	NC	50
6749084	Bromomethane	2020/05/27	92	60 - 140	96	60 - 140	<0.040	ug/g	NC	50
6749084	Carbon Tetrachloride	2020/05/27	103	60 - 140	101	60 - 130	<0.040	ug/g	NC	50
6749084	Chlorobenzene	2020/05/27	91	60 - 140	94	60 - 130	<0.040	ug/g	NC	50

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QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6749084	Chloroform	2020/05/27	91	60 - 140	93	60 - 130	<0.040	ug/g	NC	50
6749084	cis-1,2-Dichloroethylene	2020/05/27	90	60 - 140	92	60 - 130	<0.040	ug/g	NC	50
6749084	cis-1,3-Dichloropropene	2020/05/27	96	60 - 140	105	60 - 130	<0.030	ug/g	NC	50
6749084	Dibromochloromethane	2020/05/27	102	60 - 140	109	60 - 130	<0.040	ug/g	NC	50
6749084	Dichlorodifluoromethane (FREON 12)	2020/05/27	101	60 - 140	99	60 - 140	<0.040	ug/g	NC	50
6749084	Ethylbenzene	2020/05/27	94	60 - 140	94	60 - 130	<0.010	ug/g	NC	50
6749084	Ethylene Dibromide	2020/05/27	91	60 - 140	99	60 - 130	<0.040	ug/g	NC	50
6749084	Hexane	2020/05/27	108	60 - 140	105	60 - 130	<0.040	ug/g	NC	50
6749084	Methyl Ethyl Ketone (2-Butanone)	2020/05/27	91	60 - 140	105	60 - 140	<0.40	ug/g	NC	50
6749084	Methyl Isobutyl Ketone	2020/05/27	89	60 - 140	105	60 - 130	<0.40	ug/g	NC	50
6749084	Methyl t-butyl ether (MTBE)	2020/05/27	87	60 - 140	91	60 - 130	<0.040	ug/g	NC	50
6749084	Methylene Chloride(Dichloromethane)	2020/05/27	88	60 - 140	91	60 - 130	<0.049	ug/g	NC	50
6749084	o-Xylene	2020/05/27	96	60 - 140	97	60 - 130	<0.020	ug/g	NC	50
6749084	p+m-Xylene	2020/05/27	101	60 - 140	100	60 - 130	<0.020	ug/g	NC	50
6749084	Styrene	2020/05/27	94	60 - 140	97	60 - 130	<0.040	ug/g	NC	50
6749084	Tetrachloroethylene	2020/05/27	92	60 - 140	90	60 - 130	<0.040	ug/g	NC	50
6749084	Toluene	2020/05/27	91	60 - 140	91	60 - 130	<0.020	ug/g	NC	50
6749084	Total Xylenes	2020/05/27					<0.020	ug/g	NC	50
6749084	trans-1,2-Dichloroethylene	2020/05/27	99	60 - 140	99	60 - 130	<0.040	ug/g	NC	50
6749084	trans-1,3-Dichloropropene	2020/05/27	115	60 - 140	105	60 - 130	<0.040	ug/g	NC	50
6749084	Trichloroethylene	2020/05/27	98	60 - 140	98	60 - 130	<0.010	ug/g	NC	50
6749084	Trichlorofluoromethane (FREON 11)	2020/05/27	105	60 - 140	102	60 - 130	<0.040	ug/g	NC	50
6749084	Vinyl Chloride	2020/05/27	101	60 - 140	100	60 - 130	<0.019	ug/g	NC	50
6749088	Chromium (VI)	2020/05/26	54 (1)	70 - 130	90	80 - 120	<0.18	ug/g	NC	35
6749112	Acid Extractable Antimony (Sb)	2020/05/27	93	75 - 125	101	80 - 120	<0.20	ug/g	NC	30
6749112	Acid Extractable Arsenic (As)	2020/05/27	100	75 - 125	102	80 - 120	<1.0	ug/g	2.1	30
6749112	Acid Extractable Barium (Ba)	2020/05/27	NC	75 - 125	104	80 - 120	<0.50	ug/g	4.1	30
6749112	Acid Extractable Beryllium (Be)	2020/05/27	98	75 - 125	98	80 - 120	<0.20	ug/g	0.81	30
6749112	Acid Extractable Boron (B)	2020/05/27	96	75 - 125	95	80 - 120	<5.0	ug/g	4.7	30
6749112	Acid Extractable Cadmium (Cd)	2020/05/27	101	75 - 125	99	80 - 120	<0.10	ug/g	NC	30
6749112	Acid Extractable Chromium (Cr)	2020/05/27	108	75 - 125	100	80 - 120	<1.0	ug/g	0.28	30

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			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6749112	Acid Extractable Cobalt (Co)	2020/05/27	101	75 - 125	101	80 - 120	<0.10	ug/g	0.54	30
6749112	Acid Extractable Copper (Cu)	2020/05/27	96	75 - 125	99	80 - 120	<0.50	ug/g	0.53	30
6749112	Acid Extractable Lead (Pb)	2020/05/27	103	75 - 125	103	80 - 120	<1.0	ug/g	2.3	30
6749112	Acid Extractable Mercury (Hg)	2020/05/27	98	75 - 125	93	80 - 120	<0.050	ug/g	NC	30
6749112	Acid Extractable Molybdenum (Mo)	2020/05/27	102	75 - 125	99	80 - 120	<0.50	ug/g	NC	30
6749112	Acid Extractable Nickel (Ni)	2020/05/27	100	75 - 125	99	80 - 120	<0.50	ug/g	0.66	30
6749112	Acid Extractable Selenium (Se)	2020/05/27	99	75 - 125	102	80 - 120	<0.50	ug/g	NC	30
6749112	Acid Extractable Silver (Ag)	2020/05/27	100	75 - 125	100	80 - 120	<0.20	ug/g	NC	30
6749112	Acid Extractable Thallium (Tl)	2020/05/27	101	75 - 125	101	80 - 120	<0.050	ug/g	2.1	30
6749112	Acid Extractable Uranium (U)	2020/05/27	106	75 - 125	104	80 - 120	<0.050	ug/g	5.3	30
6749112	Acid Extractable Vanadium (V)	2020/05/27	NC	75 - 125	99	80 - 120	<5.0	ug/g	2.4	30
6749112	Acid Extractable Zinc (Zn)	2020/05/27	NC	75 - 125	104	80 - 120	<5.0	ug/g	4.4	30
6749191	Hot Water Ext. Boron (B)	2020/05/27	101	75 - 125	103	75 - 125	<0.050	ug/g	9.0	40
6749384	WAD Cyanide (Free)	2020/05/27	84	75 - 125	96	80 - 120	<0.01	ug/g	NC	35
6749434	Moisture	2020/05/26							0	20
6749446	Available (CaCl ₂) pH	2020/05/26			100	97 - 103			0.43	N/A
6749517	Moisture	2020/05/26							3.0	20
6749561	Available (CaCl ₂) pH	2020/05/26			100	97 - 103			0.14	N/A
6749930	Conductivity	2020/05/26			102	90 - 110	<0.002	mS/cm	0.66	10
6749970	Acid Extractable Antimony (Sb)	2020/06/01	92	75 - 125	103	80 - 120	<0.20	ug/g	NC	30
6749970	Acid Extractable Arsenic (As)	2020/06/01	98	75 - 125	106	80 - 120	<1.0	ug/g	3.1	30
6749970	Acid Extractable Barium (Ba)	2020/06/01	NC	75 - 125	99	80 - 120	<0.50	ug/g	0.24	30
6749970	Acid Extractable Beryllium (Be)	2020/06/01	97	75 - 125	98	80 - 120	<0.20	ug/g	1.8	30
6749970	Acid Extractable Boron (B)	2020/06/01	96	75 - 125	104	80 - 120	<5.0	ug/g	0.43	30
6749970	Acid Extractable Cadmium (Cd)	2020/06/01	99	75 - 125	103	80 - 120	<0.10	ug/g	NC	30
6749970	Acid Extractable Chromium (Cr)	2020/06/01	99	75 - 125	103	80 - 120	<1.0	ug/g	2.4	30
6749970	Acid Extractable Cobalt (Co)	2020/06/01	94	75 - 125	104	80 - 120	<0.10	ug/g	3.3	30
6749970	Acid Extractable Copper (Cu)	2020/06/01	NC	75 - 125	101	80 - 120	<0.50	ug/g	0.016	30
6749970	Acid Extractable Lead (Pb)	2020/06/01	89	75 - 125	102	80 - 120	<1.0	ug/g	11	30
6749970	Acid Extractable Mercury (Hg)	2020/05/29	86	75 - 125	91	80 - 120	<0.050	ug/g		
6749970	Acid Extractable Molybdenum (Mo)	2020/06/01	98	75 - 125	103	80 - 120	<0.50	ug/g	8.8	30

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			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6749970	Acid Extractable Nickel (Ni)	2020/06/01	93	75 - 125	102	80 - 120	<0.50	ug/g	4.7	30
6749970	Acid Extractable Selenium (Se)	2020/06/01	98	75 - 125	105	80 - 120	<0.50	ug/g	NC	30
6749970	Acid Extractable Silver (Ag)	2020/06/01	95	75 - 125	104	80 - 120	<0.20	ug/g	21	30
6749970	Acid Extractable Thallium (Tl)	2020/06/01	94	75 - 125	100	80 - 120	<0.050	ug/g	0.97	30
6749970	Acid Extractable Uranium (U)	2020/06/01	98	75 - 125	101	80 - 120	<0.050	ug/g	3.2	30
6749970	Acid Extractable Vanadium (V)	2020/06/01	99	75 - 125	105	80 - 120	<5.0	ug/g	0.73	30
6749970	Acid Extractable Zinc (Zn)	2020/06/01	NC	75 - 125	104	80 - 120	<5.0	ug/g	3.5	30
6750099	1-Methylnaphthalene	2020/05/26	102	50 - 130	108	50 - 130	<0.0050	ug/g	NC	40
6750099	2-Methylnaphthalene	2020/05/26	104	50 - 130	109	50 - 130	<0.0050	ug/g	NC	40
6750099	Acenaphthene	2020/05/26	110	50 - 130	111	50 - 130	<0.0050	ug/g	NC	40
6750099	Acenaphthylene	2020/05/26	109	50 - 130	113	50 - 130	<0.0050	ug/g	NC	40
6750099	Anthracene	2020/05/26	109	50 - 130	111	50 - 130	<0.0050	ug/g	NC	40
6750099	Benzo(a)anthracene	2020/05/26	117	50 - 130	118	50 - 130	<0.0050	ug/g	NC	40
6750099	Benzo(a)pyrene	2020/05/26	112	50 - 130	115	50 - 130	<0.0050	ug/g	NC	40
6750099	Benzo(b)fluoranthene	2020/05/26	115	50 - 130	120	50 - 130	<0.0050	ug/g	NC	40
6750099	Benzo(g,h,i)perylene	2020/05/26	116	50 - 130	123	50 - 130	<0.0050	ug/g	NC	40
6750099	Benzo(k)fluoranthene	2020/05/26	110	50 - 130	115	50 - 130	<0.0050	ug/g	NC	40
6750099	Chrysene	2020/05/26	118	50 - 130	122	50 - 130	<0.0050	ug/g	NC	40
6750099	Dibenzo(a,h)anthracene	2020/05/26	119	50 - 130	124	50 - 130	<0.0050	ug/g	NC	40
6750099	Fluoranthene	2020/05/26	123	50 - 130	105	50 - 130	<0.0050	ug/g	NC	40
6750099	Fluorene	2020/05/26	116	50 - 130	118	50 - 130	<0.0050	ug/g	NC	40
6750099	Indeno(1,2,3-cd)pyrene	2020/05/26	112	50 - 130	118	50 - 130	<0.0050	ug/g	NC	40
6750099	Naphthalene	2020/05/26	93	50 - 130	99	50 - 130	<0.0050	ug/g	NC	40
6750099	Phenanthrene	2020/05/26	114	50 - 130	117	50 - 130	<0.0050	ug/g	NC	40
6750099	Pyrene	2020/05/26	123	50 - 130	105	50 - 130	<0.0050	ug/g	NC	40
6750171	Hot Water Ext. Boron (B)	2020/05/27	106	75 - 125	104	75 - 125	<0.050	ug/g	0.44	40
6750401	Acid Extractable Antimony (Sb)	2020/05/28	102	75 - 125	104	80 - 120	<0.20	ug/g	NC	30
6750401	Acid Extractable Arsenic (As)	2020/05/28	103	75 - 125	105	80 - 120	<1.0	ug/g	8.4	30
6750401	Acid Extractable Barium (Ba)	2020/05/28	NC	75 - 125	93	80 - 120	<0.50	ug/g	0.79	30
6750401	Acid Extractable Beryllium (Be)	2020/05/28	105	75 - 125	100	80 - 120	<0.20	ug/g	1.5	30
6750401	Acid Extractable Boron (B)	2020/05/28	103	75 - 125	93	80 - 120	<5.0	ug/g	NC	30

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			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6750401	Acid Extractable Cadmium (Cd)	2020/05/28	106	75 - 125	102	80 - 120	<0.10	ug/g	26	30
6750401	Acid Extractable Chromium (Cr)	2020/05/28	105	75 - 125	101	80 - 120	<1.0	ug/g	0.11	30
6750401	Acid Extractable Cobalt (Co)	2020/05/28	103	75 - 125	104	80 - 120	<0.10	ug/g	1.2	30
6750401	Acid Extractable Copper (Cu)	2020/05/28	97	75 - 125	102	80 - 120	<0.50	ug/g	4.6	30
6750401	Acid Extractable Lead (Pb)	2020/05/28	NC	75 - 125	104	80 - 120	<1.0	ug/g	67 (2)	30
6750401	Acid Extractable Mercury (Hg)	2020/05/28	94	75 - 125	94	80 - 120	<0.050	ug/g	8.6	30
6750401	Acid Extractable Molybdenum (Mo)	2020/05/28	107	75 - 125	102	80 - 120	<0.50	ug/g	NC	30
6750401	Acid Extractable Nickel (Ni)	2020/05/28	102	75 - 125	105	80 - 120	<0.50	ug/g	0.59	30
6750401	Acid Extractable Selenium (Se)	2020/05/28	107	75 - 125	108	80 - 120	<0.50	ug/g	NC	30
6750401	Acid Extractable Silver (Ag)	2020/05/28	109	75 - 125	105	80 - 120	<0.20	ug/g	NC	30
6750401	Acid Extractable Thallium (Tl)	2020/05/28	104	75 - 125	103	80 - 120	<0.050	ug/g	15	30
6750401	Acid Extractable Uranium (U)	2020/05/28	109	75 - 125	106	80 - 120	<0.050	ug/g	3.0	30
6750401	Acid Extractable Vanadium (V)	2020/05/28	104	75 - 125	99	80 - 120	<5.0	ug/g	3.4	30
6750401	Acid Extractable Zinc (Zn)	2020/05/28	NC	75 - 125	107	80 - 120	<5.0	ug/g	10	30
6750458	F2 (C10-C16 Hydrocarbons)	2020/05/28	104	50 - 130	102	80 - 120	<10	ug/g	NC	30
6750458	F3 (C16-C34 Hydrocarbons)	2020/05/28	106	50 - 130	104	80 - 120	<50	ug/g	NC	30
6750458	F4 (C34-C50 Hydrocarbons)	2020/05/28	106	50 - 130	104	80 - 120	<50	ug/g	NC	30
6752397	Chromium (VI)	2020/05/27	59 (3)	70 - 130	90	80 - 120	<0.18	ug/g	NC	35
6753060	WAD Cyanide (Free)	2020/05/28	90	75 - 125	94	80 - 120	<0.01	ug/g	NC	35
6753242	1,1,1,2-Tetrachloroethane	2020/05/28	101	60 - 140	104	60 - 130	<0.050	ug/g	NC	50
6753242	1,1,1-Trichloroethane	2020/05/28	101	60 - 140	102	60 - 130	<0.050	ug/g	NC	50
6753242	1,1,2,2-Tetrachloroethane	2020/05/28	94	60 - 140	101	60 - 130	<0.050	ug/g	NC	50
6753242	1,1,2-Trichloroethane	2020/05/28	95	60 - 140	101	60 - 130	<0.050	ug/g	NC	50
6753242	1,1-Dichloroethane	2020/05/28	99	60 - 140	100	60 - 130	<0.050	ug/g	NC	50
6753242	1,1-Dichloroethylene	2020/05/28	111	60 - 140	108	60 - 130	<0.050	ug/g	NC	50
6753242	1,2-Dichlorobenzene	2020/05/28	88	60 - 140	89	60 - 130	<0.050	ug/g	NC	50
6753242	1,2-Dichloroethane	2020/05/28	102	60 - 140	106	60 - 130	<0.050	ug/g	NC	50
6753242	1,2-Dichloropropane	2020/05/28	94	60 - 140	96	60 - 130	<0.050	ug/g	NC	50
6753242	1,3-Dichlorobenzene	2020/05/28	94	60 - 140	93	60 - 130	<0.050	ug/g	NC	50
6753242	1,4-Dichlorobenzene	2020/05/28	97	60 - 140	97	60 - 130	<0.050	ug/g	NC	50
6753242	Acetone (2-Propanone)	2020/05/28	101	60 - 140	105	60 - 140	<0.50	ug/g	NC	50

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			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6753242	Benzene	2020/05/28	99	60 - 140	99	60 - 130	<0.020	ug/g	NC	50
6753242	Bromodichloromethane	2020/05/28	95	60 - 140	99	60 - 130	<0.050	ug/g	NC	50
6753242	Bromoform	2020/05/28	92	60 - 140	99	60 - 130	<0.050	ug/g	NC	50
6753242	Bromomethane	2020/05/28	101	60 - 140	102	60 - 140	<0.050	ug/g	NC	50
6753242	Carbon Tetrachloride	2020/05/28	102	60 - 140	102	60 - 130	<0.050	ug/g	NC	50
6753242	Chlorobenzene	2020/05/28	92	60 - 140	92	60 - 130	<0.050	ug/g	NC	50
6753242	Chloroform	2020/05/28	95	60 - 140	97	60 - 130	<0.050	ug/g	NC	50
6753242	cis-1,2-Dichloroethylene	2020/05/28	93	60 - 140	94	60 - 130	<0.050	ug/g	NC	50
6753242	cis-1,3-Dichloropropene	2020/05/28	92	60 - 140	96	60 - 130	<0.030	ug/g	NC	50
6753242	Dibromochloromethane	2020/05/28	96	60 - 140	101	60 - 130	<0.050	ug/g	NC	50
6753242	Dichlorodifluoromethane (FREON 12)	2020/05/28	102	60 - 140	105	60 - 140	<0.050	ug/g	NC	50
6753242	Ethylbenzene	2020/05/28	88	60 - 140	87	60 - 130	<0.020	ug/g	NC	50
6753242	Ethylene Dibromide	2020/05/28	95	60 - 140	100	60 - 130	<0.050	ug/g	NC	50
6753242	F1 (C6-C10) - BTEX	2020/05/28					<10	ug/g	NC	30
6753242	F1 (C6-C10)	2020/05/28	91	60 - 140	95	80 - 120	<10	ug/g	NC	30
6753242	Hexane	2020/05/28	108	60 - 140	105	60 - 130	<0.050	ug/g	NC	50
6753242	Methyl Ethyl Ketone (2-Butanone)	2020/05/28	89	60 - 140	97	60 - 140	<0.50	ug/g	NC	50
6753242	Methyl Isobutyl Ketone	2020/05/28	96	60 - 140	108	60 - 130	<0.50	ug/g	NC	50
6753242	Methyl t-butyl ether (MTBE)	2020/05/28	85	60 - 140	86	60 - 130	<0.050	ug/g	NC	50
6753242	Methylene Chloride(Dichloromethane)	2020/05/28	107	60 - 140	109	60 - 130	<0.050	ug/g	NC	50
6753242	o-Xylene	2020/05/28	89	60 - 140	90	60 - 130	<0.020	ug/g	NC	50
6753242	p+m-Xylene	2020/05/28	94	60 - 140	93	60 - 130	<0.020	ug/g	NC	50
6753242	Styrene	2020/05/28	90	60 - 140	93	60 - 130	<0.050	ug/g	NC	50
6753242	Tetrachloroethylene	2020/05/28	92	60 - 140	90	60 - 130	<0.050	ug/g	NC	50
6753242	Toluene	2020/05/28	91	60 - 140	90	60 - 130	<0.020	ug/g	NC	50
6753242	Total Xylenes	2020/05/28					<0.020	ug/g	NC	50
6753242	trans-1,2-Dichloroethylene	2020/05/28	103	60 - 140	102	60 - 130	<0.050	ug/g	NC	50
6753242	trans-1,3-Dichloropropene	2020/05/28	96	60 - 140	100	60 - 130	<0.040	ug/g	NC	50
6753242	Trichloroethylene	2020/05/28	101	60 - 140	100	60 - 130	<0.050	ug/g	NC	50
6753242	Trichlorofluoromethane (FREON 11)	2020/05/28	111	60 - 140	109	60 - 130	<0.050	ug/g	NC	50
6753242	Vinyl Chloride	2020/05/28	104	60 - 140	103	60 - 130	<0.020	ug/g	NC	50

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BV Labs Job #: C0C5657
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QUALITY ASSURANCE REPORT(CONT'D)

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6753863	F2 (C10-C16 Hydrocarbons)	2020/05/28	NC (4)	50 - 130	93	80 - 120	<10	ug/g	18	30
6753863	F3 (C16-C34 Hydrocarbons)	2020/05/28	NC (4)	50 - 130	94	80 - 120	<50	ug/g	70 (2)	30
6753863	F4 (C34-C50 Hydrocarbons)	2020/05/28	NC (4)	50 - 130	97	80 - 120	<50	ug/g	71 (2)	30
6756359	Benzene	2020/05/28	101	60 - 140	103	60 - 140	<0.020	ug/g	NC	50
6756359	Ethylbenzene	2020/05/28	103	60 - 140	105	60 - 140	<0.020	ug/g	NC	50
6756359	F1 (C6-C10) - BTEX	2020/05/28					<10	ug/g	NC	30
6756359	F1 (C6-C10)	2020/05/28	97	60 - 140	98	80 - 120	<10	ug/g	NC	30
6756359	o-Xylene	2020/05/28	99	60 - 140	99	60 - 140	<0.020	ug/g	NC	50
6756359	p+m-Xylene	2020/05/28	100	60 - 140	102	60 - 140	<0.040	ug/g	NC	50
6756359	Toluene	2020/05/28	94	60 - 140	96	60 - 140	<0.020	ug/g	NC	50
6756359	Total Xylenes	2020/05/28					<0.040	ug/g	NC	50
6756619	Conductivity	2020/05/28			102	90 - 110	<0.002	mS/cm	1.1	10
6756738	1-Methylnaphthalene	2020/05/28	77	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
6756738	2-Methylnaphthalene	2020/05/28	79	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
6756738	Acenaphthene	2020/05/28	86	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
6756738	Acenaphthylene	2020/05/28	83	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40
6756738	Anthracene	2020/05/28	89	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40
6756738	Benzo(a)anthracene	2020/05/28	87	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40
6756738	Benzo(a)pyrene	2020/05/28	82	50 - 130	87	50 - 130	<0.0050	ug/g	NC	40
6756738	Benzo(b,j)fluoranthene	2020/05/28	92	50 - 130	104	50 - 130	<0.0050	ug/g	NC	40
6756738	Benzo(g,h,i)perylene	2020/05/28	85	50 - 130	95	50 - 130	<0.0050	ug/g	NC	40
6756738	Benzo(k)fluoranthene	2020/05/28	85	50 - 130	94	50 - 130	<0.0050	ug/g	NC	40
6756738	Chrysene	2020/05/28	92	50 - 130	98	50 - 130	<0.0050	ug/g	NC	40
6756738	Dibenzo(a,h)anthracene	2020/05/28	97	50 - 130	105	50 - 130	<0.0050	ug/g	NC	40
6756738	Fluoranthene	2020/05/28	89	50 - 130	94	50 - 130	<0.0050	ug/g	NC	40
6756738	Fluorene	2020/05/28	88	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40
6756738	Indeno(1,2,3-cd)pyrene	2020/05/28	87	50 - 130	98	50 - 130	<0.0050	ug/g	NC	40
6756738	Naphthalene	2020/05/28	66	50 - 130	83	50 - 130	<0.0050	ug/g	NC	40
6756738	Phenanthrene	2020/05/28	84	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40



BV Labs Job #: C0C5657
Report Date: 2020/06/01

QUALITY ASSURANCE REPORT(CONT'D)

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6756738	Pyrene	2020/05/28	90	50 - 130	94	50 - 130	<0.0050	ug/g	NC	40

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 $\leq 2 \times \text{RDL}$).

(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.

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

(3) The matrix spike recovery was below the lower control limit. This may be due in part to the reducing environment of the sample. The sample was reanalyzed with the same results.

(4) Matrix Spiked recoveries were not calculated (NC) because of high concentration of target compounds in the parent sample. The relative difference between the spiked and un-spiked concentrations is not sufficiently significant to permit a reliable recovery calculation.



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VERITAS

BV Labs Job #: C0C5657
Report Date: 2020/06/01

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

VALIDATION SIGNATURE PAGE

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

Anastassia Hamanov, Scientific Specialist

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Your Project #: 2005-E074
Your C.O.C. #: NA

Attention: Hamid Rezaei

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

Report Date: 2020/06/01
Report #: R6194159
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0C8514

Received: 2020/05/26, 16:20

Sample Matrix: Soil
Samples Received: 26

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
Methylnaphthalene Sum	8	N/A	2020/05/31	CAM SOP-00301	EPA 8270D m
Hot Water Extractable Boron	6	2020/05/29	2020/05/29	CAM SOP-00408	R153 Ana. Prot. 2011
Hot Water Extractable Boron	4	2020/05/29	2020/05/30	CAM SOP-00408	R153 Ana. Prot. 2011
1,3-Dichloropropene Sum	5	N/A	2020/05/30		EPA 8260C m
1,3-Dichloropropene Sum	1	N/A	2020/05/31		EPA 8260C m
Free (WAD) Cyanide	10	2020/05/28	2020/05/29	CAM SOP-00457	OMOE E3015 m
Conductivity	10	2020/05/29	2020/05/29	CAM SOP-00414	OMOE E3530 v1 m
Hexavalent Chromium in Soil by IC (1)	10	2020/05/29	2020/05/29	CAM SOP-00436	EPA 3060/7199 m
Petroleum Hydro. CCME F1 & BTEX in Soil (2)	7	N/A	2020/05/29	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Soil (3)	7	2020/05/28	2020/05/29	CAM SOP-00316	CCME CWS m
Strong Acid Leachable Metals by ICPMS	13	2020/05/29	2020/05/30	CAM SOP-00447	EPA 6020B m
Moisture	25	N/A	2020/05/28	CAM SOP-00445	Carter 2nd ed 51.2 m
PAH Compounds in Soil by GC/MS (SIM)	8	2020/05/29	2020/05/30	CAM SOP-00318	EPA 8270D m
Polychlorinated Biphenyl in Soil	1	2020/05/29	2020/05/29	CAM SOP-00309	EPA 8082A m
Polychlorinated Biphenyl in Soil	1	2020/05/29	2020/05/30	CAM SOP-00309	EPA 8082A m
pH CaCl2 EXTRACT	12	2020/05/29	2020/05/29	CAM SOP-00413	EPA 9045 D m
Sodium Adsorption Ratio (SAR)	10	N/A	2020/06/01	CAM SOP-00102	EPA 6010C
Volatile Organic Compounds and F1 PHCs	1	N/A	2020/05/29	CAM SOP-00230	EPA 8260C m
Volatile Organic Compounds in Soil	5	N/A	2020/05/28	CAM SOP-00228	EPA 8260C m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

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

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied.



Your Project #: 2005-E074
Your C.O.C. #: NA

Attention: Hamid Rezaei

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

Report Date: 2020/06/01
Report #: R6194159
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0C8514

Received: 2020/05/26, 16:20

BV Labs 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 BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

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

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

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

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

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

(1) 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 Bureau Veritas Laboratories conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following "Alberta Environment's Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Validation of Performance-Based Alternative Methods September 2003". Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

Encryption Key

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

Antonella Brasil, Senior Project Manager

Email: Antonella.Brasil@bvlabs.com

Phone# (905)817-5817

=====

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



BUREAU
VERITAS

BV Labs Job #: C0C8514
Report Date: 2020/06/01

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

O.REG 153 ICPMS METALS (SOIL)

BV Labs ID		MSI636	MSI645	MSI653		
Sampling Date		2020/05/22	2020/05/25	2020/05/25		
COC Number		NA	NA	NA		
	UNITS	BH6/5	BH10/5	DUP-S4	RDL	QC Batch
Metals						
Acid Extractable Antimony (Sb)	ug/g	<0.20	<0.20	<0.20	0.20	6759950
Acid Extractable Arsenic (As)	ug/g	2.4	1.8	1.9	1.0	6759950
Acid Extractable Barium (Ba)	ug/g	29	37	44	0.50	6759950
Acid Extractable Beryllium (Be)	ug/g	0.25	0.25	0.28	0.20	6759950
Acid Extractable Boron (B)	ug/g	<5.0	<5.0	<5.0	5.0	6759950
Acid Extractable Cadmium (Cd)	ug/g	<0.10	<0.10	<0.10	0.10	6759950
Acid Extractable Chromium (Cr)	ug/g	10	20	11	1.0	6759950
Acid Extractable Cobalt (Co)	ug/g	4.3	4.1	4.2	0.10	6759950
Acid Extractable Copper (Cu)	ug/g	12	12	9.3	0.50	6759950
Acid Extractable Lead (Pb)	ug/g	5.7	4.7	4.7	1.0	6759950
Acid Extractable Molybdenum (Mo)	ug/g	0.68	2.3	<0.50	0.50	6759950
Acid Extractable Nickel (Ni)	ug/g	22	9.5	9.3	0.50	6759950
Acid Extractable Selenium (Se)	ug/g	<0.50	<0.50	<0.50	0.50	6759950
Acid Extractable Silver (Ag)	ug/g	<0.20	<0.20	<0.20	0.20	6759950
Acid Extractable Thallium (Tl)	ug/g	0.087	0.055	0.080	0.050	6759950
Acid Extractable Uranium (U)	ug/g	0.58	0.46	0.47	0.050	6759950
Acid Extractable Vanadium (V)	ug/g	17	19	19	5.0	6759950
Acid Extractable Zinc (Zn)	ug/g	23	30	22	5.0	6759950
Acid Extractable Mercury (Hg)	ug/g	<0.050	<0.050	<0.050	0.050	6759950
RDL = Reportable Detection Limit						
QC Batch = Quality Control Batch						



BV Labs Job #: C0C8514
Report Date: 2020/06/01

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

O.REG 153 METALS & INORGANICS PKG (SOIL)

BV Labs ID		MSI630			MSI634			MSI635		
Sampling Date		2020/05/22			2020/05/22			2020/05/22		
COC Number		NA			NA			NA		
	UNITS	BH4/1	RDL	QC Batch	BH5/2	RDL	QC Batch	BH6/1	RDL	QC Batch
Calculated Parameters										
Sodium Adsorption Ratio	N/A	1.0		6754614	0.34		6754614	0.74		6754614
Inorganics										
Conductivity	mS/cm	0.37	0.002	6760278	0.086	0.002	6760278	0.37	0.002	6760278
Moisture	%	9.3	1.0	6756975				11	1.0	6756975
Available (CaCl ₂) pH	pH	7.95		6759973	7.62		6759973	7.85		6759973
WAD Cyanide (Free)	ug/g	<0.01	0.01	6757463	<0.01	0.01	6757463	<0.01	0.01	6757463
Chromium (VI)	ug/g	<0.18	0.18	6759769	<0.18	0.18	6759769	<0.18	0.18	6759769
Metals										
Hot Water Ext. Boron (B)	ug/g	0.32	0.050	6760038	<0.050	0.050	6760012	0.22	0.050	6760038
Acid Extractable Antimony (Sb)	ug/g	<0.20	0.20	6759950	<0.20	0.20	6759950	<0.20	0.20	6759950
Acid Extractable Arsenic (As)	ug/g	1.7	1.0	6759950	1.3	1.0	6759950	1.4	1.0	6759950
Acid Extractable Barium (Ba)	ug/g	71	0.50	6759950	49	0.50	6759950	54	0.50	6759950
Acid Extractable Beryllium (Be)	ug/g	0.42	0.20	6759950	0.30	0.20	6759950	0.33	0.20	6759950
Acid Extractable Boron (B)	ug/g	7.4	5.0	6759950	<5.0	5.0	6759950	5.2	5.0	6759950
Acid Extractable Cadmium (Cd)	ug/g	<0.10	0.10	6759950	<0.10	0.10	6759950	<0.10	0.10	6759950
Acid Extractable Chromium (Cr)	ug/g	17	1.0	6759950	11	1.0	6759950	13	1.0	6759950
Acid Extractable Cobalt (Co)	ug/g	6.0	0.10	6759950	4.8	0.10	6759950	5.1	0.10	6759950
Acid Extractable Copper (Cu)	ug/g	12	0.50	6759950	9.1	0.50	6759950	11	0.50	6759950
Acid Extractable Lead (Pb)	ug/g	6.2	1.0	6759950	5.0	1.0	6759950	5.1	1.0	6759950
Acid Extractable Molybdenum (Mo)	ug/g	<0.50	0.50	6759950	<0.50	0.50	6759950	<0.50	0.50	6759950
Acid Extractable Nickel (Ni)	ug/g	13	0.50	6759950	9.6	0.50	6759950	11	0.50	6759950
Acid Extractable Selenium (Se)	ug/g	<0.50	0.50	6759950	<0.50	0.50	6759950	<0.50	0.50	6759950
Acid Extractable Silver (Ag)	ug/g	<0.20	0.20	6759950	<0.20	0.20	6759950	<0.20	0.20	6759950
Acid Extractable Thallium (Tl)	ug/g	0.10	0.050	6759950	0.082	0.050	6759950	0.078	0.050	6759950
Acid Extractable Uranium (U)	ug/g	0.63	0.050	6759950	0.40	0.050	6759950	0.47	0.050	6759950
Acid Extractable Vanadium (V)	ug/g	25	5.0	6759950	21	5.0	6759950	22	5.0	6759950
Acid Extractable Zinc (Zn)	ug/g	34	5.0	6759950	27	5.0	6759950	27	5.0	6759950
Acid Extractable Mercury (Hg)	ug/g	<0.050	0.050	6759950	<0.050	0.050	6759950	<0.050	0.050	6759950
RDL = Reportable Detection Limit										
QC Batch = Quality Control Batch										



BV Labs Job #: C0C8514
Report Date: 2020/06/01

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

O.REG 153 METALS & INORGANICS PKG (SOIL)

BV Labs ID		MSI635			MSI637			MSI637	
Sampling Date		2020/05/22			2020/05/22			2020/05/22	
COC Number		NA			NA			NA	
	UNITS	BH6/1 Lab-Dup	RDL	QC Batch	BH7/1	RDL	QC Batch	BH7/1 Lab-Dup	QC Batch
Calculated Parameters									
Sodium Adsorption Ratio	N/A				0.75		6754614		
Inorganics									
Conductivity	mS/cm	0.36	0.002	6760278	0.35	0.002	6760278		
Moisture	%				9.6	1.0	6756975		
Available (CaCl ₂) pH	pH				7.76		6759973	7.76	6759973
WAD Cyanide (Free)	ug/g	<0.01	0.01	6757463	<0.01	0.01	6757463		
Chromium (VI)	ug/g	<0.18	0.18	6759769	<0.18	0.18	6759769		
Metals									
Hot Water Ext. Boron (B)	ug/g				0.29	0.050	6760012		
Acid Extractable Antimony (Sb)	ug/g				<0.20	0.20	6759950		
Acid Extractable Arsenic (As)	ug/g				1.7	1.0	6759950		
Acid Extractable Barium (Ba)	ug/g				75	0.50	6759950		
Acid Extractable Beryllium (Be)	ug/g				0.41	0.20	6759950		
Acid Extractable Boron (B)	ug/g				6.8	5.0	6759950		
Acid Extractable Cadmium (Cd)	ug/g				<0.10	0.10	6759950		
Acid Extractable Chromium (Cr)	ug/g				17	1.0	6759950		
Acid Extractable Cobalt (Co)	ug/g				6.2	0.10	6759950		
Acid Extractable Copper (Cu)	ug/g				15	0.50	6759950		
Acid Extractable Lead (Pb)	ug/g				5.7	1.0	6759950		
Acid Extractable Molybdenum (Mo)	ug/g				<0.50	0.50	6759950		
Acid Extractable Nickel (Ni)	ug/g				14	0.50	6759950		
Acid Extractable Selenium (Se)	ug/g				<0.50	0.50	6759950		
Acid Extractable Silver (Ag)	ug/g				<0.20	0.20	6759950		
Acid Extractable Thallium (Tl)	ug/g				0.11	0.050	6759950		
Acid Extractable Uranium (U)	ug/g				0.58	0.050	6759950		
Acid Extractable Vanadium (V)	ug/g				26	5.0	6759950		
Acid Extractable Zinc (Zn)	ug/g				32	5.0	6759950		
Acid Extractable Mercury (Hg)	ug/g				<0.050	0.050	6759950		
RDL = Reportable Detection Limit									
QC Batch = Quality Control Batch									
Lab-Dup = Laboratory Initiated Duplicate									



BV Labs Job #: C0C8514
Report Date: 2020/06/01

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

O.REG 153 METALS & INORGANICS PKG (SOIL)

BV Labs ID		MSI640			MSI640			MSI641		
Sampling Date		2020/05/25			2020/05/25			2020/05/22		
COC Number		NA			NA			NA		
	UNITS	BH8/4	RDL	QC Batch	BH8/4 Lab-Dup	RDL	QC Batch	BH9/2	RDL	QC Batch
Calculated Parameters										
Sodium Adsorption Ratio	N/A	0.61		6754614				0.61		6754614
Inorganics										
Conductivity	mS/cm	0.28	0.002	6760278				0.31	0.002	6760278
Moisture	%							8.2	1.0	6756975
Available (CaCl ₂) pH	pH	7.81		6759973				7.94		6759973
WAD Cyanide (Free)	ug/g	<0.01	0.01	6757463				<0.01	0.01	6757463
Chromium (VI)	ug/g	<0.18	0.18	6759769				<0.18	0.18	6759769
Metals										
Hot Water Ext. Boron (B)	ug/g	0.20	0.050	6760038	0.18	0.050	6760038	0.17	0.050	6760038
Acid Extractable Antimony (Sb)	ug/g	<0.20	0.20	6759950				<0.20	0.20	6759950
Acid Extractable Arsenic (As)	ug/g	1.5	1.0	6759950				1.5	1.0	6759950
Acid Extractable Barium (Ba)	ug/g	41	0.50	6759950				52	0.50	6759950
Acid Extractable Beryllium (Be)	ug/g	0.29	0.20	6759950				0.30	0.20	6759950
Acid Extractable Boron (B)	ug/g	<5.0	5.0	6759950				5.2	5.0	6759950
Acid Extractable Cadmium (Cd)	ug/g	<0.10	0.10	6759950				<0.10	0.10	6759950
Acid Extractable Chromium (Cr)	ug/g	13	1.0	6759950				13	1.0	6759950
Acid Extractable Cobalt (Co)	ug/g	4.3	0.10	6759950				4.6	0.10	6759950
Acid Extractable Copper (Cu)	ug/g	9.5	0.50	6759950				9.9	0.50	6759950
Acid Extractable Lead (Pb)	ug/g	5.4	1.0	6759950				4.8	1.0	6759950
Acid Extractable Molybdenum (Mo)	ug/g	0.68	0.50	6759950				<0.50	0.50	6759950
Acid Extractable Nickel (Ni)	ug/g	9.2	0.50	6759950				9.7	0.50	6759950
Acid Extractable Selenium (Se)	ug/g	<0.50	0.50	6759950				<0.50	0.50	6759950
Acid Extractable Silver (Ag)	ug/g	<0.20	0.20	6759950				<0.20	0.20	6759950
Acid Extractable Thallium (Tl)	ug/g	0.072	0.050	6759950				0.074	0.050	6759950
Acid Extractable Uranium (U)	ug/g	0.49	0.050	6759950				0.52	0.050	6759950
Acid Extractable Vanadium (V)	ug/g	21	5.0	6759950				22	5.0	6759950
Acid Extractable Zinc (Zn)	ug/g	25	5.0	6759950				25	5.0	6759950
Acid Extractable Mercury (Hg)	ug/g	<0.050	0.050	6759950				<0.050	0.050	6759950
RDL = Reportable Detection Limit										
QC Batch = Quality Control Batch										
Lab-Dup = Laboratory Initiated Duplicate										



BV Labs Job #: COC8514
Report Date: 2020/06/01

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

O.REG 153 METALS & INORGANICS PKG (SOIL)

BV Labs ID		MSI643			MSI648			MSI649	MSI651		
Sampling Date		2020/05/25			2020/05/22			2020/05/25	2020/05/22		
COC Number		NA			NA			NA	NA		
	UNITS	BH10/2	RDL	QC Batch	BH11/3	RDL	QC Batch	BH12/2	BH15/3	RDL	QC Batch
Calculated Parameters											
Sodium Adsorption Ratio	N/A	0.71		6754614	0.72		6754614	0.32	0.43		6754614
Inorganics											
Conductivity	mS/cm	0.29	0.002	6760278	0.32	0.002	6760278	0.28	0.22	0.002	6760278
Moisture	%				9.7	1.0	6756975				
Available (CaCl ₂) pH	pH	7.77		6759973	8.04		6759973	7.73	7.75		6759973
WAD Cyanide (Free)	ug/g	<0.01	0.01	6757463	<0.01	0.01	6757463	<0.01	<0.01	0.01	6757463
Chromium (VI)	ug/g	<0.18	0.18	6759769	<0.18	0.18	6759769	<0.18	<0.18	0.18	6759769
Metals											
Hot Water Ext. Boron (B)	ug/g	0.13	0.050	6760012	0.19	0.050	6760012	0.12	0.14	0.050	6760012
Acid Extractable Antimony (Sb)	ug/g	<0.20	0.20	6759950	<0.20	0.20	6759950	<0.20	<0.20	0.20	6759950
Acid Extractable Arsenic (As)	ug/g	2.1	1.0	6759950	1.4	1.0	6759950	1.7	1.7	1.0	6759950
Acid Extractable Barium (Ba)	ug/g	86	0.50	6759950	57	0.50	6759950	77	59	0.50	6759950
Acid Extractable Beryllium (Be)	ug/g	0.54	0.20	6759950	0.31	0.20	6759950	0.48	0.36	0.20	6759950
Acid Extractable Boron (B)	ug/g	7.4	5.0	6759950	5.3	5.0	6759950	6.8	5.3	5.0	6759950
Acid Extractable Cadmium (Cd)	ug/g	<0.10	0.10	6759950	<0.10	0.10	6759950	<0.10	<0.10	0.10	6759950
Acid Extractable Chromium (Cr)	ug/g	19	1.0	6759950	13	1.0	6759950	18	15	1.0	6759950
Acid Extractable Cobalt (Co)	ug/g	7.8	0.10	6759950	4.6	0.10	6759950	6.8	5.5	0.10	6759950
Acid Extractable Copper (Cu)	ug/g	17	0.50	6759950	10	0.50	6759950	13	11	0.50	6759950
Acid Extractable Lead (Pb)	ug/g	11	1.0	6759950	4.8	1.0	6759950	6.7	6.6	1.0	6759950
Acid Extractable Molybdenum (Mo)	ug/g	<0.50	0.50	6759950	<0.50	0.50	6759950	<0.50	<0.50	0.50	6759950
Acid Extractable Nickel (Ni)	ug/g	18	0.50	6759950	9.9	0.50	6759950	15	13	0.50	6759950
Acid Extractable Selenium (Se)	ug/g	<0.50	0.50	6759950	<0.50	0.50	6759950	<0.50	<0.50	0.50	6759950
Acid Extractable Silver (Ag)	ug/g	<0.20	0.20	6759950	<0.20	0.20	6759950	<0.20	<0.20	0.20	6759950
Acid Extractable Thallium (Tl)	ug/g	0.15	0.050	6759950	0.081	0.050	6759950	0.13	0.11	0.050	6759950
Acid Extractable Uranium (U)	ug/g	0.77	0.050	6759950	0.55	0.050	6759950	0.50	0.50	0.050	6759950
Acid Extractable Vanadium (V)	ug/g	28	5.0	6759950	22	5.0	6759950	28	25	5.0	6759950
Acid Extractable Zinc (Zn)	ug/g	43	5.0	6759950	26	5.0	6759950	36	31	5.0	6759950
Acid Extractable Mercury (Hg)	ug/g	<0.050	0.050	6759950	<0.050	0.050	6759950	<0.050	<0.050	0.050	6759950
RDL = Reportable Detection Limit											
QC Batch = Quality Control Batch											



BV Labs Job #: C0C8514
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Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

O.REG 153 PAHS (SOIL)

BV Labs ID		MSI633			MSI636	MSI638			MSI639		
Sampling Date		2020/05/22			2020/05/22	2020/05/22			2020/05/25		
COC Number		NA			NA	NA			NA		
	UNITS	BH5/1	RDL	QC Batch	BH6/5	BH7/2	RDL	QC Batch	BH8/1	RDL	QC Batch
Inorganics											
Moisture	%	21	1.0	6757187					11	1.0	6757187
Calculated Parameters											
Methylnaphthalene, 2-(1-)	ug/g	<0.0071	0.0071	6754340	<0.0071	<0.0071	0.0071	6754340	<0.0071	0.0071	6754340
Polyaromatic Hydrocarbons											
Acenaphthene	ug/g	<0.0050	0.0050	6761503	<0.0050	<0.0050	0.0050	6761503	<0.0050	0.0050	6761503
Acenaphthylene	ug/g	<0.0050	0.0050	6761503	<0.0050	<0.0050	0.0050	6761503	<0.0050	0.0050	6761503
Anthracene	ug/g	<0.0050	0.0050	6761503	<0.0050	<0.0050	0.0050	6761503	<0.0050	0.0050	6761503
Benzo(a)anthracene	ug/g	0.0052	0.0050	6761503	<0.0050	<0.0050	0.0050	6761503	<0.0050	0.0050	6761503
Benzo(a)pyrene	ug/g	<0.0050	0.0050	6761503	<0.0050	<0.0050	0.0050	6761503	<0.0050	0.0050	6761503
Benzo(b/j)fluoranthene	ug/g	0.0084	0.0050	6761503	<0.0050	<0.0050	0.0050	6761503	<0.0050	0.0050	6761503
Benzo(g,h,i)perylene	ug/g	<0.0050	0.0050	6761503	<0.0050	<0.0050	0.0050	6761503	<0.0050	0.0050	6761503
Benzo(k)fluoranthene	ug/g	<0.0050	0.0050	6761503	<0.0050	<0.0050	0.0050	6761503	<0.0050	0.0050	6761503
Chrysene	ug/g	0.0090	0.0050	6761503	0.0073	<0.0050	0.0050	6761503	<0.0050	0.0050	6761503
Dibenzo(a,h)anthracene	ug/g	<0.0050	0.0050	6761503	<0.0050	<0.0050	0.0050	6761503	<0.0050	0.0050	6761503
Fluoranthene	ug/g	0.015	0.0050	6761503	<0.0050	<0.0050	0.0050	6761503	<0.0050	0.0050	6761503
Fluorene	ug/g	<0.0050	0.0050	6761503	<0.0050	<0.0050	0.0050	6761503	<0.0050	0.0050	6761503
Indeno(1,2,3-cd)pyrene	ug/g	<0.0050	0.0050	6761503	<0.0050	<0.0050	0.0050	6761503	<0.0050	0.0050	6761503
1-Methylnaphthalene	ug/g	<0.0050	0.0050	6761503	<0.0050	<0.0050	0.0050	6761503	<0.0050	0.0050	6761503
2-Methylnaphthalene	ug/g	<0.0050	0.0050	6761503	<0.0050	<0.0050	0.0050	6761503	<0.0050	0.0050	6761503
Naphthalene	ug/g	<0.0050	0.0050	6761503	<0.0050	<0.0050	0.0050	6761503	<0.0050	0.0050	6761503
Phenanthrene	ug/g	0.013	0.0050	6761503	<0.0050	<0.0050	0.0050	6761503	<0.0050	0.0050	6761503
Pyrene	ug/g	0.016	0.0050	6761503	<0.0050	<0.0050	0.0050	6761503	<0.0050	0.0050	6761503
Surrogate Recovery (%)											
D10-Anthracene	%	94		6761503	104	103		6761503	99		6761503
D14-Terphenyl (FS)	%	117		6761503	127	125		6761503	121		6761503
D8-Acenaphthylene	%	84		6761503	98	97		6761503	95		6761503
RDL = Reportable Detection Limit											
QC Batch = Quality Control Batch											



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Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

O.REG 153 PAHS (SOIL)

BV Labs ID		MSI644	MSI646	MSI650	MSI652		
Sampling Date		2020/05/25	2020/05/25	2020/05/22	2020/05/22		
COC Number		NA	NA	NA	NA		
	UNITS	BH10/4B	BH11/1	BH15/1	DUP-S3	RDL	QC Batch
Inorganics							
Moisture	%	9.1	7.8	9.7	7.7	1.0	6757187
Calculated Parameters							
Methylnaphthalene, 2-(1-)	ug/g	<0.0071	<0.0071	<0.0071	<0.0071	0.0071	6754340
Polyaromatic Hydrocarbons							
Acenaphthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	6761503
Acenaphthylene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	6761503
Anthracene	ug/g	<0.0050	<0.0050	<0.0050	0.0065	0.0050	6761503
Benzo(a)anthracene	ug/g	<0.0050	<0.0050	<0.0050	0.013	0.0050	6761503
Benzo(a)pyrene	ug/g	<0.0050	<0.0050	<0.0050	0.011	0.0050	6761503
Benzo(b/j)fluoranthene	ug/g	<0.0050	0.0050	<0.0050	0.017	0.0050	6761503
Benzo(g,h,i)perylene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	6761503
Benzo(k)fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	0.0051	0.0050	6761503
Chrysene	ug/g	<0.0050	<0.0050	<0.0050	0.015	0.0050	6761503
Dibenzo(a,h)anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	6761503
Fluoranthene	ug/g	<0.0050	0.0090	<0.0050	0.039	0.0050	6761503
Fluorene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	6761503
Indeno(1,2,3-cd)pyrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	6761503
1-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	6761503
2-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	6761503
Naphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	6761503
Phenanthrene	ug/g	<0.0050	0.0081	<0.0050	0.029	0.0050	6761503
Pyrene	ug/g	<0.0050	0.0088	<0.0050	0.032	0.0050	6761503
Surrogate Recovery (%)							
D10-Anthracene	%	109	101	102	88		6761503
D14-Terphenyl (FS)	%	109	103	101	115		6761503
D8-Acenaphthylene	%	96	93	96	91		6761503
RDL = Reportable Detection Limit							
QC Batch = Quality Control Batch							



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BV Labs Job #: COC8514
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Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

O.REG 153 PCBS (SOIL)

BV Labs ID		MSI631			MSI631	MSI646		
Sampling Date		2020/05/22			2020/05/22	2020/05/25		
COC Number		NA			NA	NA		
	UNITS	BH4/2	RDL	QC Batch	BH4/2 Lab-Dup	BH11/1	RDL	QC Batch
Inorganics								
Moisture	%	9.3	1.0	6757395				
PCBs								
Aroclor 1242	ug/g	<0.010	0.010	6760358	<0.010	<0.010	0.010	6760358
Aroclor 1248	ug/g	<0.010	0.010	6760358	<0.010	<0.010	0.010	6760358
Aroclor 1254	ug/g	<0.010	0.010	6760358	<0.010	<0.010	0.010	6760358
Aroclor 1260	ug/g	<0.010	0.010	6760358	<0.010	<0.010	0.010	6760358
Total PCB	ug/g	<0.010	0.010	6760358	<0.010	<0.010	0.010	6760358
Surrogate Recovery (%)								
Decachlorobiphenyl	%	88		6760358	77	85		6760358
RDL = Reportable Detection Limit								
QC Batch = Quality Control Batch								
Lab-Dup = Laboratory Initiated Duplicate								



BV Labs Job #: C0C8514
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Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

O.REG 153 PHCS, BTEX/F1-F4 (SOIL)

BV Labs ID		MSI632	MSI636	MSI642	MSI643	MSI645	MSI647		
Sampling Date		2020/05/22	2020/05/22	2020/05/22	2020/05/25	2020/05/25	2020/05/25		
COC Number		NA	NA	NA	NA	NA	NA		
	UNITS	BH4/3	BH6/5	BH9/4A	BH10/2	BH10/5	BH11/2	RDL	QC Batch
Inorganics									
Moisture	%	9.9	16	18	10	13	11	1.0	6757187
BTEX & F1 Hydrocarbons									
Benzene	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	6758665
Toluene	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	6758665
Ethylbenzene	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	6758665
o-Xylene	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	6758665
p+m-Xylene	ug/g	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	0.040	6758665
Total Xylenes	ug/g	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	0.040	6758665
F1 (C6-C10)	ug/g	<10	<10	<10	<10	<10	<10	10	6758665
F1 (C6-C10) - BTEX	ug/g	<10	<10	<10	<10	<10	<10	10	6758665
F2-F4 Hydrocarbons									
F2 (C10-C16 Hydrocarbons)	ug/g	<10	<10	<10	<10	<10	16	10	6758395
F3 (C16-C34 Hydrocarbons)	ug/g	<50	83	54	<50	<50	69	50	6758395
F4 (C34-C50 Hydrocarbons)	ug/g	<50	<50	<50	<50	<50	<50	50	6758395
Reached Baseline at C50	ug/g	Yes	Yes	Yes	Yes	Yes	Yes		6758395
Surrogate Recovery (%)									
1,4-Difluorobenzene	%	99	100	100	100	100	100		6758665
4-Bromofluorobenzene	%	103	104	104	104	103	103		6758665
D10-o-Xylene	%	92	98	102	103	98	94		6758665
D4-1,2-Dichloroethane	%	105	104	104	104	103	102		6758665
o-Terphenyl	%	98	96	96	95	98	94		6758395
RDL = Reportable Detection Limit									
QC Batch = Quality Control Batch									



BV Labs Job #: C0C8514
Report Date: 2020/06/01

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

O.REG 153 PHCS, BTEX/F1-F4 (SOIL)

BV Labs ID		MSI647		
Sampling Date		2020/05/25		
COC Number		NA		
	UNITS	BH11/2 Lab-Dup	RDL	QC Batch
BTEX & F1 Hydrocarbons				
Benzene	ug/g	<0.020	0.020	6758665
Toluene	ug/g	<0.020	0.020	6758665
Ethylbenzene	ug/g	<0.020	0.020	6758665
o-Xylene	ug/g	<0.020	0.020	6758665
p+m-Xylene	ug/g	<0.040	0.040	6758665
Total Xylenes	ug/g	<0.040	0.040	6758665
F1 (C6-C10)	ug/g	<10	10	6758665
F1 (C6-C10) - BTEX	ug/g	<10	10	6758665
Surrogate Recovery (%)				
1,4-Difluorobenzene	%	100		6758665
4-Bromofluorobenzene	%	103		6758665
D10-o-Xylene	%	95		6758665
D4-1,2-Dichloroethane	%	103		6758665
RDL = Reportable Detection Limit				
QC Batch = Quality Control Batch				
Lab-Dup = Laboratory Initiated Duplicate				



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BV Labs Job #: C0C8514
Report Date: 2020/06/01

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

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

BV Labs ID		MSI640		
Sampling Date		2020/05/25		
COC Number		NA		
	UNITS	BH8/4	RDL	QC Batch
Inorganics				
Moisture	%	7.7	1.0	6757187
Calculated Parameters				
1,3-Dichloropropene (cis+trans)	ug/g	<0.050	0.050	6754846
Volatile Organics				
Acetone (2-Propanone)	ug/g	<0.50	0.50	6757331
Benzene	ug/g	<0.020	0.020	6757331
Bromodichloromethane	ug/g	<0.050	0.050	6757331
Bromoform	ug/g	<0.050	0.050	6757331
Bromomethane	ug/g	<0.050	0.050	6757331
Carbon Tetrachloride	ug/g	<0.050	0.050	6757331
Chlorobenzene	ug/g	<0.050	0.050	6757331
Chloroform	ug/g	<0.050	0.050	6757331
Dibromochloromethane	ug/g	<0.050	0.050	6757331
1,2-Dichlorobenzene	ug/g	<0.050	0.050	6757331
1,3-Dichlorobenzene	ug/g	<0.050	0.050	6757331
1,4-Dichlorobenzene	ug/g	<0.050	0.050	6757331
Dichlorodifluoromethane (FREON 12)	ug/g	<0.050	0.050	6757331
1,1-Dichloroethane	ug/g	<0.050	0.050	6757331
1,2-Dichloroethane	ug/g	<0.050	0.050	6757331
1,1-Dichloroethylene	ug/g	<0.050	0.050	6757331
cis-1,2-Dichloroethylene	ug/g	<0.050	0.050	6757331
trans-1,2-Dichloroethylene	ug/g	<0.050	0.050	6757331
1,2-Dichloropropane	ug/g	<0.050	0.050	6757331
cis-1,3-Dichloropropene	ug/g	<0.030	0.030	6757331
trans-1,3-Dichloropropene	ug/g	<0.040	0.040	6757331
Ethylbenzene	ug/g	<0.020	0.020	6757331
Ethylene Dibromide	ug/g	<0.050	0.050	6757331
Hexane	ug/g	<0.050	0.050	6757331
Methylene Chloride(Dichloromethane)	ug/g	<0.050	0.050	6757331
Methyl Ethyl Ketone (2-Butanone)	ug/g	<0.50	0.50	6757331
Methyl Isobutyl Ketone	ug/g	<0.50	0.50	6757331
Methyl t-butyl ether (MTBE)	ug/g	<0.050	0.050	6757331
Styrene	ug/g	<0.050	0.050	6757331
1,1,1,2-Tetrachloroethane	ug/g	<0.050	0.050	6757331
1,1,2,2-Tetrachloroethane	ug/g	<0.050	0.050	6757331
Tetrachloroethylene	ug/g	<0.050	0.050	6757331
RDL = Reportable Detection Limit				
QC Batch = Quality Control Batch				



BV Labs Job #: C0C8514
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Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

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

BV Labs ID		MSI640		
Sampling Date		2020/05/25		
COC Number		NA		
	UNITS	BH8/4	RDL	QC Batch
Toluene	ug/g	<0.020	0.020	6757331
1,1,1-Trichloroethane	ug/g	<0.050	0.050	6757331
1,1,2-Trichloroethane	ug/g	<0.050	0.050	6757331
Trichloroethylene	ug/g	<0.050	0.050	6757331
Trichlorofluoromethane (FREON 11)	ug/g	<0.050	0.050	6757331
Vinyl Chloride	ug/g	<0.020	0.020	6757331
p+m-Xylene	ug/g	<0.020	0.020	6757331
o-Xylene	ug/g	<0.020	0.020	6757331
Total Xylenes	ug/g	<0.020	0.020	6757331
F1 (C6-C10)	ug/g	<10	10	6757331
F1 (C6-C10) - BTEX	ug/g	<10	10	6757331
F2-F4 Hydrocarbons				
F2 (C10-C16 Hydrocarbons)	ug/g	<10	10	6758395
F3 (C16-C34 Hydrocarbons)	ug/g	<50	50	6758395
F4 (C34-C50 Hydrocarbons)	ug/g	<50	50	6758395
Reached Baseline at C50	ug/g	Yes		6758395
Surrogate Recovery (%)				
o-Terphenyl	%	96		6758395
4-Bromofluorobenzene	%	92		6757331
D10-o-Xylene	%	102		6757331
D4-1,2-Dichloroethane	%	108		6757331
D8-Toluene	%	93		6757331
RDL = Reportable Detection Limit				
QC Batch = Quality Control Batch				



BV Labs Job #: C0C8514
Report Date: 2020/06/01

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

O.REG 153 VOCs BY HS (SOIL)

BV Labs ID		MSI634		MSI638		MSI649	MSI651		
Sampling Date		2020/05/22		2020/05/22		2020/05/25	2020/05/22		
COC Number		NA		NA		NA	NA		
	UNITS	BH5/2	QC Batch	BH7/2	QC Batch	BH12/2	BH15/3	RDL	QC Batch
Inorganics									
Moisture	%	17	6757359	10	6757187	16	11	1.0	6757359
Calculated Parameters									
1,3-Dichloropropene (cis+trans)	ug/g	<0.050	6754846	<0.050	6754846	<0.050	<0.050	0.050	6754846
Volatile Organics									
Acetone (2-Propanone)	ug/g	<0.49	6756897	<0.49	6756897	<0.49	<0.49	0.49	6756897
Benzene	ug/g	<0.0060	6756897	<0.0060	6756897	<0.0060	<0.0060	0.0060	6756897
Bromodichloromethane	ug/g	<0.040	6756897	<0.040	6756897	<0.040	<0.040	0.040	6756897
Bromoform	ug/g	<0.040	6756897	<0.040	6756897	<0.040	<0.040	0.040	6756897
Bromomethane	ug/g	<0.040	6756897	<0.040	6756897	<0.040	<0.040	0.040	6756897
Carbon Tetrachloride	ug/g	<0.040	6756897	<0.040	6756897	<0.040	<0.040	0.040	6756897
Chlorobenzene	ug/g	<0.040	6756897	<0.040	6756897	<0.040	<0.040	0.040	6756897
Chloroform	ug/g	<0.040	6756897	<0.040	6756897	<0.040	<0.040	0.040	6756897
Dibromochloromethane	ug/g	<0.040	6756897	<0.040	6756897	<0.040	<0.040	0.040	6756897
1,2-Dichlorobenzene	ug/g	<0.040	6756897	<0.040	6756897	<0.040	<0.040	0.040	6756897
1,3-Dichlorobenzene	ug/g	<0.040	6756897	<0.040	6756897	<0.040	<0.040	0.040	6756897
1,4-Dichlorobenzene	ug/g	<0.040	6756897	<0.040	6756897	<0.040	<0.040	0.040	6756897
Dichlorodifluoromethane (FREON 12)	ug/g	<0.040	6756897	<0.040	6756897	<0.040	<0.040	0.040	6756897
1,1-Dichloroethane	ug/g	<0.040	6756897	<0.040	6756897	<0.040	<0.040	0.040	6756897
1,2-Dichloroethane	ug/g	<0.040	6756897	<0.040	6756897	<0.040	<0.040	0.040	6756897
1,1-Dichloroethylene	ug/g	<0.040	6756897	<0.040	6756897	<0.040	<0.040	0.040	6756897
cis-1,2-Dichloroethylene	ug/g	<0.040	6756897	<0.040	6756897	<0.040	<0.040	0.040	6756897
trans-1,2-Dichloroethylene	ug/g	<0.040	6756897	<0.040	6756897	<0.040	<0.040	0.040	6756897
1,2-Dichloropropane	ug/g	<0.040	6756897	<0.040	6756897	<0.040	<0.040	0.040	6756897
cis-1,3-Dichloropropene	ug/g	<0.030	6756897	<0.030	6756897	<0.030	<0.030	0.030	6756897
trans-1,3-Dichloropropene	ug/g	<0.040	6756897	<0.040	6756897	<0.040	<0.040	0.040	6756897
Ethylbenzene	ug/g	<0.010	6756897	<0.010	6756897	<0.010	<0.010	0.010	6756897
Ethylene Dibromide	ug/g	<0.040	6756897	<0.040	6756897	<0.040	<0.040	0.040	6756897
Hexane	ug/g	<0.040	6756897	<0.040	6756897	<0.040	<0.040	0.040	6756897
Methylene Chloride(Dichloromethane)	ug/g	<0.049	6756897	<0.049	6756897	<0.049	<0.049	0.049	6756897
Methyl Ethyl Ketone (2-Butanone)	ug/g	<0.40	6756897	<0.40	6756897	<0.40	<0.40	0.40	6756897
Methyl Isobutyl Ketone	ug/g	<0.40	6756897	<0.40	6756897	<0.40	<0.40	0.40	6756897
Methyl t-butyl ether (MTBE)	ug/g	<0.040	6756897	<0.040	6756897	<0.040	<0.040	0.040	6756897
Styrene	ug/g	<0.040	6756897	<0.040	6756897	<0.040	<0.040	0.040	6756897
1,1,1,2-Tetrachloroethane	ug/g	<0.040	6756897	<0.040	6756897	<0.040	<0.040	0.040	6756897
1,1,1,2,2-Tetrachloroethane	ug/g	<0.040	6756897	<0.040	6756897	<0.040	<0.040	0.040	6756897
Tetrachloroethylene	ug/g	<0.040	6756897	<0.040	6756897	<0.040	<0.040	0.040	6756897
RDL = Reportable Detection Limit									
QC Batch = Quality Control Batch									



Bureau Veritas
LABORATORIES

BV Labs Job #: C0C8514
Report Date: 2020/06/01

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

O.REG 153 VOCs BY HS (SOIL)

BV Labs ID		MSI634		MSI638		MSI649	MSI651		
Sampling Date		2020/05/22		2020/05/22		2020/05/25	2020/05/22		
COC Number		NA		NA		NA	NA		
	UNITS	BH5/2	QC Batch	BH7/2	QC Batch	BH12/2	BH15/3	RDL	QC Batch
Toluene	ug/g	<0.020	6756897	<0.020	6756897	<0.020	<0.020	0.020	6756897
1,1,1-Trichloroethane	ug/g	<0.040	6756897	<0.040	6756897	<0.040	<0.040	0.040	6756897
1,1,2-Trichloroethane	ug/g	<0.040	6756897	<0.040	6756897	<0.040	<0.040	0.040	6756897
Trichloroethylene	ug/g	<0.010	6756897	<0.010	6756897	<0.010	<0.010	0.010	6756897
Trichlorofluoromethane (FREON 11)	ug/g	<0.040	6756897	<0.040	6756897	<0.040	<0.040	0.040	6756897
Vinyl Chloride	ug/g	<0.019	6756897	<0.019	6756897	<0.019	<0.019	0.019	6756897
p+m-Xylene	ug/g	<0.020	6756897	<0.020	6756897	<0.020	<0.020	0.020	6756897
o-Xylene	ug/g	<0.020	6756897	<0.020	6756897	<0.020	<0.020	0.020	6756897
Total Xylenes	ug/g	<0.020	6756897	<0.020	6756897	<0.020	<0.020	0.020	6756897
Surrogate Recovery (%)									
4-Bromofluorobenzene	%	97	6756897	98	6756897	98	98		6756897
D10-o-Xylene	%	106	6756897	100	6756897	103	98		6756897
D4-1,2-Dichloroethane	%	98	6756897	98	6756897	97	99		6756897
D8-Toluene	%	100	6756897	100	6756897	100	99		6756897
RDL = Reportable Detection Limit									
QC Batch = Quality Control Batch									



BV Labs Job #: C0C8514
Report Date: 2020/06/01

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

O.REG 153 VOCs BY HS (SOIL)

BV Labs ID		MSI654		
Sampling Date		2020/05/25		
COC Number		NA		
	UNITS	DUP-S5	RDL	QC Batch
Inorganics				
Moisture	%	12	1.0	6757576
Calculated Parameters				
1,3-Dichloropropene (cis+trans)	ug/g	<0.050	0.050	6754846
Volatile Organics				
Acetone (2-Propanone)	ug/g	<0.49	0.49	6756897
Benzene	ug/g	<0.0060	0.0060	6756897
Bromodichloromethane	ug/g	<0.040	0.040	6756897
Bromoform	ug/g	<0.040	0.040	6756897
Bromomethane	ug/g	<0.040	0.040	6756897
Carbon Tetrachloride	ug/g	<0.040	0.040	6756897
Chlorobenzene	ug/g	<0.040	0.040	6756897
Chloroform	ug/g	<0.040	0.040	6756897
Dibromochloromethane	ug/g	<0.040	0.040	6756897
1,2-Dichlorobenzene	ug/g	<0.040	0.040	6756897
1,3-Dichlorobenzene	ug/g	<0.040	0.040	6756897
1,4-Dichlorobenzene	ug/g	<0.040	0.040	6756897
Dichlorodifluoromethane (FREON 12)	ug/g	<0.040	0.040	6756897
1,1-Dichloroethane	ug/g	<0.040	0.040	6756897
1,2-Dichloroethane	ug/g	<0.040	0.040	6756897
1,1-Dichloroethylene	ug/g	<0.040	0.040	6756897
cis-1,2-Dichloroethylene	ug/g	<0.040	0.040	6756897
trans-1,2-Dichloroethylene	ug/g	<0.040	0.040	6756897
1,2-Dichloropropane	ug/g	<0.040	0.040	6756897
cis-1,3-Dichloropropene	ug/g	<0.030	0.030	6756897
trans-1,3-Dichloropropene	ug/g	<0.040	0.040	6756897
Ethylbenzene	ug/g	<0.010	0.010	6756897
Ethylene Dibromide	ug/g	<0.040	0.040	6756897
Hexane	ug/g	<0.040	0.040	6756897
Methylene Chloride(Dichloromethane)	ug/g	<0.049	0.049	6756897
Methyl Ethyl Ketone (2-Butanone)	ug/g	<0.40	0.40	6756897
Methyl Isobutyl Ketone	ug/g	<0.40	0.40	6756897
Methyl t-butyl ether (MTBE)	ug/g	<0.040	0.040	6756897
Styrene	ug/g	<0.040	0.040	6756897
1,1,1,2-Tetrachloroethane	ug/g	<0.040	0.040	6756897
1,1,2,2-Tetrachloroethane	ug/g	<0.040	0.040	6756897
Tetrachloroethylene	ug/g	<0.040	0.040	6756897
RDL = Reportable Detection Limit				
QC Batch = Quality Control Batch				



BV Labs
VERITAS

BV Labs Job #: C0C8514
Report Date: 2020/06/01

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

O.REG 153 VOCs BY HS (SOIL)

BV Labs ID		MSI654		
Sampling Date		2020/05/25		
COC Number		NA		
	UNITS	DUP-S5	RDL	QC Batch
Toluene	ug/g	<0.020	0.020	6756897
1,1,1-Trichloroethane	ug/g	<0.040	0.040	6756897
1,1,2-Trichloroethane	ug/g	<0.040	0.040	6756897
Trichloroethylene	ug/g	<0.010	0.010	6756897
Trichlorofluoromethane (FREON 11)	ug/g	<0.040	0.040	6756897
Vinyl Chloride	ug/g	<0.019	0.019	6756897
p+m-Xylene	ug/g	<0.020	0.020	6756897
o-Xylene	ug/g	<0.020	0.020	6756897
Total Xylenes	ug/g	<0.020	0.020	6756897
Surrogate Recovery (%)				
4-Bromofluorobenzene	%	98		6756897
D10-o-Xylene	%	102		6756897
D4-1,2-Dichloroethane	%	97		6756897
D8-Toluene	%	99		6756897
RDL = Reportable Detection Limit				
QC Batch = Quality Control Batch				



BV Labs Job #: C0C8514
Report Date: 2020/06/01

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

RESULTS OF ANALYSES OF SOIL

BV Labs ID		MSI636	MSI645		MSI655		
Sampling Date		2020/05/22	2020/05/25		2020/05/25		
COC Number		NA	NA		NA		
	UNITS	BH6/5	BH10/5	QC Batch	DUP-S6	RDL	QC Batch
Inorganics							
Moisture	%				11	1.0	6757576
Available (CaCl2) pH	pH	7.84	7.90	6759973			
RDL = Reportable Detection Limit							
QC Batch = Quality Control Batch							



BV Labs Job #: C0C8514
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Soil Engineers Ltd
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PETROLEUM HYDROCARBONS (CCME)

BV Labs ID		MSI655		
Sampling Date		2020/05/25		
COC Number		NA		
	UNITS	DUP-S6	RDL	QC Batch
BTEX & F1 Hydrocarbons				
Benzene	ug/g	<0.020	0.020	6758665
Toluene	ug/g	<0.020	0.020	6758665
Ethylbenzene	ug/g	<0.020	0.020	6758665
o-Xylene	ug/g	<0.020	0.020	6758665
p+m-Xylene	ug/g	<0.040	0.040	6758665
Total Xylenes	ug/g	<0.040	0.040	6758665
Surrogate Recovery (%)				
1,4-Difluorobenzene	%	101		6758665
4-Bromofluorobenzene	%	103		6758665
D10-o-Xylene	%	107		6758665
D4-1,2-Dichloroethane	%	102		6758665
RDL = Reportable Detection Limit				
QC Batch = Quality Control Batch				



BV Labs Job #: C0C8514
Report Date: 2020/06/01

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

TEST SUMMARY

BV Labs ID: MSI630
Sample ID: BH4/1
Matrix: Soil

Collected: 2020/05/22
Shipped:
Received: 2020/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hot Water Extractable Boron	ICP	6760038	2020/05/29	2020/05/30	Archana Patel
Free (WAD) Cyanide	TECH	6757463	2020/05/28	2020/05/29	Louise Harding
Conductivity	AT	6760278	2020/05/29	2020/05/29	Gnana Thomas
Hexavalent Chromium in Soil by IC	IC/SPEC	6759769	2020/05/29	2020/05/29	Rupinder Sihota
Strong Acid Leachable Metals by ICPMS	ICP/MS	6759950	2020/05/29	2020/05/30	Viviana Canzonieri
Moisture	BAL	6756975	N/A	2020/05/28	Prgya Panchal
pH CaCl ₂ EXTRACT	AT	6759973	2020/05/29	2020/05/29	Gnana Thomas
Sodium Adsorption Ratio (SAR)	CALC/MET	6754614	N/A	2020/06/01	Automated Statchk

BV Labs ID: MSI631
Sample ID: BH4/2
Matrix: Soil

Collected: 2020/05/22
Shipped:
Received: 2020/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	6757395	N/A	2020/05/28	Amitoj Singh Uppal
Polychlorinated Biphenyl in Soil	GC/ECD	6760358	2020/05/29	2020/05/29	Li Peng

BV Labs ID: MSI631 Dup
Sample ID: BH4/2
Matrix: Soil

Collected: 2020/05/22
Shipped:
Received: 2020/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Polychlorinated Biphenyl in Soil	GC/ECD	6760358	2020/05/29	2020/05/29	Li Peng

BV Labs ID: MSI632
Sample ID: BH4/3
Matrix: Soil

Collected: 2020/05/22
Shipped:
Received: 2020/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	6758665	N/A	2020/05/29	Ravinder Gaidhu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	6758395	2020/05/28	2020/05/29	(Kent) Maolin Li
Moisture	BAL	6757187	N/A	2020/05/28	Prgya Panchal

BV Labs ID: MSI633
Sample ID: BH5/1
Matrix: Soil

Collected: 2020/05/22
Shipped:
Received: 2020/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6754340	N/A	2020/05/31	Automated Statchk
Moisture	BAL	6757187	N/A	2020/05/28	Prgya Panchal
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	6761503	2020/05/29	2020/05/30	Jett Wu



BV Labs Job #: C0C8514
Report Date: 2020/06/01

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

TEST SUMMARY

BV Labs ID: MSI634
Sample ID: BH5/2
Matrix: Soil

Collected: 2020/05/22
Shipped:
Received: 2020/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hot Water Extractable Boron	ICP	6760012	2020/05/29	2020/05/29	Archana Patel
1,3-Dichloropropene Sum	CALC	6754846	N/A	2020/05/30	Automated Statchk
Free (WAD) Cyanide	TECH	6757463	2020/05/28	2020/05/29	Louise Harding
Conductivity	AT	6760278	2020/05/29	2020/05/29	Gnana Thomas
Hexavalent Chromium in Soil by IC	IC/SPEC	6759769	2020/05/29	2020/05/29	Rupinder Sihota
Strong Acid Leachable Metals by ICPMS	ICP/MS	6759950	2020/05/29	2020/05/30	Viviana Canzonieri
Moisture	BAL	6757359	N/A	2020/05/28	Prgya Panchal
pH CaCl2 EXTRACT	AT	6759973	2020/05/29	2020/05/29	Gnana Thomas
Sodium Adsorption Ratio (SAR)	CALC/MET	6754614	N/A	2020/06/01	Automated Statchk
Volatile Organic Compounds in Soil	GC/MS	6756897	N/A	2020/05/28	Rebecca McClean

BV Labs ID: MSI635
Sample ID: BH6/1
Matrix: Soil

Collected: 2020/05/22
Shipped:
Received: 2020/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hot Water Extractable Boron	ICP	6760038	2020/05/29	2020/05/30	Archana Patel
Free (WAD) Cyanide	TECH	6757463	2020/05/28	2020/05/29	Louise Harding
Conductivity	AT	6760278	2020/05/29	2020/05/29	Gnana Thomas
Hexavalent Chromium in Soil by IC	IC/SPEC	6759769	2020/05/29	2020/05/29	Rupinder Sihota
Strong Acid Leachable Metals by ICPMS	ICP/MS	6759950	2020/05/29	2020/05/30	Viviana Canzonieri
Moisture	BAL	6756975	N/A	2020/05/28	Prgya Panchal
pH CaCl2 EXTRACT	AT	6759973	2020/05/29	2020/05/29	Gnana Thomas
Sodium Adsorption Ratio (SAR)	CALC/MET	6754614	N/A	2020/06/01	Automated Statchk

BV Labs ID: MSI635 Dup
Sample ID: BH6/1
Matrix: Soil

Collected: 2020/05/22
Shipped:
Received: 2020/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Free (WAD) Cyanide	TECH	6757463	2020/05/28	2020/05/29	Louise Harding
Conductivity	AT	6760278	2020/05/29	2020/05/29	Gnana Thomas
Hexavalent Chromium in Soil by IC	IC/SPEC	6759769	2020/05/29	2020/05/29	Rupinder Sihota

BV Labs ID: MSI636
Sample ID: BH6/5
Matrix: Soil

Collected: 2020/05/22
Shipped:
Received: 2020/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6754340	N/A	2020/05/31	Automated Statchk
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	6758665	N/A	2020/05/29	Ravinder Gaidhu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	6758395	2020/05/28	2020/05/29	(Kent) Maolin Li
Strong Acid Leachable Metals by ICPMS	ICP/MS	6759950	2020/05/29	2020/05/30	Viviana Canzonieri
Moisture	BAL	6757187	N/A	2020/05/28	Prgya Panchal
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	6761503	2020/05/29	2020/05/30	Jett Wu



BV Labs Job #: C0C8514
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TEST SUMMARY

BV Labs ID: MSI636
Sample ID: BH6/5
Matrix: Soil

Collected: 2020/05/22
Shipped:
Received: 2020/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
pH CaCl2 EXTRACT	AT	6759973	2020/05/29	2020/05/29	Gnana Thomas

BV Labs ID: MSI637
Sample ID: BH7/1
Matrix: Soil

Collected: 2020/05/22
Shipped:
Received: 2020/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hot Water Extractable Boron	ICP	6760012	2020/05/29	2020/05/29	Archana Patel
Free (WAD) Cyanide	TECH	6757463	2020/05/28	2020/05/29	Louise Harding
Conductivity	AT	6760278	2020/05/29	2020/05/29	Gnana Thomas
Hexavalent Chromium in Soil by IC	IC/SPEC	6759769	2020/05/29	2020/05/29	Rupinder Sihota
Strong Acid Leachable Metals by ICPMS	ICP/MS	6759950	2020/05/29	2020/05/30	Viviana Canzonieri
Moisture	BAL	6756975	N/A	2020/05/28	Prgya Panchal
pH CaCl2 EXTRACT	AT	6759973	2020/05/29	2020/05/29	Gnana Thomas
Sodium Adsorption Ratio (SAR)	CALC/MET	6754614	N/A	2020/06/01	Automated Statchk

BV Labs ID: MSI637 Dup
Sample ID: BH7/1
Matrix: Soil

Collected: 2020/05/22
Shipped:
Received: 2020/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
pH CaCl2 EXTRACT	AT	6759973	2020/05/29	2020/05/29	Gnana Thomas

BV Labs ID: MSI638
Sample ID: BH7/2
Matrix: Soil

Collected: 2020/05/22
Shipped:
Received: 2020/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6754340	N/A	2020/05/31	Automated Statchk
1,3-Dichloropropene Sum	CALC	6754846	N/A	2020/05/30	Automated Statchk
Moisture	BAL	6757187	N/A	2020/05/28	Prgya Panchal
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	6761503	2020/05/29	2020/05/30	Jett Wu
Volatile Organic Compounds in Soil	GC/MS	6756897	N/A	2020/05/28	Rebecca McClean

BV Labs ID: MSI639
Sample ID: BH8/1
Matrix: Soil

Collected: 2020/05/25
Shipped:
Received: 2020/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6754340	N/A	2020/05/31	Automated Statchk
Moisture	BAL	6757187	N/A	2020/05/28	Prgya Panchal
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	6761503	2020/05/29	2020/05/30	Jett Wu



BV Labs Job #: C0C8514
Report Date: 2020/06/01

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

TEST SUMMARY

BV Labs ID: MSI640
Sample ID: BH8/4
Matrix: Soil

Collected: 2020/05/25
Shipped:
Received: 2020/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hot Water Extractable Boron	ICP	6760038	2020/05/29	2020/05/30	Archana Patel
1,3-Dichloropropene Sum	CALC	6754846	N/A	2020/05/31	Automated Statchk
Free (WAD) Cyanide	TECH	6757463	2020/05/28	2020/05/29	Louise Harding
Conductivity	AT	6760278	2020/05/29	2020/05/29	Gnana Thomas
Hexavalent Chromium in Soil by IC	IC/SPEC	6759769	2020/05/29	2020/05/29	Rupinder Sihota
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	6758395	2020/05/28	2020/05/29	(Kent) Maolin Li
Strong Acid Leachable Metals by ICPMS	ICP/MS	6759950	2020/05/29	2020/05/30	Viviana Canzonieri
Moisture	BAL	6757187	N/A	2020/05/28	Prgya Panchal
pH CaCl2 EXTRACT	AT	6759973	2020/05/29	2020/05/29	Gnana Thomas
Sodium Adsorption Ratio (SAR)	CALC/MET	6754614	N/A	2020/06/01	Automated Statchk
Volatile Organic Compounds and F1 PHCs	GC/MSFD	6757331	N/A	2020/05/29	Denis Reid

BV Labs ID: MSI640 Dup
Sample ID: BH8/4
Matrix: Soil

Collected: 2020/05/25
Shipped:
Received: 2020/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hot Water Extractable Boron	ICP	6760038	2020/05/29	2020/05/30	Archana Patel

BV Labs ID: MSI641
Sample ID: BH9/2
Matrix: Soil

Collected: 2020/05/22
Shipped:
Received: 2020/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hot Water Extractable Boron	ICP	6760038	2020/05/29	2020/05/30	Archana Patel
Free (WAD) Cyanide	TECH	6757463	2020/05/28	2020/05/29	Louise Harding
Conductivity	AT	6760278	2020/05/29	2020/05/29	Gnana Thomas
Hexavalent Chromium in Soil by IC	IC/SPEC	6759769	2020/05/29	2020/05/29	Rupinder Sihota
Strong Acid Leachable Metals by ICPMS	ICP/MS	6759950	2020/05/29	2020/05/30	Viviana Canzonieri
Moisture	BAL	6756975	N/A	2020/05/28	Prgya Panchal
pH CaCl2 EXTRACT	AT	6759973	2020/05/29	2020/05/29	Gnana Thomas
Sodium Adsorption Ratio (SAR)	CALC/MET	6754614	N/A	2020/06/01	Automated Statchk

BV Labs ID: MSI642
Sample ID: BH9/4A
Matrix: Soil

Collected: 2020/05/22
Shipped:
Received: 2020/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	6758665	N/A	2020/05/29	Ravinder Gaidhu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	6758395	2020/05/28	2020/05/29	(Kent) Maolin Li
Moisture	BAL	6757187	N/A	2020/05/28	Prgya Panchal



BV Labs Job #: C0C8514
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Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

TEST SUMMARY

BV Labs ID: MSI643
Sample ID: BH10/2
Matrix: Soil

Collected: 2020/05/25
Shipped:
Received: 2020/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hot Water Extractable Boron	ICP	6760012	2020/05/29	2020/05/29	Archana Patel
Free (WAD) Cyanide	TECH	6757463	2020/05/28	2020/05/29	Louise Harding
Conductivity	AT	6760278	2020/05/29	2020/05/29	Gnana Thomas
Hexavalent Chromium in Soil by IC	IC/SPEC	6759769	2020/05/29	2020/05/29	Rupinder Sihota
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	6758665	N/A	2020/05/29	Ravinder Gaidhu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	6758395	2020/05/28	2020/05/29	(Kent) Maolin Li
Strong Acid Leachable Metals by ICPMS	ICP/MS	6759950	2020/05/29	2020/05/30	Viviana Canzonieri
Moisture	BAL	6757187	N/A	2020/05/28	Prgya Panchal
pH CaCl2 EXTRACT	AT	6759973	2020/05/29	2020/05/29	Gnana Thomas
Sodium Adsorption Ratio (SAR)	CALC/MET	6754614	N/A	2020/06/01	Automated Statchk

BV Labs ID: MSI644
Sample ID: BH10/4B
Matrix: Soil

Collected: 2020/05/25
Shipped:
Received: 2020/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6754340	N/A	2020/05/31	Automated Statchk
Moisture	BAL	6757187	N/A	2020/05/28	Prgya Panchal
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	6761503	2020/05/29	2020/05/30	Jett Wu

BV Labs ID: MSI645
Sample ID: BH10/5
Matrix: Soil

Collected: 2020/05/25
Shipped:
Received: 2020/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	6758665	N/A	2020/05/29	Ravinder Gaidhu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	6758395	2020/05/28	2020/05/29	(Kent) Maolin Li
Strong Acid Leachable Metals by ICPMS	ICP/MS	6759950	2020/05/29	2020/05/30	Viviana Canzonieri
Moisture	BAL	6757187	N/A	2020/05/28	Prgya Panchal
pH CaCl2 EXTRACT	AT	6759973	2020/05/29	2020/05/29	Gnana Thomas

BV Labs ID: MSI646
Sample ID: BH11/1
Matrix: Soil

Collected: 2020/05/25
Shipped:
Received: 2020/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6754340	N/A	2020/05/31	Automated Statchk
Moisture	BAL	6757187	N/A	2020/05/28	Prgya Panchal
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	6761503	2020/05/29	2020/05/30	Jett Wu
Polychlorinated Biphenyl in Soil	GC/ECD	6760358	2020/05/29	2020/05/30	Li Peng



BV Labs Job #: C0C8514
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Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

TEST SUMMARY

BV Labs ID: MSI647
Sample ID: BH11/2
Matrix: Soil

Collected: 2020/05/25
Shipped:
Received: 2020/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	6758665	N/A	2020/05/29	Ravinder Gaidhu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	6758395	2020/05/28	2020/05/29	(Kent) Maolin Li
Moisture	BAL	6757187	N/A	2020/05/28	Prgya Panchal

BV Labs ID: MSI647 Dup
Sample ID: BH11/2
Matrix: Soil

Collected: 2020/05/25
Shipped:
Received: 2020/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	6758665	N/A	2020/05/29	Ravinder Gaidhu

BV Labs ID: MSI648
Sample ID: BH11/3
Matrix: Soil

Collected: 2020/05/22
Shipped:
Received: 2020/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hot Water Extractable Boron	ICP	6760012	2020/05/29	2020/05/29	Archana Patel
Free (WAD) Cyanide	TECH	6757463	2020/05/28	2020/05/29	Louise Harding
Conductivity	AT	6760278	2020/05/29	2020/05/29	Gnana Thomas
Hexavalent Chromium in Soil by IC	IC/SPEC	6759769	2020/05/29	2020/05/29	Rupinder Sihota
Strong Acid Leachable Metals by ICPMS	ICP/MS	6759950	2020/05/29	2020/05/30	Viviana Canzonieri
Moisture	BAL	6756975	N/A	2020/05/28	Prgya Panchal
pH CaCl2 EXTRACT	AT	6759973	2020/05/29	2020/05/29	Gnana Thomas
Sodium Adsorption Ratio (SAR)	CALC/MET	6754614	N/A	2020/06/01	Automated Statchk

BV Labs ID: MSI649
Sample ID: BH12/2
Matrix: Soil

Collected: 2020/05/25
Shipped:
Received: 2020/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hot Water Extractable Boron	ICP	6760012	2020/05/29	2020/05/29	Archana Patel
1,3-Dichloropropene Sum	CALC	6754846	N/A	2020/05/30	Automated Statchk
Free (WAD) Cyanide	TECH	6757463	2020/05/28	2020/05/29	Louise Harding
Conductivity	AT	6760278	2020/05/29	2020/05/29	Gnana Thomas
Hexavalent Chromium in Soil by IC	IC/SPEC	6759769	2020/05/29	2020/05/29	Rupinder Sihota
Strong Acid Leachable Metals by ICPMS	ICP/MS	6759950	2020/05/29	2020/05/30	Viviana Canzonieri
Moisture	BAL	6757359	N/A	2020/05/28	Prgya Panchal
pH CaCl2 EXTRACT	AT	6759973	2020/05/29	2020/05/29	Gnana Thomas
Sodium Adsorption Ratio (SAR)	CALC/MET	6754614	N/A	2020/06/01	Automated Statchk
Volatile Organic Compounds in Soil	GC/MS	6756897	N/A	2020/05/28	Rebecca McClean



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Sampler Initials: OG

TEST SUMMARY

BV Labs ID: MSI650
Sample ID: BH15/1
Matrix: Soil

Collected: 2020/05/22
Shipped:
Received: 2020/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6754340	N/A	2020/05/31	Automated Statchk
Moisture	BAL	6757187	N/A	2020/05/28	Prgya Panchal
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	6761503	2020/05/29	2020/05/30	Jett Wu

BV Labs ID: MSI651
Sample ID: BH15/3
Matrix: Soil

Collected: 2020/05/22
Shipped:
Received: 2020/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hot Water Extractable Boron	ICP	6760012	2020/05/29	2020/05/29	Archana Patel
1,3-Dichloropropene Sum	CALC	6754846	N/A	2020/05/30	Automated Statchk
Free (WAD) Cyanide	TECH	6757463	2020/05/28	2020/05/29	Louise Harding
Conductivity	AT	6760278	2020/05/29	2020/05/29	Gnana Thomas
Hexavalent Chromium in Soil by IC	IC/SPEC	6759769	2020/05/29	2020/05/29	Rupinder Sihota
Strong Acid Leachable Metals by ICPMS	ICP/MS	6759950	2020/05/29	2020/05/30	Viviana Canzonieri
Moisture	BAL	6757359	N/A	2020/05/28	Prgya Panchal
pH CaCl2 EXTRACT	AT	6759973	2020/05/29	2020/05/29	Gnana Thomas
Sodium Adsorption Ratio (SAR)	CALC/MET	6754614	N/A	2020/06/01	Automated Statchk
Volatile Organic Compounds in Soil	GC/MS	6756897	N/A	2020/05/28	Rebecca McClean

BV Labs ID: MSI652
Sample ID: DUP-S3
Matrix: Soil

Collected: 2020/05/22
Shipped:
Received: 2020/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6754340	N/A	2020/05/31	Automated Statchk
Moisture	BAL	6757187	N/A	2020/05/28	Prgya Panchal
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	6761503	2020/05/29	2020/05/30	Jett Wu

BV Labs ID: MSI653
Sample ID: DUP-S4
Matrix: Soil

Collected: 2020/05/25
Shipped:
Received: 2020/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6759950	2020/05/29	2020/05/30	Viviana Canzonieri

BV Labs ID: MSI654
Sample ID: DUP-S5
Matrix: Soil

Collected: 2020/05/25
Shipped:
Received: 2020/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	6754846	N/A	2020/05/30	Automated Statchk
Moisture	BAL	6757576	N/A	2020/05/28	Prgya Panchal
Volatile Organic Compounds in Soil	GC/MS	6756897	N/A	2020/05/28	Rebecca McClean



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Soil Engineers Ltd
Client Project #: 2005-E074
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TEST SUMMARY

BV Labs ID: MSI655
Sample ID: DUP-S6
Matrix: Soil

Collected: 2020/05/25
Shipped:
Received: 2020/05/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	6758665	N/A	2020/05/29	Ravinder Gaidhu
Moisture	BAL	6757576	N/A	2020/05/28	Prgya Panchal



BV Labs Job #: C0C8514
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Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

GENERAL COMMENTS

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

Package 1	-1.0°C
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Sample MSI632 [BH4/3] : F1/BTEX Analysis: Soil weight exceeds the protocol specification of approximately 5g in the field preserved vial. Additional methanol was added to the vial to ensure extraction efficiency.

Sample MSI634 [BH5/2] : 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 MSI647 [BH11/2] : F1/BTEX Analysis: Soil weight exceeds the protocol specification of approximately 5g in the field preserved vial. Additional methanol was added to the vial to ensure extraction efficiency.

Results relate only to the items tested.



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QUALITY ASSURANCE REPORT

Soil Engineers Ltd
Client Project #: 2005-E074
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QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6756897	4-Bromofluorobenzene	2020/05/28	99	60 - 140	100	60 - 140	98	%		
6756897	D10-o-Xylene	2020/05/28	103	60 - 130	103	60 - 130	101	%		
6756897	D4-1,2-Dichloroethane	2020/05/28	99	60 - 140	102	60 - 140	105	%		
6756897	D8-Toluene	2020/05/28	103	60 - 140	100	60 - 140	98	%		
6757331	4-Bromofluorobenzene	2020/05/29	94	60 - 140	95	60 - 140	87	%		
6757331	D10-o-Xylene	2020/05/29	92	60 - 130	100	60 - 130	85	%		
6757331	D4-1,2-Dichloroethane	2020/05/29	109	60 - 140	115	60 - 140	110	%		
6757331	D8-Toluene	2020/05/29	104	60 - 140	102	60 - 140	93	%		
6758395	o-Terphenyl	2020/05/29	90	60 - 130	92	60 - 130	94	%		
6758665	1,4-Difluorobenzene	2020/05/29	97	60 - 140	98	60 - 140	101	%		
6758665	4-Bromofluorobenzene	2020/05/29	103	60 - 140	105	60 - 140	103	%		
6758665	D10-o-Xylene	2020/05/29	104	60 - 140	95	60 - 140	97	%		
6758665	D4-1,2-Dichloroethane	2020/05/29	99	60 - 140	100	60 - 140	104	%		
6760358	Decachlorobiphenyl	2020/05/29	89	60 - 130	94	60 - 130	83	%		
6761503	D10-Anthracene	2020/05/30	99	50 - 130	94	50 - 130	99	%		
6761503	D14-Terphenyl (FS)	2020/05/30	100	50 - 130	106	50 - 130	99	%		
6761503	D8-Acenaphthylene	2020/05/30	93	50 - 130	86	50 - 130	86	%		
6756897	1,1,1,2-Tetrachloroethane	2020/05/28	120	60 - 140	118	60 - 130	<0.040	ug/g	NC	50
6756897	1,1,1-Trichloroethane	2020/05/28	102	60 - 140	101	60 - 130	<0.040	ug/g	NC	50
6756897	1,1,2,2-Tetrachloroethane	2020/05/28	102	60 - 140	106	60 - 130	<0.040	ug/g	NC	50
6756897	1,1,2-Trichloroethane	2020/05/28	105	60 - 140	107	60 - 130	<0.040	ug/g	NC	50
6756897	1,1-Dichloroethane	2020/05/28	100	60 - 140	100	60 - 130	<0.040	ug/g	NC	50
6756897	1,1-Dichloroethylene	2020/05/28	110	60 - 140	108	60 - 130	<0.040	ug/g	NC	50
6756897	1,2-Dichlorobenzene	2020/05/28	92	60 - 140	92	60 - 130	<0.040	ug/g	NC	50
6756897	1,2-Dichloroethane	2020/05/28	94	60 - 140	96	60 - 130	<0.040	ug/g	NC	50
6756897	1,2-Dichloropropane	2020/05/28	95	60 - 140	96	60 - 130	<0.040	ug/g	NC	50
6756897	1,3-Dichlorobenzene	2020/05/28	94	60 - 140	92	60 - 130	<0.040	ug/g	NC	50
6756897	1,4-Dichlorobenzene	2020/05/28	99	60 - 140	97	60 - 130	<0.040	ug/g	NC	50
6756897	Acetone (2-Propanone)	2020/05/28	96	60 - 140	96	60 - 140	<0.49	ug/g	NC	50
6756897	Benzene	2020/05/28	101	60 - 140	101	60 - 130	<0.0060	ug/g	NC	50
6756897	Bromodichloromethane	2020/05/28	107	60 - 140	109	60 - 130	<0.040	ug/g	NC	50

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QUALITY ASSURANCE REPORT(CONT'D)

Soil Engineers Ltd
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QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6756897	Bromoform	2020/05/28	129	60 - 140	132 (1)	60 - 130	<0.040	ug/g	NC	50
6756897	Bromomethane	2020/05/28	98	60 - 140	100	60 - 140	<0.040	ug/g	NC	50
6756897	Carbon Tetrachloride	2020/05/28	114	60 - 140	111	60 - 130	<0.040	ug/g	NC	50
6756897	Chlorobenzene	2020/05/28	95	60 - 140	95	60 - 130	<0.040	ug/g	NC	50
6756897	Chloroform	2020/05/28	95	60 - 140	95	60 - 130	<0.040	ug/g	NC	50
6756897	cis-1,2-Dichloroethylene	2020/05/28	94	60 - 140	94	60 - 130	<0.040	ug/g	NC	50
6756897	cis-1,3-Dichloropropene	2020/05/28	100	60 - 140	105	60 - 130	<0.030	ug/g	NC	50
6756897	Dibromochloromethane	2020/05/28	123	60 - 140	124	60 - 130	<0.040	ug/g	NC	50
6756897	Dichlorodifluoromethane (FREON 12)	2020/05/28	98	60 - 140	97	60 - 140	<0.040	ug/g	NC	50
6756897	Ethylbenzene	2020/05/28	97	60 - 140	94	60 - 130	<0.010	ug/g	NC	50
6756897	Ethylene Dibromide	2020/05/28	100	60 - 140	103	60 - 130	<0.040	ug/g	NC	50
6756897	Hexane	2020/05/28	110	60 - 140	107	60 - 130	<0.040	ug/g	NC	50
6756897	Methyl Ethyl Ketone (2-Butanone)	2020/05/28	97	60 - 140	102	60 - 140	<0.40	ug/g	NC	50
6756897	Methyl Isobutyl Ketone	2020/05/28	93	60 - 140	102	60 - 130	<0.40	ug/g	NC	50
6756897	Methyl t-butyl ether (MTBE)	2020/05/28	85	60 - 140	88	60 - 130	<0.040	ug/g	NC	50
6756897	Methylene Chloride(Dichloromethane)	2020/05/28	93	60 - 140	94	60 - 130	<0.049	ug/g	NC	50
6756897	o-Xylene	2020/05/28	98	60 - 140	96	60 - 130	<0.020	ug/g	NC	50
6756897	p+m-Xylene	2020/05/28	102	60 - 140	99	60 - 130	<0.020	ug/g	NC	50
6756897	Styrene	2020/05/28	97	60 - 140	97	60 - 130	<0.040	ug/g	NC	50
6756897	Tetrachloroethylene	2020/05/28	96	60 - 140	92	60 - 130	<0.040	ug/g	NC	50
6756897	Toluene	2020/05/28	95	60 - 140	93	60 - 130	<0.020	ug/g	1.1	50
6756897	Total Xylenes	2020/05/28					<0.020	ug/g	NC	50
6756897	trans-1,2-Dichloroethylene	2020/05/28	103	60 - 140	101	60 - 130	<0.040	ug/g	NC	50
6756897	trans-1,3-Dichloropropene	2020/05/28	99	60 - 140	129	60 - 130	<0.040	ug/g	NC	50
6756897	Trichloroethylene	2020/05/28	101	60 - 140	100	60 - 130	<0.010	ug/g	NC	50
6756897	Trichlorofluoromethane (FREON 11)	2020/05/28	106	60 - 140	103	60 - 130	<0.040	ug/g	NC	50
6756897	Vinyl Chloride	2020/05/28	102	60 - 140	101	60 - 130	<0.019	ug/g	NC	50
6756975	Moisture	2020/05/28							0	20
6757187	Moisture	2020/05/28							0.61	20
6757331	1,1,1,2-Tetrachloroethane	2020/05/29	104	60 - 140	104	60 - 130	<0.050	ug/g	NC	50
6757331	1,1,1-Trichloroethane	2020/05/29	103	60 - 140	102	60 - 130	<0.050	ug/g	NC	50

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Sampler Initials: OG

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6757331	1,1,2,2-Tetrachloroethane	2020/05/29	96	60 - 140	104	60 - 130	<0.050	ug/g	NC	50
6757331	1,1,2-Trichloroethane	2020/05/29	98	60 - 140	103	60 - 130	<0.050	ug/g	NC	50
6757331	1,1-Dichloroethane	2020/05/29	102	60 - 140	102	60 - 130	<0.050	ug/g	NC	50
6757331	1,1-Dichloroethylene	2020/05/29	111	60 - 140	107	60 - 130	<0.050	ug/g	NC	50
6757331	1,2-Dichlorobenzene	2020/05/29	87	60 - 140	87	60 - 130	<0.050	ug/g	NC	50
6757331	1,2-Dichloroethane	2020/05/29	105	60 - 140	110	60 - 130	<0.050	ug/g	NC	50
6757331	1,2-Dichloropropane	2020/05/29	95	60 - 140	98	60 - 130	<0.050	ug/g	NC	50
6757331	1,3-Dichlorobenzene	2020/05/29	92	60 - 140	89	60 - 130	<0.050	ug/g	NC	50
6757331	1,4-Dichlorobenzene	2020/05/29	96	60 - 140	93	60 - 130	<0.050	ug/g	NC	50
6757331	Acetone (2-Propanone)	2020/05/29	103	60 - 140	111	60 - 140	<0.50	ug/g	NC	50
6757331	Benzene	2020/05/29	100	60 - 140	100	60 - 130	<0.020	ug/g	NC	50
6757331	Bromodichloromethane	2020/05/29	97	60 - 140	100	60 - 130	<0.050	ug/g	NC	50
6757331	Bromoform	2020/05/29	94	60 - 140	100	60 - 130	<0.050	ug/g	NC	50
6757331	Bromomethane	2020/05/29	103	60 - 140	104	60 - 140	<0.050	ug/g	NC	50
6757331	Carbon Tetrachloride	2020/05/29	104	60 - 140	102	60 - 130	<0.050	ug/g	NC	50
6757331	Chlorobenzene	2020/05/29	92	60 - 140	91	60 - 130	<0.050	ug/g	NC	50
6757331	Chloroform	2020/05/29	98	60 - 140	99	60 - 130	<0.050	ug/g	NC	50
6757331	cis-1,2-Dichloroethylene	2020/05/29	94	60 - 140	95	60 - 130	<0.050	ug/g	NC	50
6757331	cis-1,3-Dichloropropene	2020/05/29	92	60 - 140	94	60 - 130	<0.030	ug/g	NC	50
6757331	Dibromochloromethane	2020/05/29	98	60 - 140	102	60 - 130	<0.050	ug/g	NC	50
6757331	Dichlorodifluoromethane (FREON 12)	2020/05/29	100	60 - 140	100	60 - 140	<0.050	ug/g	NC	50
6757331	Ethylbenzene	2020/05/29	86	60 - 140	82	60 - 130	<0.020	ug/g	NC	50
6757331	Ethylene Dibromide	2020/05/29	97	60 - 140	101	60 - 130	<0.050	ug/g	NC	50
6757331	F1 (C6-C10) - BTEX	2020/05/29					<10	ug/g	NC	30
6757331	F1 (C6-C10)	2020/05/29	89	60 - 140	90	80 - 120	<10	ug/g	NC	30
6757331	Hexane	2020/05/29	108	60 - 140	104	60 - 130	<0.050	ug/g	NC	50
6757331	Methyl Ethyl Ketone (2-Butanone)	2020/05/29	91	60 - 140	101	60 - 140	<0.50	ug/g	NC	50
6757331	Methyl Isobutyl Ketone	2020/05/29	98	60 - 140	111	60 - 130	<0.50	ug/g	NC	50
6757331	Methyl t-butyl ether (MTBE)	2020/05/29	85	60 - 140	85	60 - 130	<0.050	ug/g	NC	50
6757331	Methylene Chloride(Dichloromethane)	2020/05/29	110	60 - 140	113	60 - 130	<0.050	ug/g	NC	50
6757331	o-Xylene	2020/05/29	88	60 - 140	86	60 - 130	<0.020	ug/g	NC	50

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BV Labs Job #: C0C8514
Report Date: 2020/06/01

QUALITY ASSURANCE REPORT(CONT'D)

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6757331	p+m-Xylene	2020/05/29	91	60 - 140	88	60 - 130	<0.020	ug/g	NC	50
6757331	Styrene	2020/05/29	90	60 - 140	89	60 - 130	<0.050	ug/g	NC	50
6757331	Tetrachloroethylene	2020/05/29	93	60 - 140	88	60 - 130	<0.050	ug/g	NC	50
6757331	Toluene	2020/05/29	91	60 - 140	88	60 - 130	<0.020	ug/g	NC	50
6757331	Total Xylenes	2020/05/29					<0.020	ug/g	NC	50
6757331	trans-1,2-Dichloroethylene	2020/05/29	105	60 - 140	103	60 - 130	<0.050	ug/g	NC	50
6757331	trans-1,3-Dichloropropene	2020/05/29	96	60 - 140	97	60 - 130	<0.040	ug/g	NC	50
6757331	Trichloroethylene	2020/05/29	102	60 - 140	100	60 - 130	<0.050	ug/g	NC	50
6757331	Trichlorofluoromethane (FREON 11)	2020/05/29	113	60 - 140	110	60 - 130	<0.050	ug/g	NC	50
6757331	Vinyl Chloride	2020/05/29	104	60 - 140	103	60 - 130	<0.020	ug/g	NC	50
6757359	Moisture	2020/05/28							2.1	20
6757395	Moisture	2020/05/28							3.2	20
6757463	WAD Cyanide (Free)	2020/05/29	96	75 - 125	98	80 - 120	<0.01	ug/g	NC	35
6757576	Moisture	2020/05/28							1.2	20
6758395	F2 (C10-C16 Hydrocarbons)	2020/05/29	89	50 - 130	89	80 - 120	<10	ug/g	NC	30
6758395	F3 (C16-C34 Hydrocarbons)	2020/05/29	93	50 - 130	93	80 - 120	<50	ug/g	NC	30
6758395	F4 (C34-C50 Hydrocarbons)	2020/05/29	92	50 - 130	91	80 - 120	<50	ug/g	NC	30
6758665	Benzene	2020/05/29	111	60 - 140	105	60 - 140	<0.020	ug/g	NC	50
6758665	Ethylbenzene	2020/05/29	113	60 - 140	104	60 - 140	<0.020	ug/g	NC	50
6758665	F1 (C6-C10) - BTEX	2020/05/29					<10	ug/g	NC	30
6758665	F1 (C6-C10)	2020/05/29	91	60 - 140	94	80 - 120	<10	ug/g	NC	30
6758665	o-Xylene	2020/05/29	110	60 - 140	102	60 - 140	<0.020	ug/g	NC	50
6758665	p+m-Xylene	2020/05/29	109	60 - 140	102	60 - 140	<0.040	ug/g	NC	50
6758665	Toluene	2020/05/29	103	60 - 140	96	60 - 140	<0.020	ug/g	NC	50
6758665	Total Xylenes	2020/05/29					<0.040	ug/g	NC	50
6759769	Chromium (VI)	2020/05/29	73	70 - 130	88	80 - 120	<0.18	ug/g	NC	35
6759950	Acid Extractable Antimony (Sb)	2020/05/30	102	75 - 125	104	80 - 120	<0.20	ug/g	NC	30
6759950	Acid Extractable Arsenic (As)	2020/05/30	100	75 - 125	100	80 - 120	<1.0	ug/g	5.8	30
6759950	Acid Extractable Barium (Ba)	2020/05/30	94	75 - 125	95	80 - 120	<0.50	ug/g	7.5	30
6759950	Acid Extractable Beryllium (Be)	2020/05/30	103	75 - 125	100	80 - 120	<0.20	ug/g	7.6	30
6759950	Acid Extractable Boron (B)	2020/05/30	104	75 - 125	98	80 - 120	<5.0	ug/g	NC	30

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BV Labs Job #: C0C8514
Report Date: 2020/06/01

QUALITY ASSURANCE REPORT(CONT'D)

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6759950	Acid Extractable Cadmium (Cd)	2020/05/30	104	75 - 125	103	80 - 120	<0.10	ug/g	NC	30
6759950	Acid Extractable Chromium (Cr)	2020/05/30	98	75 - 125	97	80 - 120	<1.0	ug/g	3.9	30
6759950	Acid Extractable Cobalt (Co)	2020/05/30	97	75 - 125	98	80 - 120	<0.10	ug/g	3.4	30
6759950	Acid Extractable Copper (Cu)	2020/05/30	97	75 - 125	100	80 - 120	<0.50	ug/g	7.5	30
6759950	Acid Extractable Lead (Pb)	2020/05/30	99	75 - 125	99	80 - 120	<1.0	ug/g	4.8	30
6759950	Acid Extractable Mercury (Hg)	2020/05/30	89	75 - 125	87	80 - 120	<0.050	ug/g		
6759950	Acid Extractable Molybdenum (Mo)	2020/05/30	101	75 - 125	101	80 - 120	<0.50	ug/g	NC	30
6759950	Acid Extractable Nickel (Ni)	2020/05/30	96	75 - 125	99	80 - 120	<0.50	ug/g	12	30
6759950	Acid Extractable Selenium (Se)	2020/05/30	104	75 - 125	103	80 - 120	<0.50	ug/g	NC	30
6759950	Acid Extractable Silver (Ag)	2020/05/30	103	75 - 125	102	80 - 120	<0.20	ug/g	NC	30
6759950	Acid Extractable Thallium (Tl)	2020/05/30	99	75 - 125	100	80 - 120	<0.050	ug/g	NC	30
6759950	Acid Extractable Uranium (U)	2020/05/30	101	75 - 125	102	80 - 120	<0.050	ug/g	5.5	30
6759950	Acid Extractable Vanadium (V)	2020/05/30	97	75 - 125	100	80 - 120	<5.0	ug/g	6.5	30
6759950	Acid Extractable Zinc (Zn)	2020/05/30	99	75 - 125	108	80 - 120	<5.0	ug/g	4.2	30
6759973	Available (CaCl2) pH	2020/05/29			100	97 - 103			0.030	N/A
6760012	Hot Water Ext. Boron (B)	2020/05/29	107	75 - 125	107	75 - 125	<0.050	ug/g	8.9	40
6760038	Hot Water Ext. Boron (B)	2020/05/30	104	75 - 125	102	75 - 125	<0.050	ug/g	13	40
6760278	Conductivity	2020/05/29			101	90 - 110	<0.002	mS/cm	1.1	10
6760358	Aroclor 1242	2020/05/29					<0.010	ug/g	NC	50
6760358	Aroclor 1248	2020/05/29					<0.010	ug/g	NC	50
6760358	Aroclor 1254	2020/05/29					<0.010	ug/g	NC	50
6760358	Aroclor 1260	2020/05/29	101	30 - 130	106	30 - 130	<0.010	ug/g	NC	50
6760358	Total PCB	2020/05/29	101	30 - 130	106	30 - 130	<0.010	ug/g	NC	50
6761503	1-Methylnaphthalene	2020/05/30	98	50 - 130	95	50 - 130	<0.0050	ug/g	NC	40
6761503	2-Methylnaphthalene	2020/05/30	97	50 - 130	95	50 - 130	<0.0050	ug/g	NC	40
6761503	Acenaphthene	2020/05/30	99	50 - 130	96	50 - 130	<0.0050	ug/g	NC	40
6761503	Acenaphthylene	2020/05/30	87	50 - 130	80	50 - 130	<0.0050	ug/g	NC	40
6761503	Anthracene	2020/05/30	91	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40
6761503	Benzo(a)anthracene	2020/05/30	92	50 - 130	87	50 - 130	<0.0050	ug/g	NC	40
6761503	Benzo(a)pyrene	2020/05/30	87	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40
6761503	Benzo(b/j)fluoranthene	2020/05/30	108	50 - 130	114	50 - 130	<0.0050	ug/g	NC	40

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BV Labs Job #: C0C8514
Report Date: 2020/06/01

QUALITY ASSURANCE REPORT(CONT'D)

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6761503	Benzo(g,h,i)perylene	2020/05/30	97	50 - 130	98	50 - 130	<0.0050	ug/g	NC	40
6761503	Benzo(k)fluoranthene	2020/05/30	100	50 - 130	108	50 - 130	<0.0050	ug/g	NC	40
6761503	Chrysene	2020/05/30	100	50 - 130	99	50 - 130	<0.0050	ug/g	NC	40
6761503	Dibenzo(a,h)anthracene	2020/05/30	110	50 - 130	106	50 - 130	<0.0050	ug/g	NC	40
6761503	Fluoranthene	2020/05/30	97	50 - 130	100	50 - 130	<0.0050	ug/g	NC	40
6761503	Fluorene	2020/05/30	99	50 - 130	97	50 - 130	<0.0050	ug/g	NC	40
6761503	Indeno(1,2,3-cd)pyrene	2020/05/30	98	50 - 130	94	50 - 130	<0.0050	ug/g	NC	40
6761503	Naphthalene	2020/05/30	89	50 - 130	87	50 - 130	<0.0050	ug/g	NC	40
6761503	Phenanthrene	2020/05/30	97	50 - 130	96	50 - 130	<0.0050	ug/g	NC	40
6761503	Pyrene	2020/05/30	97	50 - 130	102	50 - 130	<0.0050	ug/g	NC	40

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 (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 $\leq 2 \times \text{RDL}$).

(1) The recovery was above the upper control limit. This may represent a high bias in some results for this specific analyte. For results that were not detected (ND), this potential bias has no impact.



BV Labs Job #: C0C8514
Report Date: 2020/06/01

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

VALIDATION SIGNATURE PAGE

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

Anastassia Hamanov, Scientific Specialist

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.



Your Project #: 2005-E074
Your C.O.C. #: n/a

Attention: Hamid Rezaei

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

Report Date: 2020/06/25
Report #: R6223783
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0F5600

Received: 2020/06/23, 16:00

Sample Matrix: Soil
Samples Received: 2

Analyses	Date		Laboratory Method	Analytical Method
	Quantity	Date		
Strong Acid Leachable Metals by ICPMS	2	2020/06/25	CAM SOP-00447	EPA 6020B m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

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

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs 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 BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

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

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

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

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

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



Your Project #: 2005-E074
Your C.O.C. #: n/a

Attention: Hamid Rezaei

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

Report Date: 2020/06/25
Report #: R6223783
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0F5600
Received: 2020/06/23, 16:00

Encryption Key

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

Antonella Brasil, Senior Project Manager

Email: Antonella.Brasil@bvlabs.com

Phone# (905)817-5817

=====

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

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



BV Labs Job #: C0F5600
Report Date: 2020/06/25

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: CM

O.REG 153 ICPMS METALS (SOIL)

BV Labs ID		MYE243	MYE244	MYE244		
Sampling Date		2020/06/23	2020/06/23	2020/06/23		
COC Number		n/a	n/a	n/a		
	UNITS	BH10A/5	BH10B/5	BH10B/5 Lab-Dup	RDL	QC Batch
Metals						
Acid Extractable Antimony (Sb)	ug/g	<0.20	<0.20	<0.20	0.20	6804728
Acid Extractable Arsenic (As)	ug/g	2.2	2.3	2.0	1.0	6804728
Acid Extractable Barium (Ba)	ug/g	55	67	63	0.50	6804728
Acid Extractable Beryllium (Be)	ug/g	0.41	0.49	0.50	0.20	6804728
Acid Extractable Boron (B)	ug/g	<5.0	<5.0	<5.0	5.0	6804728
Acid Extractable Cadmium (Cd)	ug/g	0.14	0.11	0.12	0.10	6804728
Acid Extractable Chromium (Cr)	ug/g	16	19	19	1.0	6804728
Acid Extractable Cobalt (Co)	ug/g	6.1	7.1	7.2	0.10	6804728
Acid Extractable Copper (Cu)	ug/g	10	12	12	0.50	6804728
Acid Extractable Lead (Pb)	ug/g	8.9	8.5	8.7	1.0	6804728
Acid Extractable Molybdenum (Mo)	ug/g	<0.50	<0.50	<0.50	0.50	6804728
Acid Extractable Nickel (Ni)	ug/g	11	15	14	0.50	6804728
Acid Extractable Selenium (Se)	ug/g	<0.50	<0.50	<0.50	0.50	6804728
Acid Extractable Silver (Ag)	ug/g	<0.20	<0.20	<0.20	0.20	6804728
Acid Extractable Thallium (Tl)	ug/g	0.10	0.14	0.12	0.050	6804728
Acid Extractable Uranium (U)	ug/g	0.42	0.52	0.52	0.050	6804728
Acid Extractable Vanadium (V)	ug/g	27	30	30	5.0	6804728
Acid Extractable Zinc (Zn)	ug/g	39	40	40	5.0	6804728
Acid Extractable Mercury (Hg)	ug/g	<0.050	<0.050	<0.050	0.050	6804728
RDL = Reportable Detection Limit						
QC Batch = Quality Control Batch						
Lab-Dup = Laboratory Initiated Duplicate						



BV Labs Job #: C0F5600
Report Date: 2020/06/25

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: CM

TEST SUMMARY

BV Labs ID: MYE243
Sample ID: BH10A/5
Matrix: Soil

Collected: 2020/06/23
Shipped:
Received: 2020/06/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6804728	2020/06/25	2020/06/25	Viviana Canzonieri

BV Labs ID: MYE244
Sample ID: BH10B/5
Matrix: Soil

Collected: 2020/06/23
Shipped:
Received: 2020/06/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6804728	2020/06/25	2020/06/25	Viviana Canzonieri

BV Labs ID: MYE244 Dup
Sample ID: BH10B/5
Matrix: Soil

Collected: 2020/06/23
Shipped:
Received: 2020/06/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6804728	2020/06/25	2020/06/25	Viviana Canzonieri



BV Labs Job #: C0F5600
Report Date: 2020/06/25

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: CM

GENERAL COMMENTS

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

Package 1	3.7°C
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Results relate only to the items tested.



BV Labs Job #: C0F5600
Report Date: 2020/06/25

QUALITY ASSURANCE REPORT

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: CM

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6804728	Acid Extractable Antimony (Sb)	2020/06/25	98	75 - 125	101	80 - 120	<0.20	ug/g	NC	30
6804728	Acid Extractable Arsenic (As)	2020/06/25	97	75 - 125	98	80 - 120	<1.0	ug/g	16	30
6804728	Acid Extractable Barium (Ba)	2020/06/25	NC	75 - 125	93	80 - 120	<0.50	ug/g	5.0	30
6804728	Acid Extractable Beryllium (Be)	2020/06/25	97	75 - 125	96	80 - 120	<0.20	ug/g	1.0	30
6804728	Acid Extractable Boron (B)	2020/06/25	98	75 - 125	93	80 - 120	<5.0	ug/g	NC	30
6804728	Acid Extractable Cadmium (Cd)	2020/06/25	101	75 - 125	100	80 - 120	<0.10	ug/g	8.3	30
6804728	Acid Extractable Chromium (Cr)	2020/06/25	98	75 - 125	102	80 - 120	<1.0	ug/g	3.0	30
6804728	Acid Extractable Cobalt (Co)	2020/06/25	99	75 - 125	100	80 - 120	<0.10	ug/g	0.47	30
6804728	Acid Extractable Copper (Cu)	2020/06/25	96	75 - 125	101	80 - 120	<0.50	ug/g	2.6	30
6804728	Acid Extractable Lead (Pb)	2020/06/25	100	75 - 125	100	80 - 120	<1.0	ug/g	1.7	30
6804728	Acid Extractable Mercury (Hg)	2020/06/25	95	75 - 125	94	80 - 120	<0.050	ug/g	NC	30
6804728	Acid Extractable Molybdenum (Mo)	2020/06/25	101	75 - 125	103	80 - 120	<0.50	ug/g	NC	30
6804728	Acid Extractable Nickel (Ni)	2020/06/25	100	75 - 125	99	80 - 120	<0.50	ug/g	1.7	30
6804728	Acid Extractable Selenium (Se)	2020/06/25	100	75 - 125	101	80 - 120	<0.50	ug/g	NC	30
6804728	Acid Extractable Silver (Ag)	2020/06/25	98	75 - 125	101	80 - 120	<0.20	ug/g	NC	30
6804728	Acid Extractable Thallium (Tl)	2020/06/25	97	75 - 125	99	80 - 120	<0.050	ug/g	15	30
6804728	Acid Extractable Uranium (U)	2020/06/25	98	75 - 125	97	80 - 120	<0.050	ug/g	0.53	30
6804728	Acid Extractable Vanadium (V)	2020/06/25	NC	75 - 125	99	80 - 120	<5.0	ug/g	2.0	30
6804728	Acid Extractable Zinc (Zn)	2020/06/25	NC	75 - 125	99	80 - 120	<5.0	ug/g	1.3	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.

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).



BUREAU
VERITAS

BV Labs Job #: C0F5600

Report Date: 2020/06/25

Soil Engineers Ltd

Client Project #: 2005-E074

Sampler Initials: CM

VALIDATION SIGNATURE PAGE

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

Anastassia Hamanov, Scientific Specialist

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Your Project #: 2005-E074
Your C.O.C. #: n/a

Attention: Hamid Rezaei

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

Report Date: 2020/06/25

Report #: R6223270

Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0F5607

Received: 2020/06/23, 16:00

Sample Matrix: Soil
Samples Received: 2

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
Petroleum Hydro. CCME F1 & BTEX in Soil (1)	2	N/A	2020/06/24	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Soil (2)	2	2020/06/23	2020/06/24	CAM SOP-00316	CCME CWS m
Moisture	2	N/A	2020/06/24	CAM SOP-00445	Carter 2nd ed 51.2 m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

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

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs 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 BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

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

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

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

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

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

(1) No lab extraction date is given for F1BTEX & VOC samples that are field preserved with methanol. Extraction date is the date sampled unless otherwise stated.

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



Your Project #: 2005-E074
Your C.O.C. #: n/a

Attention: Hamid Rezaei

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

Report Date: 2020/06/25
Report #: R6223270
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0F5607

Received: 2020/06/23, 16:00

Encryption Key

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

Antonella Brasil, Senior Project Manager

Email: Antonella.Brasil@bvlabs.com

Phone# (905)817-5817

=====

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



BV Labs Job #: C0F5607
Report Date: 2020/06/25

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: CM

O.REG 153 PHCS, BTEX/F1-F4 (SOIL)

BV Labs ID		MYE270			MYE270			MYE271		
Sampling Date		2020/06/23			2020/06/23			2020/06/23		
COC Number		n/a			n/a			n/a		
	UNITS	BH11A/2	RDL	QC Batch	BH11A/2 Lab-Dup	RDL	QC Batch	BH11B/2	RDL	QC Batch
Inorganics										
Moisture	%	16	1.0	6802618	16	1.0	6802618	15	1.0	6802618
BTEX & F1 Hydrocarbons										
Benzene	ug/g	<0.020	0.020	6802196	<0.020	0.020	6802196	<0.020	0.020	6802196
Toluene	ug/g	<0.020	0.020	6802196	<0.020	0.020	6802196	<0.020	0.020	6802196
Ethylbenzene	ug/g	<0.020	0.020	6802196	<0.020	0.020	6802196	<0.020	0.020	6802196
o-Xylene	ug/g	<0.020	0.020	6802196	<0.020	0.020	6802196	<0.020	0.020	6802196
p+m-Xylene	ug/g	<0.040	0.040	6802196	<0.040	0.040	6802196	<0.040	0.040	6802196
Total Xylenes	ug/g	<0.040	0.040	6802196	<0.040	0.040	6802196	<0.040	0.040	6802196
F1 (C6-C10)	ug/g	<10	10	6802196	<10	10	6802196	<10	10	6802196
F1 (C6-C10) - BTEX	ug/g	<10	10	6802196	<10	10	6802196	<10	10	6802196
F2-F4 Hydrocarbons										
F2 (C10-C16 Hydrocarbons)	ug/g	<10	10	6802089				<10	10	6802089
F3 (C16-C34 Hydrocarbons)	ug/g	<50	50	6802089				<50	50	6802089
F4 (C34-C50 Hydrocarbons)	ug/g	<50	50	6802089				<50	50	6802089
Reached Baseline at C50	ug/g	Yes		6802089				Yes		6802089
Surrogate Recovery (%)										
1,4-Difluorobenzene	%	98		6802196	98		6802196	97		6802196
4-Bromofluorobenzene	%	101		6802196	100		6802196	100		6802196
D10-o-Xylene	%	111		6802196	109		6802196	109		6802196
D4-1,2-Dichloroethane	%	94		6802196	96		6802196	94		6802196
o-Terphenyl	%	91		6802089				90		6802089
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate										



BV Labs Job #: C0F5607
Report Date: 2020/06/25

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: CM

TEST SUMMARY

BV Labs ID: MYE270
Sample ID: BH11A/2
Matrix: Soil

Collected: 2020/06/23
Shipped:
Received: 2020/06/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	6802196	N/A	2020/06/24	Haibin Wu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	6802089	2020/06/23	2020/06/24	Prabhjot Gulati
Moisture	BAL	6802618	N/A	2020/06/24	Kruti Jitesh Patel

BV Labs ID: MYE270 Dup
Sample ID: BH11A/2
Matrix: Soil

Collected: 2020/06/23
Shipped:
Received: 2020/06/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	6802196	N/A	2020/06/24	Haibin Wu
Moisture	BAL	6802618	N/A	2020/06/24	Kruti Jitesh Patel

BV Labs ID: MYE271
Sample ID: BH11B/2
Matrix: Soil

Collected: 2020/06/23
Shipped:
Received: 2020/06/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	6802196	N/A	2020/06/24	Haibin Wu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	6802089	2020/06/23	2020/06/24	Prabhjot Gulati
Moisture	BAL	6802618	N/A	2020/06/24	Kruti Jitesh Patel



BV Labs Job #: C0F5607
Report Date: 2020/06/25

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: CM

GENERAL COMMENTS

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

Package 1	3.7°C
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Results relate only to the items tested.



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VERITAS**

BV Labs Job #: C0F5607
Report Date: 2020/06/25

QUALITY ASSURANCE REPORT

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: CM

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6802089	o-Terphenyl	2020/06/24	91	60 - 130	92	60 - 130	89	%		
6802196	1,4-Difluorobenzene	2020/06/24	96	60 - 140	96	60 - 140	99	%		
6802196	4-Bromofluorobenzene	2020/06/24	101	60 - 140	101	60 - 140	100	%		
6802196	D10-o-Xylene	2020/06/24	112	60 - 140	101	60 - 140	107	%		
6802196	D4-1,2-Dichloroethane	2020/06/24	90	60 - 140	91	60 - 140	91	%		
6802089	F2 (C10-C16 Hydrocarbons)	2020/06/24	103	50 - 130	102	80 - 120	<10	ug/g	NC	30
6802089	F3 (C16-C34 Hydrocarbons)	2020/06/24	107	50 - 130	108	80 - 120	<50	ug/g	6.7	30
6802089	F4 (C34-C50 Hydrocarbons)	2020/06/24	105	50 - 130	106	80 - 120	<50	ug/g	11	30
6802196	Benzene	2020/06/24	108	60 - 140	98	60 - 140	<0.020	ug/g	NC	50
6802196	Ethylbenzene	2020/06/24	119	60 - 140	105	60 - 140	<0.020	ug/g	NC	50
6802196	F1 (C6-C10) - BTEX	2020/06/24					<10	ug/g	NC	30
6802196	F1 (C6-C10)	2020/06/24	96	60 - 140	92	80 - 120	<10	ug/g	NC	30
6802196	o-Xylene	2020/06/24	117	60 - 140	105	60 - 140	<0.020	ug/g	NC	50
6802196	p+m-Xylene	2020/06/24	114	60 - 140	102	60 - 140	<0.040	ug/g	NC	50
6802196	Toluene	2020/06/24	106	60 - 140	96	60 - 140	<0.020	ug/g	NC	50
6802196	Total Xylenes	2020/06/24					<0.040	ug/g	NC	50
6802618	Moisture	2020/06/24							0	20

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 $\leq 2 \times \text{RDL}$).



BV Labs Job #: C0F5607
Report Date: 2020/06/25

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: CM

VALIDATION SIGNATURE PAGE

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

Anastassia Hamanov, Scientific Specialist

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

CLIENT NAME: SOIL ENGINEERS LIMITED
90 WEST BEAVER CREEK ROAD, UNIT 100
RICHMOND HILL, ON L4B 1E7
(416) 754-8515

ATTENTION TO: Ahmed Hassan

PROJECT: 1902-E052

AGAT WORK ORDER: 19T438015

SOIL ANALYSIS REVIEWED BY: Amanjot Bhela, Inorganic Supervisor

TRACE ORGANICS REVIEWED BY: Oksana Gushyla, Trace Organics Lab Supervisor

DATE REPORTED: Feb 20, 2019

PAGES (INCLUDING COVER): 9

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

***NOTES**

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

AGAT Laboratories (V1)

Member of: Association of Professional Engineers and Geoscientists of Alberta (APEGA)
Western Enviro-Agricultural Laboratory Association (WEALA)
Environmental Services Association of Alberta (ESAA)

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Results relate only to the items tested. Results apply to samples as received.
All reportable information as specified by ISO 17025:2017 is available from AGAT Laboratories upon request



Laboratories

Certificate of Analysis

AGAT WORK ORDER: 19T438015

PROJECT: 1902-E052

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: SOIL ENGINEERS LIMITED
SAMPLING SITE: Witch-Curch Stouffville

ATTENTION TO: Ahmed Hassan
SAMPLED BY: Tremaine

O. Reg. 153(511) - Metals & Inorganics (Soil)

DATE RECEIVED: 2019-02-15

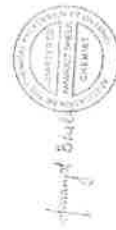
DATE REPORTED: 2019-02-20

Parameter	SAMPLE DESCRIPTION:		SAMPLE TYPE:		TP1		TP2		TP3		TP4		TP5		TP6	
	DATE SAMPLED:		DATE SAMPLED:		2019-02-14		2019-02-14		2019-02-14		2019-02-14		2019-02-14		2019-02-14	
	G/S	RDL	G/S	RDL	Soil	9904796	Soil	9904797	Soil	9904800	Soil	9904801	Soil	9904802	Soil	9904804
Antimony	1.3	0.8			<0.8		<0.8		<0.8		<0.8		<0.8		<0.8	
Arsenic	18	1			3		3		4		4		3		5	
Barium	220	2			83		156		90		85		100		108	
Beryllium	2.5	0.5			0.7		0.9		0.6		0.7		0.8		0.8	
Boron	36	5			8		7		8		7		7		8	
Boron (Hot Water Soluble)	NA	0.10			0.29		0.27		0.28		0.24		0.28		0.45	
Cadmium	1.2	0.5			<0.5		<0.5		<0.5		<0.5		<0.5		<0.5	
Chromium	70	2			21		27		21		21		22		25	
Cobalt	21	0.5			7.1		8.1		6.9		8.4		7.9		9.6	
Copper	92	1			13		16		12		13		13		19	
Lead	120	1			13		15		12		14		13		15	
Molybdenum	2	0.5			<0.5		0.5		<0.5		1.2		<0.5		<0.5	
Nickel	82	1			14		17		13		17		15		19	
Selenium	1.5	0.4			<0.4		<0.4		<0.4		<0.4		<0.4		<0.4	
Silver	0.5	0.2			<0.2		<0.2		<0.2		<0.2		<0.2		<0.2	
Thallium	1	0.4			<0.4		<0.4		<0.4		<0.4		<0.4		<0.4	
Uranium	2.5	0.5			0.8		0.7		0.7		0.8		0.8		1.0	
Vanadium	86	1			32		40		31		34		35		38	
Zinc	290	5			69		71		56		55		59		74	
Chromium VI	0.66	0.2			<0.2		<0.2		<0.2		<0.2		<0.2		<0.2	
Cyanide	0.051	0.040			<0.040		<0.040		<0.040		<0.040		<0.040		<0.040	
Mercury	0.27	0.10			<0.10		0.11		<0.10		<0.10		<0.10		<0.10	
Electrical Conductivity	0.57	0.005			0.286		0.299		0.223		0.213		0.233		0.149	
Sodium Adsorption Ratio	NA	NA			0.193		0.320		0.140		0.088		0.099		0.108	
pH, 2:1 CaCl2 Extraction					7.12		7.09		7.18		7.29		7.25		6.28	

Comments: RDL - Reported Detection Limit; G/S - Guideline / Standard; Refers to Table 1: Full Depth Background Site Condition Standards - Soil - Residential/Parkland/Institutional/Commercial/Community Property Use

Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.
9904796-9904804 EC & SAR were determined on the DI water extract obtained from the 2:1 leaching procedure (2 parts DI water:1 part soil). pH was determined on the 0.01M CaCl2 extract prepared at 2:1 ratio.
Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

Certificate of Analysis

AGAT WORK ORDER: 19T438015

PROJECT: 1902-E052

AGAT

Laboratories

CLIENT NAME: SOIL ENGINEERS LIMITED

SAMPLING SITE:Whitch-Curch Stouffville

ATTENTION TO: Ahmed Hassan

SAMPLED BY:Tremaine

O. Reg. 153(511) - OC Pesticides (Soil)

DATE RECEIVED: 2019-02-15

DATE REPORTED: 2019-02-20

Parameter	Unit	SAMPLE DESCRIPTION:		TP2 Soil	TP4 Soil	TP5 Soil	TP6 Soil
		SAMPLE TYPE:					
		DATE SAMPLED:	RDL				
		G / S					
Hexachloroethane	µg/g	0.01	0.01	<0.01	<0.01	<0.01	<0.01
Gamma-Hexachlorocyclohexane	µg/g	0.01	0.005	<0.005	<0.005	<0.005	<0.005
Heptachlor	µg/g	0.05	0.005	<0.005	<0.005	<0.005	<0.005
Aldrin	µg/g	0.05	0.005	<0.005	<0.005	<0.005	<0.005
Heptachlor Epoxide	µg/g	0.05	0.005	<0.005	<0.005	<0.005	<0.005
Endosulfan	µg/g	0.04	0.005	<0.005	<0.005	<0.005	<0.005
Chlordane	µg/g	0.05	0.007	<0.007	<0.007	<0.007	<0.007
DDE	µg/g	0.05	0.007	<0.007	<0.007	0.011	0.017
DDD	µg/g	0.05	0.007	<0.007	<0.007	<0.007	0.023
DDT	µg/g	1.4	0.007	<0.007	<0.007	<0.007	<0.007
Dieldrin	µg/g	0.05	0.005	<0.005	<0.005	<0.005	<0.005
Endrin	µg/g	0.04	0.005	<0.005	<0.005	<0.005	<0.005
Methoxychlor	µg/g	0.05	0.005	<0.005	<0.005	<0.005	<0.005
Hexachlorobenzene	µg/g	0.01	0.005	<0.005	<0.005	<0.005	<0.005
Hexachlorobutadiene	µg/g	0.01	0.01	<0.01	<0.01	<0.01	<0.01
Moisture Content	%		0.1	37.5	21.1	22.2	20.2
Surrogate	Unit	Acceptable Limits					
	%	50-140					
TCMX	%	65					
Decachlorobiphenyl	%	66					
		60-130					
		71					
		76					

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard; Refers to Table 1: Full Depth Background Site Condition Standards - Soil - Residential/Parkland/Industrial/Community Property Use

Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

9904797-9904804 Results are based on the dry weight of the soil.

DDT total is a calculated parameter. The calculated value is the sum of op/DDT and pp/DDT.

DDD total is a calculated parameter. The calculated value is the sum of op/DDD and pp/DDD.

DDE total is a calculated parameter. The calculated value is the sum of op/DDE and pp/DDE.

Endosulfan total is a calculated parameter. The calculated value is the sum of Endosulfan I and Endosulfan II.

Chlordane total is a calculated parameter. The calculated value is the sum of Alpha-Chlordane and Gamma-Chlordane.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:

5835 COOPERS AVENUE
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TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

Certificate of Analysis

AGAT WORK ORDER: 19T438015

PROJECT: 1902-E052

ATTENTION TO: Ahmed Hassan
SAMPLED BY: Tremaine

AGAT

Laboratories

CLIENT NAME: SOIL ENGINEERS LIMITED

SAMPLING SITE:Whitch-Curch Stouffville

O. Reg. 153(511) - PHCs F1 - F4 (Soil)						DATE REPORTED: 2019-02-20
DATE RECEIVED: 2019-02-15						
Parameter	Unit	SAMPLE DESCRIPTION:		TP4	TP5	
		G / S	RDL			
Benzene	µg/g	0.02	0.02	<0.02	<0.02	
Toluene	µg/g	0.2	0.05	<0.05	<0.05	
Ethylbenzene	µg/g	0.05	0.05	<0.05	<0.05	
Xylene Mixture	µg/g	0.05	0.05	<0.05	<0.05	
F1 (C6 to C10)	µg/g	25	5	<5	<5	
F1 (C6 to C10) minus BTEX	µg/g	25	5	<5	<5	
F2 (C10 to C16)	µg/g	10	10	<10	<10	
F3 (C16 to C34)	µg/g	240	50	<50	<50	
F4 (C34 to C50)	µg/g	120	50	<50	<50	
Gravimetric Heavy Hydrocarbons	µg/g	120	50	NA	NA	
Moisture Content	%		0.1	21.1	22.2	
Surrogate	Unit	Acceptable Limits				
Terphenyl	%	60-140		113	108	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard; Refers to Table 1: Full Depth Background Site Condition Standards - Soil - Residential/Parkland/Industrial/Commercial/Community Property Use
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

9904801-9904802 Results are based on sample dry weight.
The C6-C10 fraction is calculated using Toluene response factor.
Xylenes is a calculated parameter. The calculated value is the sum of m&p-Xylene and o-Xylene.
C6-C10 (F1 minus BTEX) is a calculated parameter. The calculated value is F1 minus BTEX.
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and n-C34.
Gravimetric Heavy Hydrocarbons are not included in the Total C16-C50 and are only determined if the chromatogram of the C34 - C50 hydrocarbons indicates that hydrocarbons >C50 are present.
The chromatogram has returned to baseline by the retention time of nC50.
Total C6 - C50 results are corrected for BTEX contribution.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
nC10, nC16 and nC34 response factors are within 10% of their average.
C50 response factor is within 70% of nC10 + nC16 + nC34 average.
Linearity is within 15%.
Extraction and holding times were met for this sample.
Fractions 1-4 are quantified with the contribution of PAHs. Under Ontario Regulation 153, results are considered valid without determining the PAH contribution if not requested by the client.
Quality Control Data is available upon request.
Analysis performed at AGAT Toronto (unless marked by *)

Certified By: 

Quality Assurance

CLIENT NAME: SOIL ENGINEERS LIMITED

PROJECT: 1902-E052

SAMPLING SITE:Whitch-Curch Stouffville

AGAT WORK ORDER: 19T438015

ATTENTION TO: Ahmed Hassan

SAMPLED BY:Tremaine

Soil Analysis

RPT Date: Feb 20, 2019

RPT Date: Feb 20, 2019			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - Metals & Inorganics (Soil)															
Antimony	9909415		<0.8	<0.8	NA	< 0.8	125%	70%	130%	99%	80%	120%	85%	70%	130%
Arsenic	9909415		1	1	NA	< 1	127%	70%	130%	101%	80%	120%	112%	70%	130%
Barium	9909415		39	40	2.5%	< 2	100%	70%	130%	100%	80%	120%	93%	70%	130%
Beryllium	9909415		<0.5	<0.5	NA	< 0.5	107%	70%	130%	102%	80%	120%	105%	70%	130%
Boron	9909415		<5	<5	NA	< 5	95%	70%	130%	106%	80%	120%	105%	70%	130%
Boron (Hot Water Soluble)	9904796	9904796	0.29	0.30	NA	< 0.10	93%	60%	140%	95%	70%	130%	96%	60%	140%
Cadmium	9909415		<0.5	<0.5	NA	< 0.5	109%	70%	130%	105%	80%	120%	97%	70%	130%
Chromium	9909415		10	10	0.0%	< 2	101%	70%	130%	100%	80%	120%	103%	70%	130%
Cobalt	9909415		3.1	3.1	0.0%	< 0.5	108%	70%	130%	101%	80%	120%	104%	70%	130%
Copper	9909415		6	6	0.0%	< 1	99%	70%	130%	103%	80%	120%	100%	70%	130%
Lead	9909415		3	3	NA	< 1	104%	70%	130%	106%	80%	120%	101%	70%	130%
Molybdenum	9909415		<0.5	<0.5	NA	< 0.5	113%	70%	130%	104%	80%	120%	106%	70%	130%
Nickel	9909415		6	6	0.0%	< 1	108%	70%	130%	101%	80%	120%	100%	70%	130%
Selenium	9909415		<0.4	<0.4	NA	< 0.4	101%	70%	130%	102%	80%	120%	108%	70%	130%
Silver	9909415		<0.2	<0.2	NA	< 0.2	102%	70%	130%	108%	80%	120%	91%	70%	130%
Thallium	9909415		<0.4	<0.4	NA	< 0.4	99%	70%	130%	97%	80%	120%	96%	70%	130%
Uranium	9909415		<0.5	<0.5	NA	< 0.5	118%	70%	130%	103%	80%	120%	109%	70%	130%
Vanadium	9909415		16	16	0.0%	< 1	112%	70%	130%	98%	80%	120%	106%	70%	130%
Zinc	9909415		19	19	NA	< 5	111%	70%	130%	103%	80%	120%	102%	70%	130%
Chromium VI	9904797	9904797	<0.2	<0.2	NA	< 0.2	108%	70%	130%	99%	80%	120%	98%	70%	130%
Cyanide	9905210		<0.040	<0.040	NA	< 0.040	106%	70%	130%	98%	80%	120%	108%	70%	130%
Mercury	9909415		<0.10	<0.10	NA	< 0.10	107%	70%	130%	104%	80%	120%	104%	70%	130%
Electrical Conductivity	9904796	9904796	0.286	0.277	3.2%	< 0.005	104%	90%	110%	NA			NA		
Sodium Adsorption Ratio	9904796	9904796	0.193	0.181	6.4%	NA	NA			NA			NA		
pH, 2:1 CaCl2 Extraction	9904796	9904796	7.12	7.08	0.6%	NA	101%	80%	120%	NA			NA		

Comments: NA signifies Not Applicable.

Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL

Certified By:



AGAT QUALITY ASSURANCE REPORT (V1)

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Results relate only to the items tested. Results apply to samples as received.

Quality Assurance

CLIENT NAME: SOIL ENGINEERS LIMITED

PROJECT: 1902-E052

SAMPLING SITE:Whitch-Curch Stouffville

AGAT WORK ORDER: 19T438015

ATTENTION TO: Ahmed Hassan

SAMPLED BY:Tremaine

Trace Organics Analysis

RPT Date: Feb 20, 2019

RPT Date: Feb 20, 2019			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

O. Reg. 153(511) - OC Pesticides (Soil)

Hexachloroethane	9901240		< 0.01	< 0.01	NA	< 0.01	82%	50%	140%	83%	50%	140%	89%	50%	140%
Gamma-Hexachlorocyclohexane	9901240		< 0.005	< 0.005	NA	< 0.005	82%	50%	140%	85%	50%	140%	97%	50%	140%
Heptachlor	9901240		< 0.005	< 0.005	NA	< 0.005	95%	50%	140%	93%	50%	140%	104%	50%	140%
Aldrin	9901240		< 0.005	< 0.005	NA	< 0.005	95%	50%	140%	83%	50%	140%	107%	50%	140%
Heptachlor Epoxide	9901240		< 0.005	< 0.005	NA	< 0.005	91%	50%	140%	85%	50%	140%	100%	50%	140%
Endosulfan	9901240		< 0.005	< 0.005	NA	< 0.005	90%	50%	140%	84%	50%	140%	101%	50%	140%
Chlordane	9901240		< 0.007	< 0.007	NA	< 0.007	90%	50%	140%	86%	50%	140%	104%	50%	140%
DDE	9901240		< 0.007	< 0.007	NA	< 0.007	89%	50%	140%	83%	50%	140%	107%	50%	140%
DDD	9901240		< 0.007	< 0.007	NA	< 0.007	102%	50%	140%	83%	50%	140%	114%	50%	140%
DDT	9901240		< 0.007	< 0.007	NA	< 0.007	93%	50%	140%	88%	50%	140%	106%	50%	140%
Dieldrin	9901240		< 0.005	< 0.005	NA	< 0.005	90%	50%	140%	88%	50%	140%	102%	50%	140%
Endrin	9901240		< 0.005	< 0.005	NA	< 0.005	103%	50%	140%	87%	50%	140%	112%	50%	140%
Methoxychlor	9901240		< 0.005	< 0.005	NA	< 0.005	97%	50%	140%	77%	50%	140%	103%	50%	140%
Hexachlorobenzene	9901240		< 0.005	< 0.005	NA	< 0.005	94%	50%	140%	85%	50%	140%	102%	50%	140%
Hexachlorobutadiene	9901240		< 0.01	< 0.01	NA	< 0.01	87%	50%	140%	82%	50%	140%	89%	50%	140%

O. Reg. 153(511) - PHCs F1 - F4 (Soil)

Benzene	9893814		< 0.02	< 0.02	NA	< 0.02	109%	60%	130%	107%	60%	130%	109%	60%	130%
Toluene	9893814		< 0.05	< 0.05	NA	< 0.05	109%	60%	130%	92%	60%	130%	106%	60%	130%
Ethylbenzene	9893814		< 0.05	< 0.05	NA	< 0.05	107%	60%	130%	77%	60%	130%	102%	60%	130%
Xylene Mixture	9893814		< 0.05	< 0.05	NA	< 0.05	105%	60%	130%	84%	60%	130%	104%	60%	130%
F1 (C6 to C10)	9893814		< 5	< 5	NA	< 5	103%	60%	130%	87%	85%	115%	79%	70%	130%
F2 (C10 to C16)	9899622		< 10	< 10	NA	< 10	98%	60%	130%	103%	80%	120%	95%	70%	130%
F3 (C16 to C34)	9899622		< 50	< 50	NA	< 50	100%	60%	130%	110%	80%	120%	102%	70%	130%
F4 (C34 to C50)	9899622		< 50	< 50	NA	< 50	88%	60%	130%	93%	80%	120%	102%	70%	130%

Comments: When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

Certified By: 

AGAT QUALITY ASSURANCE REPORT (V1)

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Results relate only to the items tested. Results apply to samples as received.

Method Summary

CLIENT NAME: SOIL ENGINEERS LIMITED

PROJECT: 1902-E052

SAMPLING SITE:Whitch-Curch Stouffville

AGAT WORK ORDER: 19T438015

ATTENTION TO: Ahmed Hassan

SAMPLED BY:Tremaine

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Antimony	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Barium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron (Hot Water Soluble)	MET-93-6104	EPA SW 846 6010C; MSA, Part 3, Ch.21	ICP/OES
Cadmium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Copper	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Lead	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Nickel	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Selenium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Silver	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Thallium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Uranium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Zinc	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium VI	INOR-93-6029	SM 3500 B; MSA Part 3, Ch. 25	SPECTROPHOTOMETER
Cyanide	INOR-93-6052	MOE CN-3015 & E 3009 A;SM 4500 CN	TECHNICON AUTO ANALYZER
Mercury	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Electrical Conductivity	INOR-93-6036	McKeague 4.12, SM 2510 B	EC METER
Sodium Adsorption Ratio	INOR-93-6007	McKeague 4.12 & 3.26 & EPA SW-846 6010C	ICP/OES
pH, 2:1 CaCl ₂ Extraction	INOR-93-6031	MSA part 3 & SM 4500-H+ B	PH METER

Method Summary

CLIENT NAME: SOIL ENGINEERS LIMITED

AGAT WORK ORDER: 19T438015

PROJECT: 1902-E052

ATTENTION TO: Ahmed Hassan

SAMPLING SITE:Whitch-Curch Stouffville

SAMPLED BY:Tremaine

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Hexachloroethane	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
Gamma-Hexachlorocyclohexane	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
Heptachlor	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
Aldrin	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
Heptachlor Epoxide	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
Endosulfan	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
Chlordane	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
DDE	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
DDD	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
DDT	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
Dieldrin	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
Endrin	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
Methoxychlor	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
Hexachlorobenzene	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
Hexachlorobutadiene	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
TCMX	ORG-91-5112	EPA SW-846 3541,3620 & 8081	GC/ECD
Decachlorobiphenyl	ORG-91-5113	EPA SW-846 3541,3620 & 8081	GC/ECD
Moisture Content		MOE E3139	BALANCE
Benzene	VOL-91-5009	EPA SW-846 5035 & 8260D	P & T GC/MS
Toluene	VOL-91-5009	EPA SW-846 5035 & 8260D	P & T GC/MS
Ethylbenzene	VOL-91-5009	EPA SW-846 5035 & 8260D	P & T GC/MS
Xylene Mixture	VOL-91-5009	EPA SW-846 5035 & 8260D	P & T GC/MS
F1 (C6 to C10)	VOL-91-5009	CCME Tier 1 Method	P & T GC/FID
F1 (C6 to C10) minus BTEX	VOL-91-5009	CCME Tier 1 Method	P & T GC/FID
F2 (C10 to C16)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F3 (C16 to C34)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F4 (C34 to C50)	VOL-91-5009	CCME Tier 1 Method	GC / FID
Gravimetric Heavy Hydrocarbons	VOL-91-5009	CCME Tier 1 Method	BALANCE
Moisture Content	VOL-91-5009	CCME Tier 1 Method	BALANCE
Terphenyl	VOL-91-5009		GC/FID

Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water consumed by humans)

Report Information: **SEL**

Company: **AHMED HASSAN**

Contact: **90 West Beaver Creek Rd**

Address: **RICHMOND HILL ON**

Phone: _____ Fax: _____

Reports to be sent to:

1. Email: **a.hassan@efua.khobar.co**

2. Email: **Steve.chao@tremont-blanchette.com**

Project Information:
Project: 1902-E052
Site Location: Whitey-Church Stationville
Sampled By: TREMAINE
AGAT Quote #: PO: _____
Please note: if evaluation number is not provided, client will be billed full price for analysis.

Invoice Information:

Company: _____

Contact: _____

Address: _____

Final: _____

Bill To Same: Yes ☒ No ☐

Regulatory Requirements: ☐ No Regulatory Requirement ☐ Regulation 558

(Please check all applicable boxes)

☒ Regulation 153/04 ☐ Sewer Use ☐ CCME

Table *Indicate One*

☐ Inter Conn ☐ Sanitary

☐ Other Path ☐ Storm

☐ Agriculture

Region *Indicate One*

☒ Coastal ☐ MISA

Soil Texture *Check One*

☒ Coarse ☐ Fine

Report Guide line on Certificate of Analysis

Is this submission for a ☐ Yes ☐ No

Record of Site Condition?

☐ Yes ☐ No

Sample Matrix Legend

B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

[illegible]

Sampled By (Print Name and Signature) 	Date 14/02/19	Time 12:30	Sampled By (Print Name and Signature) 	Date 20/9/02/15
Submitted By (Print Name and Signature) 	Date 20/9/02/15	Time 2:15	Submitted By (Print Name and Signature) 	Date
Samples Received By (Print Name and Signature) 	Date 	Time 	Samples Received By (Print Name and Signature) 	Date

Laboratory Use Only	Work Order #:	19T438015	Cooler Quantity:	39	4-1	4-1	☐ N/A
			Arrival Temperatures:	4.3	4.5	4.5	☐ No
			Custody Seal Intact:	☐ Yes			
			Notes:				

Turnaround Time (TAT) Required:

Regular TAT ☐ Business Days ☐ Next Business Day

Rush TAT ☒ Business Days ☐ Next Business Day

OR Date Required (Rush Surcharges May Apply):

*Please provide prior notification for rush TAT
TAT is exclusive of weekends and statutory holidays

For 'Same Day' analysis, please contact your AGAT CPM

Volatiles:	☐ VOC	☒ ABTEX	☐ THM
PHCS F1 - F4		X	X
ABNS			
PAHs			
PCBs: ☐ Total ☐ Aroclors		X	X
Organochlorine Pesticides		X	X
TOLP: ☐ M&I ☐ VOCs ☐ ABNS ☐ B(a)P ☐ PCBs			
Sewer Use			



Soil Engineers Ltd.

CONSULTING ENGINEERS

GEOTECHNICAL • ENVIRONMENTAL • HYDROGEOLOGICAL • BUILDING SCIENCE

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FAX: (705) 721-7864

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TEL: (905) 542-7605
FAX: (905) 542-2769

OSHAWA
TEL: (905) 440-2040
FAX: (905) 725-1315

NEWMARKET
TEL: (905) 853-0647
FAX: (905) 881-8335

GRAVENHURST
TEL: (705) 684-4242
FAX: (705) 684-8522

HAMILTON
TEL: (905) 777-7956
FAX: (905) 542-2769

APPENDIX 'D'

CERTIFICATE OF ANALYSIS (GROUNDWATER SAMPLE)

REFERENCE NO. 2005-E074



Your Project #: 2005-E074
Your C.O.C. #: na

Attention: Hamid Rezaei

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

Report Date: 2020/06/04
Report #: R6197482
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0D0398

Received: 2020/05/28, 16:05

Sample Matrix: Water
Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Methylnaphthalene Sum	2	N/A	2020/06/02	CAM SOP-00301	EPA 8270D m
1,3-Dichloropropene Sum	2	N/A	2020/06/01		EPA 8260C m
Chromium (VI) in Water	2	N/A	2020/06/02	CAM SOP-00436	EPA 7199 m
Free (WAD) Cyanide	2	N/A	2020/06/03	CAM SOP-00457	OMOE E3015 m
Petroleum Hydro. CCME F1 & BTEX in Water	2	N/A	2020/06/01	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Water (1)	2	2020/06/01	2020/06/02	CAM SOP-00316	CCME PHC-CWS m
Mercury	2	2020/06/01	2020/06/01	CAM SOP-00453	EPA 7470A m
Dissolved Metals by ICPMS	2	N/A	2020/05/30	CAM SOP-00447	EPA 6020B m
PAH Compounds in Water by GC/MS (SIM)	2	2020/06/01	2020/06/02	CAM SOP-00318	EPA 8270D m
pH	2	2020/05/30	2020/06/01	CAM SOP-00413	SM 4500H+ B m
Volatile Organic Compounds and F1 PHCs	2	N/A	2020/06/01	CAM SOP-00230	EPA 8260C m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

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

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs 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 BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

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

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

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

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



Your Project #: 2005-E074
Your C.O.C. #: na

Attention: Hamid Rezaei

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

Report Date: 2020/06/04
Report #: R6197482
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0D0398

Received: 2020/05/28, 16:05

* 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 Bureau Veritas Laboratories conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following "Alberta Environment's Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Validation of Performance-Based Alternative Methods September 2003". Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

Encryption Key

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

Antonella Brasil, Senior Project Manager

Email: Antonella.Brasil@bvlabs.com

Phone# (905)817-5817

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BV Labs Job #: C0D0398
Report Date: 2020/06/04

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

RESULTS OF ANALYSES OF WATER

BV Labs ID		MST345	MST346	
Sampling Date		2020/05/27	2020/05/27	
COC Number		na	na	
	UNITS	MW6	MW10	QC Batch
Inorganics				
pH	pH	7.74	8.23	6762062
QC Batch = Quality Control Batch				



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BV Labs Job #: C0D0398
Report Date: 2020/06/04

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

PETROLEUM HYDROCARBONS (CCME)

BV Labs ID		MST347	MST348		
Sampling Date		2020/05/27	2020/05/27		
COC Number		na	na		
	UNITS	DUP-W1	TRIP BLANK	RDL	QC Batch
BTEX & F1 Hydrocarbons					
Benzene	ug/L	<0.20	<0.20	0.20	6763972
Toluene	ug/L	0.39	<0.20	0.20	6763972
Ethylbenzene	ug/L	<0.20	<0.20	0.20	6763972
o-Xylene	ug/L	<0.20	<0.20	0.20	6763972
p+m-Xylene	ug/L	<0.40	<0.40	0.40	6763972
Total Xylenes	ug/L	<0.40	<0.40	0.40	6763972
F1 (C6-C10)	ug/L	<25	<25	25	6763972
F1 (C6-C10) - BTEX	ug/L	<25	<25	25	6763972
Surrogate Recovery (%)					
1,4-Difluorobenzene	%	106	102		6763972
4-Bromofluorobenzene	%	99	100		6763972
D10-o-Xylene	%	97	97		6763972
D4-1,2-Dichloroethane	%	100	102		6763972
RDL = Reportable Detection Limit					
QC Batch = Quality Control Batch					



BV Labs Job #: C0D0398
Report Date: 2020/06/04

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

O.REG 153 METALS & INORGANICS PKG (WTR)

BV Labs ID		MST345	MST346		
Sampling Date		2020/05/27	2020/05/27		
COC Number		na	na		
	UNITS	MW6	MW10	RDL	QC Batch
Inorganics					
WAD Cyanide (Free)	ug/L	45	1	1	6767471
Metals					
Chromium (VI)	ug/L	<0.50	<0.50	0.50	6760344
Mercury (Hg)	ug/L	<0.10	<0.10	0.10	6763316
Dissolved Antimony (Sb)	ug/L	<0.50	<0.50	0.50	6760998
Dissolved Arsenic (As)	ug/L	<1.0	<1.0	1.0	6760998
Dissolved Barium (Ba)	ug/L	62	80	2.0	6760998
Dissolved Beryllium (Be)	ug/L	<0.50	<0.50	0.50	6760998
Dissolved Boron (B)	ug/L	99	36	10	6760998
Dissolved Cadmium (Cd)	ug/L	<0.10	<0.10	0.10	6760998
Dissolved Chromium (Cr)	ug/L	<5.0	<5.0	5.0	6760998
Dissolved Cobalt (Co)	ug/L	1.5	<0.50	0.50	6760998
Dissolved Copper (Cu)	ug/L	<1.0	<1.0	1.0	6760998
Dissolved Lead (Pb)	ug/L	<0.50	<0.50	0.50	6760998
Dissolved Molybdenum (Mo)	ug/L	11	9.9	0.50	6760998
Dissolved Nickel (Ni)	ug/L	4.9	<1.0	1.0	6760998
Dissolved Selenium (Se)	ug/L	<2.0	<2.0	2.0	6760998
Dissolved Silver (Ag)	ug/L	<0.10	<0.10	0.10	6760998
Dissolved Sodium (Na)	ug/L	140000	8300	100	6760998
Dissolved Thallium (Tl)	ug/L	<0.050	<0.050	0.050	6760998
Dissolved Uranium (U)	ug/L	3.4	0.42	0.10	6760998
Dissolved Vanadium (V)	ug/L	<0.50	<0.50	0.50	6760998
Dissolved Zinc (Zn)	ug/L	<5.0	<5.0	5.0	6760998
RDL = Reportable Detection Limit					
QC Batch = Quality Control Batch					



BV Labs Job #: C0D0398
Report Date: 2020/06/04

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

O.REG 153 PAHS (WATER)

BV Labs ID		MST345	MST346		
Sampling Date		2020/05/27	2020/05/27		
COC Number		na	na		
	UNITS	MW6	MW10	RDL	QC Batch
Calculated Parameters					
Methylnaphthalene, 2-(1-)	ug/L	<0.071	<0.071	0.071	6758586
Polyaromatic Hydrocarbons					
Acenaphthene	ug/L	<0.050	<0.050	0.050	6763762
Acenaphthylene	ug/L	<0.050	<0.050	0.050	6763762
Anthracene	ug/L	<0.050	<0.050	0.050	6763762
Benzo(a)anthracene	ug/L	<0.050	<0.050	0.050	6763762
Benzo(a)pyrene	ug/L	<0.010	<0.010	0.010	6763762
Benzo(b,j)fluoranthene	ug/L	<0.050	<0.050	0.050	6763762
Benzo(g,h,i)perylene	ug/L	<0.050	<0.050	0.050	6763762
Benzo(k)fluoranthene	ug/L	<0.050	<0.050	0.050	6763762
Chrysene	ug/L	<0.050	<0.050	0.050	6763762
Dibenzo(a,h)anthracene	ug/L	<0.050	<0.050	0.050	6763762
Fluoranthene	ug/L	<0.050	<0.050	0.050	6763762
Fluorene	ug/L	<0.050	<0.050	0.050	6763762
Indeno(1,2,3-cd)pyrene	ug/L	<0.050	<0.050	0.050	6763762
1-Methylnaphthalene	ug/L	<0.050	<0.050	0.050	6763762
2-Methylnaphthalene	ug/L	<0.050	<0.050	0.050	6763762
Naphthalene	ug/L	<0.050	<0.050	0.050	6763762
Phenanthrene	ug/L	<0.030	<0.030	0.030	6763762
Pyrene	ug/L	<0.050	<0.050	0.050	6763762
Surrogate Recovery (%)					
D10-Anthracene	%	106	103		6763762
D14-Terphenyl (FS)	%	96	95		6763762
D8-Acenaphthylene	%	93	93		6763762
RDL = Reportable Detection Limit					
QC Batch = Quality Control Batch					



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BV Labs Job #: C0D0398
Report Date: 2020/06/04

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

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

BV Labs ID		MST345	MST346		
Sampling Date		2020/05/27	2020/05/27		
COC Number		na	na		
	UNITS	MW6	MW10	RDL	QC Batch
Calculated Parameters					
1,3-Dichloropropene (cis+trans)	ug/L	<0.50	<0.50	0.50	6758672
Volatile Organics					
Acetone (2-Propanone)	ug/L	<10	11	10	6757601
Benzene	ug/L	<0.20	<0.20	0.20	6757601
Bromodichloromethane	ug/L	<0.50	<0.50	0.50	6757601
Bromoform	ug/L	<1.0	<1.0	1.0	6757601
Bromomethane	ug/L	<0.50	<0.50	0.50	6757601
Carbon Tetrachloride	ug/L	<0.20	<0.20	0.20	6757601
Chlorobenzene	ug/L	<0.20	<0.20	0.20	6757601
Chloroform	ug/L	<0.20	<0.20	0.20	6757601
Dibromochloromethane	ug/L	<0.50	<0.50	0.50	6757601
1,2-Dichlorobenzene	ug/L	<0.50	<0.50	0.50	6757601
1,3-Dichlorobenzene	ug/L	<0.50	<0.50	0.50	6757601
1,4-Dichlorobenzene	ug/L	<0.50	<0.50	0.50	6757601
Dichlorodifluoromethane (FREON 12)	ug/L	<1.0	<1.0	1.0	6757601
1,1-Dichloroethane	ug/L	<0.20	<0.20	0.20	6757601
1,2-Dichloroethane	ug/L	<0.50	<0.50	0.50	6757601
1,1-Dichloroethylene	ug/L	<0.20	<0.20	0.20	6757601
cis-1,2-Dichloroethylene	ug/L	<0.50	<0.50	0.50	6757601
trans-1,2-Dichloroethylene	ug/L	<0.50	<0.50	0.50	6757601
1,2-Dichloropropane	ug/L	<0.20	<0.20	0.20	6757601
cis-1,3-Dichloropropene	ug/L	<0.30	<0.30	0.30	6757601
trans-1,3-Dichloropropene	ug/L	<0.40	<0.40	0.40	6757601
Ethylbenzene	ug/L	<0.20	<0.20	0.20	6757601
Ethylene Dibromide	ug/L	<0.20	<0.20	0.20	6757601
Hexane	ug/L	<1.0	<1.0	1.0	6757601
Methylene Chloride(Dichloromethane)	ug/L	<2.0	<2.0	2.0	6757601
Methyl Ethyl Ketone (2-Butanone)	ug/L	<10	<10	10	6757601
Methyl Isobutyl Ketone	ug/L	<5.0	<5.0	5.0	6757601
Methyl t-butyl ether (MTBE)	ug/L	<0.50	<0.50	0.50	6757601
Styrene	ug/L	<0.50	<0.50	0.50	6757601
1,1,1,2-Tetrachloroethane	ug/L	<0.50	<0.50	0.50	6757601
1,1,2,2-Tetrachloroethane	ug/L	<0.50	<0.50	0.50	6757601
Tetrachloroethylene	ug/L	<0.20	<0.20	0.20	6757601
Toluene	ug/L	<0.20	0.33	0.20	6757601
1,1,1-Trichloroethane	ug/L	<0.20	<0.20	0.20	6757601
RDL = Reportable Detection Limit					
QC Batch = Quality Control Batch					



BV Labs Job #: C0D0398
Report Date: 2020/06/04

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

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

BV Labs ID		MST345	MST346		
Sampling Date		2020/05/27	2020/05/27		
COC Number		na	na		
	UNITS	MW6	MW10	RDL	QC Batch
1,1,2-Trichloroethane	ug/L	<0.50	<0.50	0.50	6757601
Trichloroethylene	ug/L	<0.20	<0.20	0.20	6757601
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	<0.50	0.50	6757601
Vinyl Chloride	ug/L	<0.20	<0.20	0.20	6757601
p+m-Xylene	ug/L	<0.20	<0.20	0.20	6757601
o-Xylene	ug/L	<0.20	<0.20	0.20	6757601
Total Xylenes	ug/L	<0.20	<0.20	0.20	6757601
F1 (C6-C10)	ug/L	<25	<25	25	6757601
F1 (C6-C10) - BTEX	ug/L	<25	<25	25	6757601
F2-F4 Hydrocarbons					
F2 (C10-C16 Hydrocarbons)	ug/L	<100	<100	100	6763763
F3 (C16-C34 Hydrocarbons)	ug/L	<200	<200	200	6763763
F4 (C34-C50 Hydrocarbons)	ug/L	<200	<200	200	6763763
Reached Baseline at C50	ug/L	Yes	Yes		6763763
Surrogate Recovery (%)					
o-Terphenyl	%	94	94		6763763
4-Bromofluorobenzene	%	99	97		6757601
D4-1,2-Dichloroethane	%	102	103		6757601
D8-Toluene	%	100	97		6757601
RDL = Reportable Detection Limit					
QC Batch = Quality Control Batch					



BV Labs Job #: C0D0398
Report Date: 2020/06/04

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

TEST SUMMARY

BV Labs ID: MST345
Sample ID: MW6
Matrix: Water

Collected: 2020/05/27
Shipped:
Received: 2020/05/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6758586	N/A	2020/06/02	Automated Statchk
1,3-Dichloropropene Sum	CALC	6758672	N/A	2020/06/01	Automated Statchk
Chromium (VI) in Water	IC	6760344	N/A	2020/06/02	Lang Le
Free (WAD) Cyanide	SKAL/CN	6767471	N/A	2020/06/03	Louise Harding
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	6763763	2020/06/01	2020/06/02	Prabhjot Gulati
Mercury	CV/AA	6763316	2020/06/01	2020/06/01	Meghaben Patel
Dissolved Metals by ICPMS	ICP/MS	6760998	N/A	2020/05/30	Nan Raykha
PAH Compounds in Water by GC/MS (SIM)	GC/MS	6763762	2020/06/01	2020/06/02	Mitesh Raj
pH	AT	6762062	2020/05/30	2020/06/01	Gnana Thomas
Volatile Organic Compounds and F1 PHCs	GC/MSFD	6757601	N/A	2020/06/01	James Zou

BV Labs ID: MST346
Sample ID: MW10
Matrix: Water

Collected: 2020/05/27
Shipped:
Received: 2020/05/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6758586	N/A	2020/06/02	Automated Statchk
1,3-Dichloropropene Sum	CALC	6758672	N/A	2020/06/01	Automated Statchk
Chromium (VI) in Water	IC	6760344	N/A	2020/06/02	Lang Le
Free (WAD) Cyanide	SKAL/CN	6767471	N/A	2020/06/03	Louise Harding
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	6763763	2020/06/01	2020/06/02	Prabhjot Gulati
Mercury	CV/AA	6763316	2020/06/01	2020/06/01	Meghaben Patel
Dissolved Metals by ICPMS	ICP/MS	6760998	N/A	2020/05/30	Nan Raykha
PAH Compounds in Water by GC/MS (SIM)	GC/MS	6763762	2020/06/01	2020/06/02	Mitesh Raj
pH	AT	6762062	2020/05/30	2020/06/01	Gnana Thomas
Volatile Organic Compounds and F1 PHCs	GC/MSFD	6757601	N/A	2020/06/01	James Zou

BV Labs ID: MST347
Sample ID: DUP-W1
Matrix: Water

Collected: 2020/05/27
Shipped:
Received: 2020/05/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	6763972	N/A	2020/06/01	Joe Paino

BV Labs ID: MST348
Sample ID: TRIP BLANK
Matrix: Water

Collected: 2020/05/27
Shipped:
Received: 2020/05/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	6763972	N/A	2020/06/01	Joe Paino



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BV Labs Job #: C0D0398
Report Date: 2020/06/04

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

GENERAL COMMENTS

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

Package 1	-2.3°C
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Results relate **only** to the items tested.



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BV Labs Job #: COD0398
Report Date: 2020/06/04

QUALITY ASSURANCE REPORT

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6757601	4-Bromofluorobenzene	2020/05/31	100	70 - 130	101	70 - 130	96	%		
6757601	D4-1,2-Dichloroethane	2020/05/31	99	70 - 130	100	70 - 130	99	%		
6757601	D8-Toluene	2020/05/31	99	70 - 130	102	70 - 130	98	%		
6763762	D10-Anthracene	2020/06/02	107	50 - 130	106	50 - 130	108	%		
6763762	D14-Terphenyl (FS)	2020/06/02	97	50 - 130	95	50 - 130	95	%		
6763762	D8-Acenaphthylene	2020/06/02	97	50 - 130	96	50 - 130	97	%		
6763763	o-Terphenyl	2020/06/02	96	60 - 130	98	60 - 130	95	%		
6763972	1,4-Difluorobenzene	2020/06/01	107	70 - 130	107	70 - 130	103	%		
6763972	4-Bromofluorobenzene	2020/06/01	98	70 - 130	98	70 - 130	100	%		
6763972	D10-o-Xylene	2020/06/01	91	70 - 130	91	70 - 130	96	%		
6763972	D4-1,2-Dichloroethane	2020/06/01	97	70 - 130	97	70 - 130	101	%		
6757601	1,1,1,2-Tetrachloroethane	2020/05/31	94	70 - 130	96	70 - 130	<0.50	ug/L	NC	30
6757601	1,1,1-Trichloroethane	2020/05/31	89	70 - 130	93	70 - 130	<0.20	ug/L	NC	30
6757601	1,1,2,2-Tetrachloroethane	2020/05/31	96	70 - 130	99	70 - 130	<0.50	ug/L	NC	30
6757601	1,1,2-Trichloroethane	2020/05/31	109	70 - 130	113	70 - 130	<0.50	ug/L	NC	30
6757601	1,1-Dichloroethane	2020/05/31	91	70 - 130	92	70 - 130	<0.20	ug/L	NC	30
6757601	1,1-Dichloroethylene	2020/05/31	98	70 - 130	103	70 - 130	<0.20	ug/L	NC	30
6757601	1,2-Dichlorobenzene	2020/05/31	88	70 - 130	90	70 - 130	<0.50	ug/L	NC	30
6757601	1,2-Dichloroethane	2020/05/31	96	70 - 130	99	70 - 130	<0.50	ug/L	NC	30
6757601	1,2-Dichloropropane	2020/05/31	88	70 - 130	87	70 - 130	<0.20	ug/L	NC	30
6757601	1,3-Dichlorobenzene	2020/05/31	89	70 - 130	91	70 - 130	<0.50	ug/L	NC	30
6757601	1,4-Dichlorobenzene	2020/05/31	93	70 - 130	96	70 - 130	<0.50	ug/L	NC	30
6757601	Acetone (2-Propanone)	2020/05/31	101	60 - 140	103	60 - 140	<10	ug/L	NC	30
6757601	Benzene	2020/05/31	90	70 - 130	94	70 - 130	<0.20	ug/L	NC	30
6757601	Bromodichloromethane	2020/05/31	89	70 - 130	89	70 - 130	<0.50	ug/L	NC	30
6757601	Bromoform	2020/05/31	94	70 - 130	98	70 - 130	<1.0	ug/L	NC	30
6757601	Bromomethane	2020/05/31	89	60 - 140	91	60 - 140	<0.50	ug/L	NC	30
6757601	Carbon Tetrachloride	2020/05/31	87	70 - 130	90	70 - 130	<0.20	ug/L	NC	30
6757601	Chlorobenzene	2020/05/31	86	70 - 130	89	70 - 130	<0.20	ug/L	NC	30
6757601	Chloroform	2020/05/31	86	70 - 130	89	70 - 130	<0.20	ug/L	NC	30
6757601	cis-1,2-Dichloroethylene	2020/05/31	86	70 - 130	89	70 - 130	<0.50	ug/L	3.0	30

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BV Labs Job #: COD0398
Report Date: 2020/06/04

QUALITY ASSURANCE REPORT(CONT'D)

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6757601	cis-1,3-Dichloropropene	2020/05/31	90	70 - 130	91	70 - 130	<0.30	ug/L	NC	30
6757601	Dibromochloromethane	2020/05/31	95	70 - 130	99	70 - 130	<0.50	ug/L	NC	30
6757601	Dichlorodifluoromethane (FREON 12)	2020/05/31	101	60 - 140	105	60 - 140	<1.0	ug/L	NC	30
6757601	Ethylbenzene	2020/05/31	87	70 - 130	91	70 - 130	<0.20	ug/L	NC	30
6757601	Ethylene Dibromide	2020/05/31	94	70 - 130	98	70 - 130	<0.20	ug/L	NC	30
6757601	F1 (C6-C10) - BTEX	2020/05/31					<25	ug/L	NC	30
6757601	F1 (C6-C10)	2020/05/31	91	60 - 140	96	60 - 140	<25	ug/L	NC	30
6757601	Hexane	2020/05/31	100	70 - 130	102	70 - 130	<1.0	ug/L	NC	30
6757601	Methyl Ethyl Ketone (2-Butanone)	2020/05/31	106	60 - 140	108	60 - 140	<10	ug/L	NC	30
6757601	Methyl Isobutyl Ketone	2020/05/31	97	70 - 130	99	70 - 130	<5.0	ug/L	NC	30
6757601	Methyl t-butyl ether (MTBE)	2020/05/31	89	70 - 130	91	70 - 130	<0.50	ug/L	NC	30
6757601	Methylene Chloride(Dichloromethane)	2020/05/31	99	70 - 130	103	70 - 130	<2.0	ug/L	NC	30
6757601	o-Xylene	2020/05/31	92	70 - 130	94	70 - 130	<0.20	ug/L	NC	30
6757601	p+m-Xylene	2020/05/31	92	70 - 130	95	70 - 130	<0.20	ug/L	NC	30
6757601	Styrene	2020/05/31	88	70 - 130	92	70 - 130	<0.50	ug/L	NC	30
6757601	Tetrachloroethylene	2020/05/31	83	70 - 130	89	70 - 130	<0.20	ug/L	NC	30
6757601	Toluene	2020/05/31	83	70 - 130	88	70 - 130	<0.20	ug/L	NC	30
6757601	Total Xylenes	2020/05/31					<0.20	ug/L	NC	30
6757601	trans-1,2-Dichloroethylene	2020/05/31	90	70 - 130	93	70 - 130	<0.50	ug/L	NC	30
6757601	trans-1,3-Dichloropropene	2020/05/31	96	70 - 130	101	70 - 130	<0.40	ug/L	NC	30
6757601	Trichloroethylene	2020/05/31	91	70 - 130	95	70 - 130	<0.20	ug/L	5.7	30
6757601	Trichlorofluoromethane (FREON 11)	2020/05/31	95	70 - 130	99	70 - 130	<0.50	ug/L	NC	30
6757601	Vinyl Chloride	2020/05/31	85	70 - 130	101	70 - 130	<0.20	ug/L	NC	30
6760344	Chromium (VI)	2020/06/02	NC	80 - 120	103	80 - 120	<0.50	ug/L	4.3	20
6760998	Dissolved Antimony (Sb)	2020/05/30	113	80 - 120	96	80 - 120	<0.50	ug/L	NC	20
6760998	Dissolved Arsenic (As)	2020/05/30	110	80 - 120	96	80 - 120	<1.0	ug/L	4.9	20
6760998	Dissolved Barium (Ba)	2020/05/30	105	80 - 120	97	80 - 120	<2.0	ug/L	4.3	20
6760998	Dissolved Beryllium (Be)	2020/05/30	102	80 - 120	106	80 - 120	<0.50	ug/L	NC	20
6760998	Dissolved Boron (B)	2020/05/30	90	80 - 120	103	80 - 120	<10	ug/L	1.8	20
6760998	Dissolved Cadmium (Cd)	2020/05/30	110	80 - 120	96	80 - 120	<0.10	ug/L	NC	20
6760998	Dissolved Chromium (Cr)	2020/05/30	103	80 - 120	95	80 - 120	<5.0	ug/L	NC	20

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BV Labs Job #: COD0398
Report Date: 2020/06/04

QUALITY ASSURANCE REPORT(CONT'D)

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6760998	Dissolved Cobalt (Co)	2020/05/30	109	80 - 120	95	80 - 120	<0.50	ug/L	NC	20
6760998	Dissolved Copper (Cu)	2020/05/30	109	80 - 120	100	80 - 120	<1.0	ug/L	NC	20
6760998	Dissolved Lead (Pb)	2020/05/30	107	80 - 120	90	80 - 120	<0.50	ug/L	NC	20
6760998	Dissolved Molybdenum (Mo)	2020/05/30	112	80 - 120	97	80 - 120	<0.50	ug/L	3.9	20
6760998	Dissolved Nickel (Ni)	2020/05/30	103	80 - 120	93	80 - 120	<1.0	ug/L	NC	20
6760998	Dissolved Selenium (Se)	2020/05/30	111	80 - 120	98	80 - 120	<2.0	ug/L	NC	20
6760998	Dissolved Silver (Ag)	2020/05/30	106	80 - 120	94	80 - 120	<0.10	ug/L	NC	20
6760998	Dissolved Sodium (Na)	2020/05/30	NC	80 - 120	101	80 - 120	120, RDI=100	ug/L	0.81	20
6760998	Dissolved Thallium (Tl)	2020/05/30	109	80 - 120	87	80 - 120	<0.050	ug/L	NC	20
6760998	Dissolved Uranium (U)	2020/05/30	112	80 - 120	90	80 - 120	<0.10	ug/L	0.36	20
6760998	Dissolved Vanadium (V)	2020/05/30	106	80 - 120	97	80 - 120	<0.50	ug/L	NC	20
6760998	Dissolved Zinc (Zn)	2020/05/30	105	80 - 120	94	80 - 120	<5.0	ug/L	NC	20
6762062	pH	2020/06/01			100	98 - 103			0.15	N/A
6763316	Mercury (Hg)	2020/06/01	103	75 - 125	101	80 - 120	<0.10	ug/L	NC	20
6763762	1-Methylnaphthalene	2020/06/02	102	50 - 130	102	50 - 130	<0.050	ug/L		
6763762	2-Methylnaphthalene	2020/06/02	100	50 - 130	100	50 - 130	<0.050	ug/L		
6763762	Acenaphthene	2020/06/02	95	50 - 130	96	50 - 130	<0.050	ug/L		
6763762	Acenaphthylene	2020/06/02	91	50 - 130	92	50 - 130	<0.050	ug/L		
6763762	Anthracene	2020/06/02	97	50 - 130	98	50 - 130	<0.050	ug/L	NC	30
6763762	Benzo(a)anthracene	2020/06/02	92	50 - 130	97	50 - 130	<0.050	ug/L	NC	30
6763762	Benzo(a)pyrene	2020/06/02	89	50 - 130	97	50 - 130	<0.010	ug/L	NC	30
6763762	Benzo(b,j)fluoranthene	2020/06/02	91	50 - 130	101	50 - 130	<0.050	ug/L		
6763762	Benzo(g,h,i)perylene	2020/06/02	88	50 - 130	97	50 - 130	<0.050	ug/L	NC	30
6763762	Benzo(k)fluoranthene	2020/06/02	88	50 - 130	96	50 - 130	<0.050	ug/L	NC	30
6763762	Chrysene	2020/06/02	95	50 - 130	102	50 - 130	<0.050	ug/L	NC	30
6763762	Dibenzo(a,h)anthracene	2020/06/02	84	50 - 130	94	50 - 130	<0.050	ug/L	NC	30
6763762	Fluoranthene	2020/06/02	106	50 - 130	109	50 - 130	<0.050	ug/L	NC	30
6763762	Fluorene	2020/06/02	98	50 - 130	100	50 - 130	<0.050	ug/L	NC	30
6763762	Indeno(1,2,3-cd)pyrene	2020/06/02	87	50 - 130	96	50 - 130	<0.050	ug/L		
6763762	Naphthalene	2020/06/02	90	50 - 130	91	50 - 130	<0.050	ug/L	NC	30
6763762	Phenanthrene	2020/06/02	97	50 - 130	101	50 - 130	<0.030	ug/L	NC	30

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BV Labs Job #: COD0398
Report Date: 2020/06/04

QUALITY ASSURANCE REPORT(CONT'D)

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6763762	Pyrene	2020/06/02	103	50 - 130	106	50 - 130	<0.050	ug/L		
6763763	F2 (C10-C16 Hydrocarbons)	2020/06/02	97	50 - 130	99	60 - 130	<100	ug/L	NC	30
6763763	F3 (C16-C34 Hydrocarbons)	2020/06/02	101	50 - 130	105	60 - 130	<200	ug/L	NC	30
6763763	F4 (C34-C50 Hydrocarbons)	2020/06/02	110	50 - 130	113	60 - 130	<200	ug/L	NC	30
6763972	Benzene	2020/06/01	108	70 - 130	109	70 - 130	<0.20	ug/L	NC	30
6763972	Ethylbenzene	2020/06/01	112	70 - 130	111	70 - 130	<0.20	ug/L	1.0	30
6763972	F1 (C6-C10) - BTEX	2020/06/01					<25	ug/L	18	30
6763972	F1 (C6-C10)	2020/06/01	93	70 - 130	93	70 - 130	<25	ug/L	14	30
6763972	o-Xylene	2020/06/01	107	70 - 130	107	70 - 130	<0.20	ug/L	0.85	30
6763972	p+m-Xylene	2020/06/01	107	70 - 130	106	70 - 130	<0.40	ug/L	0	30
6763972	Toluene	2020/06/01	101	70 - 130	102	70 - 130	<0.20	ug/L	6.4	30
6763972	Total Xylenes	2020/06/01					<0.40	ug/L	0.44	30
6767471	WAD Cyanide (Free)	2020/06/03	101	80 - 120	101	80 - 120	<1	ug/L	NC	20

N/A = Not Applicable

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

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

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 $\leq 2 \times$ RDL).



BV Labs Job #: C0D0398
Report Date: 2020/06/04

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: OG

VALIDATION SIGNATURE PAGE

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

Anastassia Hamanov, Scientific Specialist

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.



Your Project #: 2005-E074
Your C.O.C. #: 758160-41-01

Attention: Hamid Rezaei

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

Report Date: 2020/06/29
Report #: R6228321
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0F9780

Received: 2020/06/26, 16:05

Sample Matrix: Water
Samples Received: 1

Analyses	Date		Laboratory Method	Analytical Method
	Quantity	Date Extracted		
Free (WAD) Cyanide	1	N/A	2020/06/29 CAM SOP-00457	OMOE E3015 m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

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

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs 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 BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

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

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

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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.



Your Project #: 2005-E074
Your C.O.C. #: 758160-41-01

Attention: Hamid Rezaei

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

Report Date: 2020/06/29
Report #: R6228321
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0F9780

Received: 2020/06/26, 16:05

Encryption Key

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

Antonella Brasil, Senior Project Manager

Email: Antonella.Brasil@bvlabs.com

Phone# (905)817-5817

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BUREAU
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BV Labs Job #: C0F9780
Report Date: 2020/06/29

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: HR

RESULTS OF ANALYSES OF WATER

BV Labs ID		MZB147		
Sampling Date		2020/06/16		
COC Number		758160-41-01		
	UNITS	MW6A	RDL	QC Batch
Inorganics				
WAD Cyanide (Free)	ug/L	<1	1	6807791
RDL = Reportable Detection Limit				
QC Batch = Quality Control Batch				



BV Labs Job #: C0F9780
Report Date: 2020/06/29

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: HR

TEST SUMMARY

BV Labs ID: MZB147
Sample ID: MW6A
Matrix: Water

Collected: 2020/06/16
Shipped:
Received: 2020/06/26

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Free (WAD) Cyanide	SKAL/CN	6807791	N/A	2020/06/29	Gnana Thomas



BUREAU
VERITAS

BV Labs Job #: C0F9780
Report Date: 2020/06/29

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: HR

GENERAL COMMENTS

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

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



BUREAU
VERITAS

BV Labs Job #: COF9780
Report Date: 2020/06/29

QUALITY ASSURANCE REPORT

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: HR

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6807791	WAD Cyanide (Free)	2020/06/26	101	80 - 120	104	80 - 120	<1	ug/L	NC	20
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.										
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 $\leq 2 \times \text{RDL}$).										



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VERITAS**

BV Labs Job #: C0F9780
Report Date: 2020/06/29

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: HR

VALIDATION SIGNATURE PAGE

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Anastassia Hamanov, Scientific Specialist

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Your Project #: 2005-E074
Your C.O.C. #: 133907

Attention: Hamid Rezaei

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

Report Date: 2020/07/17
Report #: R6250847
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0H8513

Received: 2020/07/16, 16:10

Sample Matrix: Water
Samples Received: 1

Analyses	Date		Laboratory Method	Analytical Method
	Quantity	Date Extracted		
Free (WAD) Cyanide	1	N/A	2020/07/17 CAM SOP-00457	OMOE E3015 m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

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

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs 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 BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

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

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

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

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

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



Your Project #: 2005-E074
Your C.O.C. #: 133907

Attention: Hamid Rezaei

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

Report Date: 2020/07/17
Report #: R6250847
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0H8513

Received: 2020/07/16, 16:10

Encryption Key

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

Antonella Brasil, Senior Project Manager

Email: Antonella.Brasil@bvlabs.com

Phone# (905)817-5817

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BV Labs Job #: COH8513
Report Date: 2020/07/17

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: HR

RESULTS OF ANALYSES OF WATER

BV Labs ID		NDB046		
Sampling Date		2020/07/16		
COC Number		133907		
	UNITS	MW6B	RDL	QC Batch
Inorganics				
WAD Cyanide (Free)	ug/L	<1	1	6841479
RDL = Reportable Detection Limit				
QC Batch = Quality Control Batch				



BV Labs Job #: C0H8513
Report Date: 2020/07/17

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: HR

TEST SUMMARY

BV Labs ID: NDB046
Sample ID: MW6B
Matrix: Water

Collected: 2020/07/16
Shipped:
Received: 2020/07/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Free (WAD) Cyanide	SKAL/CN	6841479	N/A	2020/07/17	Gnana Thomas



BV Labs Job #: C0H8513
Report Date: 2020/07/17

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: HR

GENERAL COMMENTS

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

Package 1	0.7°C
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Results relate only to the items tested.



BV Labs Job #: COH8513
Report Date: 2020/07/17

QUALITY ASSURANCE REPORT

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: HR

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6841479	WAD Cyanide (Free)	2020/07/17	103	80 - 120	101	80 - 120	<1	ug/L	NC	20
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.										
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 $\leq 2 \times \text{RDL}$).										



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BV Labs Job #: C0H8513
Report Date: 2020/07/17

Soil Engineers Ltd
Client Project #: 2005-E074
Sampler Initials: HR

VALIDATION SIGNATURE PAGE

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