Phase Two Environmental Site Assessment
337 Montgomery Street, Ottawa, Ontario

Client:
Maybach Homes
485 Kirkwood Avenue
Ottawa, Ontario K1Z 5W8

Project Number:
OTT-00241785-B0

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Type of Document:
Final

Date Submitted:
June 13, 2019

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Date Submitted:
June 13, 2019

Legal Notification

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Executive Summary

EXP Services Inc. (EXP) was retained by Maybach Homes Inc. to complete a Phase Two Environmental Site Assessment (ESA) of the property referred to as 337 Montgomery Street, located in Ottawa, Ontario hereinafter referred to as the 'Phase One Property'. The objective of the Phase Two ESA was to address areas of potential environmental concern (APEC) identified in a Phase One ESA conducted at the Phase Two Property by EXP. It is understood that this report is required as part of the permitting process with the City of Ottawa. We understand that a Record of Site Condition (RSC) is required due to a change in land use.

The findings of a Phase One ESA were presented in a report entitled *Phase One Environmental Site* Assessment, 337 Montgomery Street, Ottawa*, Ontario* dated April 25, 2019. The Phase One ESA identified the following APECs:

Table EX.1: Areas of Potential Environmental Concern

Area of Potential Environmental Concern (APEC)	Location of APEC on Phase One Property	Potentially Contaminating Activity (PCA)	Location of PCA (On-Site or Off-Site)	Contaminants of Concern	Media Potentially Impacted (Groundwater, Soil and/or Sediment)
1. Potential soil and groundwater impact from a former on-site heating oil above ground storage tank	Central part of Site	#28: Gasoline and Associated Products Storage in Fixed Tanks	On-Site	Petroleum hydrocarbons (PHCs), benzene, toluene, ethylbenzene and xylenes (BTEX),	Soil and groundwater
2. Potential groundwater impact from a historic automotive repair garage	Southern half of the Site	#10: Commercial Autobody Shops	20 m south	PHC, BTEX, volatile organic compounds (VOCs), and lead	Soil and groundwater
3. Potential soil and groundwater impact from a former heating oil above ground storage tanks on neighbouring residential properties	East part of Site	28: Gasoline and Associated Products Storage in Fixed Tanks	20 m radius from Site	PHC, BTEX	Soil and groundwater

Based on the Phase One ESA findings, EXP recommended conducting a Phase Two ESA at the Phase Two Property. The Phase Two ESA consisted of advancing boreholes and completing them as groundwater monitoring wells. Soil and groundwater samples were collected and submitted for laboratory analysis of one or more of the following parameters: BTEX and PHC, VOC, PAH and metals.

For assessment purposes, EXP selected the Site Condition Standards (SCS), provided in Table 3 of *Soil, Groundwater and Sediment Standards for use Under Part XV.1 of the Environmental Protection Act*, Ministry of the Environment, Conservation and Parks (MECP), 2011 for residential/institutional land use at a site with coarse textured soil in accordance with Ontario Regulation 153/04 (as amended).

Based on the Phase Two ESA results, the following summary is provided:

- On April 5, 2019, 3 boreholes (BH 1 to BH3) were advanced at the Phase Two Property and were instrumented with a monitoring well.
- Based on the Phase Two ESA, a 12 to 20 mm layer of asphalt was observed in BH1 and BH 2. A 50 cm layer of topsoil was found at the ground surface in MW19-3. Sand and gravel fill material was observed in BH 1 and BH 2 and ranged in thickness from 0.6 m to 1.5 m. No petroleum odours were identified in the fill material. Below the topsoil was a layer of sandy silty till that extended to the bedrock surface that ranged from 5.1 m to 6.0 m. No petroleum odours were identified in the native soil.
- Shale bedrock was encountered at a depth of 5.1 m to 6.0 m. Groundwater was encountered at a depth of 3.17 m bgs in BH 2 to 3.57 m bgs in BH 1. No petroleum sheens were observed in the monitoring wells during the sampling event. Based on the groundwater elevations, the groundwater flow direction is to the south.
- Based on the results of the investigation, there are two soil samples located east of the building that had one or more MECP Table 3 SCS exceedances of PHC F1, PHC F2, hexane, benzo(a)pyrene and/or fluoranthene.

  The estimated volume of impacted soil is approximately 1,600 m^3. This is based on a shallow area of PAH impact at BH 2 with a volume of 300 m^3 and a deeper area of PHC impact at BH 1 and BH 2 with a volume of 1,300 m^3.
- All of the groundwater samples had concentrations of metals, VOC, PHC and BTEX that were less than the 2011 MECP Table 3 SCS.

It is recommended that the impacted soil be removed from the Phase Two property. If the wells are no longer needed, they should be decommissioned in accordance with Ontario Regulation 903.

Table of Contents

List of Figures

List of Appendices

1 Introduction

EXP Services Inc. (EXP) was retained by Maybach Homes Inc. to complete a Phase Two Environmental Site Assessment (ESA) of the property referred to as 337 Montgomery Street in Ottawa, Ontario, hereinafter referred to as the 'Phase Two property'. The objective of the Phase Two ESA was to address areas of potential environmental concern (APEC) identified in a Phase One ESA conducted at the Phase Two property by EXP. EXP understands that Maybach Homes Inc. plans to re-develop the land as medium density residential and that this report is required as part of the permitting process with the City of Ottawa. We understand that a Record of Site Condition (RSC) is required.

This report has been prepared in accordance with the Phase Two ESA standard as defined by Ontario Regulation 153/04 (as amended), and in accordance with generally accepted professional practices. Subject to this standard of care, EXP makes no express or implied warranties regarding its services and no third-party beneficiaries are intended. Limitation of liability, scope of report and third-party reliance are outlined in Section 7 of this report.

1.1 Site Description

The Phase Two property is located on the north side of Montgomery Street, at the corner of Montgomery Street and Selkirk Street in Ottawa, as shown on Figure 1 in Appendix B

The Phase Two Property is legally described as PLAN 49 LOT 23 LOT 25 LOT 27; PT LOT 70, City of Ottawa. The property identification number is 042370063. The Phase Two property has an area of 0.01 hectares and is occupied by a large 2-storey single family home with one (1) below grade level (currently vacant). Additionally, a restaurant is attached to the eastern side of the building with slab-on-grade construction (currently vacant). An asphalt parking area is located along the eastern side of the property, and landscaped areas are present along the western property boundary. The Phase Two property is located within a municipally serviced area of the City of Ottawa (Figure 2 in Appendix B).

Topographically, the Phase Two property is relatively flat. The local groundwater flow direction is toward the west based on previous investigations in the area. The Rideau River is approximately 330 m west from the Phase Two property.

The approximate Universal Transverse Mercator (UTM) coordinates for the Phase Two property centroid is NAD83, Zone 18T, 447903.1 m E, 5031143.5 m N. The UTM coordinates were based on an estimate derived using Google Earth™. The accuracy of the centroid is estimated to range from 5 to 50 m.

1.2 Property Ownership

At the time of the investigation, the Phase Two Property was owned by Mr. Mike Baroud.

Owner Contact: Mr. Mike Baroud
Maybach Homes Inc.
485 Kirkwood Avenue
Ottawa, Ontario K1Z 5W8

1.3 Current and Proposed Future Uses

At the time of the Phase Two ESA investigation, the Phase Two Property was commercial and residential. The future land use will be residential. Therefore, under Section 168.3.1 of the Act, a Record of Site Condition is required. A site plan is included in Appendix B.

1.4 Applicable Site Condition Standards

Analytical results obtained for Phase Two property soil and groundwater samples were assessed against Site Condition Standards (SCS) as established under subsection 169.4(1) of the Environmental Protection Act, and presented in the document Ontario Ministry of Environment, Conservation and Parks (MECP) "*Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*", ("SGWS" Standards), (MECP, 2011a). Tabulated background SCS (Table 1) applicable to environmentally sensitive Sites and effects based generic SCS (Tables 2 to 9) applicable to non-environmentally sensitive Sites are provided in MECP (2011a). The effects based SCS (Tables 2 to 9) are protective of human health and the environment for different groundwater conditions (potable and non-potable), land use scenarios (residential, parkland, institutional, commercial, industrial, community and agricultural/other), soil texture (coarse or medium/fine) and restoration depth (full or stratified).

Application of the generic or background SCS to a specific site is based on a consideration of site conditions related to soil pH (i.e. surface and subsurface soil), thickness and extent of overburden material, (i.e. shallow soil conditions), and proximity to an area of environmental sensitivity or of natural significance. For some chemical constituents, consideration is also given to soil textural classification with SCS having been derived for both coarse and medium-fine textured soil conditions.

For assessment purposes, EXP selected the MECP (2011) Table 3: Full Depth Generic Site Condition Standards (SCS) in a non-potable groundwater condition for a residential/parkland/institutional property use and coarse textured soil. The selection of this category was based on the following factors:

- The predominant soil type on the Phase Two property was considered to be coarse textured (refer to the results of the Grain Size Analysis as provided in the Certificates of Analysis presented in Appendix E);
- There was no intention to carry out a stratified restoration at the Phase Two property.
- More than two-thirds of the Phase Two property has an overburden thickness greater than 2 m.
- The Phase Two property is not located within 30 m of a surface water body or an area of natural significance.
- The soil at the Phase Two property has a pH value between 5 and 9 for surficial soils; and, between 5 and 11 for subsurface soils.
- The property is not within an area of natural significance; does not include, nor is it adjacent to an area of natural significance, nor is it part of such an area; and, it does not include land that is within 30 m of an area of natural significance, nor is it part of such an area.
- The Phase Two property is serviced by the City of Ottawa's water distribution system and the surrounding properties are municipally serviced.
- The Phase Two property is planned for residential use.

2 Background Information

2.1 Physical Setting

The Phase Two property has an area of 0.01 hectares and is occupied by a large 2-storey single family home with one (1) below grade level (currently vacant). Additionally, a restaurant is attached to the eastern side of the building with slab-on-grade construction (currently vacant). An asphalt parking area is located along the eastern side of the property, and landscaped areas are present along the western property boundary. The Phase Two property is located within a municipally serviced area of the City of Ottawa (Figure 2 in Appendix B).

Local Ontario Ministry of Environment, Conservation and Parks (MECP) water wells records show that bedrock was found at 2 - 4 m from surface. The overburden consists of sand and sandy clay. Bedrock in the area was found to be limestone.

Topographically, the Phase Two property is relatively flat. The local groundwater flow direction is toward the west based on previous investigations in the area. The Rideau River is approximately 330 m west of the Phase Two property.

2.2 First Developed Use Determination

Based on a review of historical aerial photographs, chain of title for the property, historical maps, and other records review, it appears the Phase Two property was initially developed with the 2-story single-family home in the early 1930s. An additional building located on the eastern portion of the property may have been a residential garage or stable. The Phase Two property has been used for residential and various restaurant businesses since that time.

2.3 Past Investigations

The following reports were reviewed by EXP:

- *Phase I Environmental Site Assessment 337 Montgomery Street, Ottawa, Ontario*, dated August 2017, prepared by EXP Services Inc.

  No APECs were identified and therefore a Phase II ESA was not recommended.

- *Phase One Environmental Site Assessment 337 Montgomery Street, Ottawa, Ontario*, dated May 8, 2019, prepared by EXP Services Inc.

The findings of the Phase One ESA identified the following APECs.

Table 2.1: Areas of Potential Environmental Concern

Area of Potential Environmental Concern (APEC)	Location of APEC on Phase One Property	Potentially Contaminating Activity (PCA)	Location of PCA (On-Site or Off-Site)	Contaminants of Concern	Media Potentially Impacted (Groundwater, Soil and/or Sediment)
1. Potential soil and groundwater impact from a former on-site heating oil above ground storage tank	Central part of Site	#28: Gasoline and Associated Products Storage in Fixed Tanks	On-Site	Petroleum hydrocarbons (PHCs), benzene, toluene, ethylbenzene and xylenes (BTEX)	Soil and groundwater
2. Potential groundwater impact from a historic automotive repair garage	Southern half of the Site	#10: Commercial Autobody Shops	20 m off-site	PHC, BTEX, volatile organic compounds (VOCs), and metals	Soil and groundwater
3. Potential soil and groundwater impact from a former heating oil above ground storage tanks on neighbouring residential properties	East part of Site	28: Gasoline and Associated Products Storage in Fixed Tanks	20 m off-site	PHC, BTEX	Soil and groundwater

Based on the results of the Phase One ESA, EXP recommended that a Phase Two ESA be completed to assess the soil and groundwater quality at the Phase Two property.

3 Scope of the Investigation

3.1 Overview of Site Investigation

The purpose of the Phase Two ESA was to investigate the soil and groundwater quality at the Phase Two property and to obtain soil and groundwater data to further characterize conditions in the surficial fill/shallow overburden soils.

It is understood that the Phase Two Property is to be re-developed for medium density residential use from a commercial land use; therefore, the regulation requires that a Phase Two ESA be completed in accordance with Ontario Regulation 153/04 (as amended).

3.2 Scope of Work

The scope of work for the Phase Two ESA was as follows:

- Request local utility locating companies (e.g., cable, telephone, gas, hydro) to mark any underground utilities present at the Phase Two property;
- Retain a private utility locating company to mark any underground utilities present in the vicinity of the borehole locations and to clear the individual borehole locations;
- Advance a total of three (3) boreholes and complete them as groundwater monitoring wells;
- Attempt to collect representative soil samples for chemical analysis of metals, VOC, PHC and BTEX (PAH were added to assess the fill quality);
- Attempt to collect representative groundwater samples for chemical analysis of metals, VOC, PHC and BTEX;
- Measure groundwater levels in the monitoring wells;
- Completion of a survey of the borehole locations relative to a geodetic or other permanent benchmark and in reference with the Universal Transverse Mercator (UTM) coordinate system for vertical and horizontal control; and
- Review the analytical data and prepare a report of the findings.

Mark Devlin B. Sc. conducted assessment work for this project and was supervised by Mark McCalla, P.Geo., QP_{ESA}. Mark McCalla is a qualified person as defined by O. Reg. 153/04.

3.3 Media Investigated

The Phase Two ESA included the investigation of on-site soil and groundwater. As there are no water bodies on the Phase Two property, no surface water or sediment sampling was required.

The potential contaminants of concern (PCOCs) identified in EXP's (2019) Phase One ESA were identified as target parameters for this Phase Two ESA. The areas of potential environmental concern (APEC) and PCOCs identified in the Phase One ESA are outlined in Table 2.1.

The rationale for the selection of borehole and monitoring well locations during this investigation are to place them on the property to assess the soil and groundwater conditions in the APECs. A copy of the Sampling and Analysis Plan prepared for the Phase Two property is provided in Appendix A.

3.4 Phase One ESA Conceptual Site Model

In order to develop a conceptual model for the Phase Two property and surrounding study area, the following physical characteristics and pathways were considered.

3.4.1 Current and Past Uses

Based on a review of historical aerial photographs, chain of title for the property, historical maps, and other records review, it appears the Phase Two property was initially developed with the 2-story single-family home in the early 1930s. An additional building located on the eastern portion of the property which may have been a residential garage or stable. The Phase Two property has been used for residential and various restaurant businesses since that time.

3.4.2 Summary of Potentially Contaminating Activities

As per Ontario Regulation (O.Reg.) 153/04, a Potential Contaminating Activity (PCA) is defined as one of fifty-nine (59) industrial operations set out in Table 2 of Schedule D that occurs or has occurred in a Phase Two study area. The following PCAs were identified:

- PCA 1 – 337 Montgomery Street – Suspected former heating tank location on the subject site. (PCA#28 – Gasoline and Associated Products Stored in Fixed Tanks). This contributes to an APEC.
- PCA 2 – 350 Montgomery Street – Former automotive repair garage, 20 m south of the subject property (#10 – Commercial Autobody Shops). Based on the close proximity, this contributes to an APEC.
- PCA 3 and PCA4 – neighbouring single family residences – Suspected former heating tanks at these locations within 20 m of the subject site. (PCA#28 – Gasoline and Associated Products Stored in Fixed Tanks). These are considered to contribute to an APEC.
- PCA 5 – 52 MacArthur Avenue – Active automotive repair garage, 100 m south of the subject property (PCA#10 Commercial Autobody Shops). Based on intervening distance and the downgradient location, this is not considered an environmental concern for the Phase Two property.
- PCA 6 – 381 Marguerite Street -Dry cleaners from 1986 to 2001, 185 m south from the Phase One property (PCA#37 Operation of Dry Cleaning Operations). Due to relatively far intervening distance and the downgradient location, this does not represent an APEC for the Phase Two property.
- PCA 7 –120 Montreal Road - Private/retail fuel storage tanks in 1996 and 2009, 200 m north from the Phase One property. (PCA#28 – Gasoline and Associated Products Stored in Fixed Tanks). Due to relatively far intervening distance and the downgradient location, this is not considered an environmental concern for the Phase Two property.
- PCA 8 – 94 Montreal Road -Dry cleaner from 1986 to 2009, 200 m north from the Phase One property (PCA#37 Operation of Dry Cleaning Operations). Due to relatively far intervening distance and the downgradient location, this is not considered an environmental concern for the Phase Two property.
- PCA 9 – 307 Montgomery Street – Elementary School listed as a waste generator from 1994 – 2015 (135 m northwest from the Phase One property). Due to intervening distance and the downgradient location, this is not considered an environmental concern for the Phase Two property.
- PCA 10 – Former railway tracks running north south along the present-day route of the Vanier Parkway 110 m east from the Phase One property, (PCA#46 Rail Yards, Tracks and Spurs). Based

on intervening distance, cross-gradient location, and short migration nature of the typical contaminant for railway operations (metals, creosote), this is not considered an environmental concern for the Phase Two property.

- PCA 11 – Former Champlain Oil Products was present at the southeast corner of McArthur Road and the Vanier Parkway at a distance of 180 m to the southeast. (PCA#28 – Gasoline and Associated Products Stored in Fixed Tanks). Due to relatively far intervening distance, this does not represent an APEC for the Phase Two property.

No other PCAs that took place within the vicinity of the Phase Two property (approximately 250 m radius) were identified.

3.4.3 Areas of Potential Environmental Concern

As a result of the PCAs, the report identified the following APECs at the Phase Two property:

- APEC 1 – (central part of Phase Two property). Former above ground fuel storage tank in basement of the building at the Phase Two property. Contaminated soil and/or groundwater. This APEC is associated with PCA 1. The potential contaminants of concern include PHC and BTEX.
- APEC 2 – (eastern part of Phase Two property). Due to the possible off-site former above ground fuel storage tank in basements there could be contaminated soil and/or groundwater at the Phase Two property. This APEC is associated with PCA 2. The potential contaminants of concern include PHC, BTEX, VOCs, and lead.
- APEC 3 – (south part of Phase Two property). Underground fuel storage tanks at former service garage located south of Phase Two property. Contaminated soil and/or groundwater This APEC is associated with PCA 3 and 4. The potential contaminants of concern include PHC and BTEX.

It is noted that any significant uncertainty or absence of information has the ability to affect the Phase Two Conceptual Site Model. However, based on the information and findings presented within the Phase Two ESA, it is EXP's opinion that any uncertainty would be minimal, and it would not alter the validity of the model presented above.

3.4.4 Topography and Geology

Topographically, the Site is relatively flat. Beneath any fill, the surficial geology of the Phase Two property is characterised by fine textured glaciomarine deposits. The bedrock geology underlying the Phase One property consists of shale of the Billings Formation. Local MOE well records and geotechnical boreholes indicate local geology is sand and clay over black shale. The depth to bedrock is approximately 2-4 m below grade

3.4.5 Estimated Groundwater Flow Direction

Topographically, the Phase Two property is relatively flat. The local groundwater flow direction is toward the west based on previous investigations in the area. The Rideau River is approximately 330 m west from the Phase Two property.

3.4.6 Underground Utilities

The Phase Two property is connected to the municipal water and sewage systems, the natural gas distribution network, and overhead Hydro/telephone/cable lines.

3.5 Deviations from Sampling and Analysis Plan

The field investigative and sampling program was carried out following the requirements of the Site Sampling and Analysis Plan (SAAP in Appendix A). No significant deviations from the Sampling and Analysis Plan were reported that affected the sampling and data quality objectives for the Phase Two property.

3.6 Impediments

No physical impediments were encountered during the field investigation. The entire Phase Two property was accessible at the time of the investigation.

4 Investigation Method

4.1 General

The Phase Two property investigative activities consisted of drilling boreholes to facilitate the collection of soil samples for chemical analysis and the installation of monitoring wells for hydrogeological property characterization and the collection of groundwater samples for chemical analysis.

4.2 Borehole Drilling and Excavating

Prior to the commencement of drilling, the locations of underground public utilities including telephone, natural gas and electrical lines were marked at the Phase Two property by locating companies. A private utility locating contractor was also retained to clear the individual borehole locations.

On April 5, 2019, a total of 3 boreholes (BH1 to BH3) were advanced at the Phase Two property by Downing Estate Drilling, a licensed well contractor, under the full-time supervision of EXP staff. A track mounted CME drill rig with split spoon samplers was used to collect the soil samples. A monitoring well was installed in each borehole to facilitate groundwater sampling. The locations of the boreholes and monitoring wells are presented on Figure 4 in Appendix B.

No petroleum-based greases or solvents were used during drilling activities. EXP staff continuously monitored the drilling activities and recorded the depth of soil sample collection and total depth of boring. Field observations are summarized on the borehole logs provided in Appendix C.

The split spoon samplers were decontaminated between sampling intervals by the drilling contractor using a potable water/phosphate-free detergent solution followed by rinses with potable water.

4.3 Soil Sampling

The soil sampling during the completion of this Phase Two ESA was undertaken in general accordance with the SAAP presented in Appendix A.

Soil samples for geologic characterization were collected on a continuous basis in the overburden materials using 5 cm diameter, 61 cm long, split spoon samplers advanced into the subsurface using the drilling rig. The soil cores were removed from the samplers upon retrieval by drilling personnel. Geologic details of the recovered cores were logged by EXP field staff. EXP staff continuously monitored the drilling activities to log the stratigraphy observed from the recovered soil cores, to record the depth of soil sample collection, to record total depths of borings, and to record visual or olfactory observations of potential impacts. Field observations are summarized on the borehole logs provided in Appendix C.

Soil samples identified for possible laboratory analysis were collected from the split spoon sampler and placed directly into pre-cleaned, laboratory-supplied glass sample jars/vials. Samples to be analysed for VOC, PHC fraction F1 and BTEX were collected using a soil core sampler and placed in to vials containing methanol as a preservative. The jars and vials were sealed with Teflon-lined lids to minimize head-space and reduce the potential for induced volatilization during storage/transport prior to analysis. All soil samples were placed in clean coolers containing ice prior to and during transportation to the subcontract laboratory, Maxxam Analytics (Maxxam) of Ottawa, Ontario. The samples were transported/submitted within 24 hours of collection to the laboratory following chain of custody protocols for chemical analysis.

4.4 Field Screening Measurements

Readings of petroleum vapour concentrations in the soil samples collected during the drilling investigation were recorded using an RKI Eagle 2, where there was sufficient recovery. This instrument is designed to detect and measure concentrations of combustible gas in the atmosphere to within 5 parts per million by volume (ppmv) from 0 ppmv to 200 ppmv, 10 ppmv increments from 200 ppmv to 1,000 ppmv, 50 ppmv increments from 1,000 ppmv to 10,000 ppmv, and 250 ppmv increments above 10,000 ppmv. It is equipped with two ranges of measurement, reading concentrations in ppmv or in percentage lower explosive limit (% LEL). The RKI Eagle 2 instrument can determine combustible vapour concentrations in the range equivalent to 0 to 11,000 ppmv of hexane.

The instrument was configured to eliminate any response from methane for all sampling conducted at the subject property. Instrument calibration is checked on a daily basis in both the ppmv range and % LEL range using standard gases comprised of known concentrations of hexane (400 ppmv, 40% LEL) in air. If the instrument readings are within ±10% of the standard gas value, then the instrument is deemed to be calibrated, however if the readings are greater than ±10% of the standard gas value then the instrument is re-calibrated prior to use.

A portion of each soil sample collected from the boreholes was placed in a sealed “zip-lock” plastic bag and allowed to reach ambient temperature prior to field screening using an RKI Eagle combustible vapour meter, calibrated to hexane. The samples are left to equilibrate within the bag at a temperature above 15^{o}C for thirty minutes before measurement of the peak headspace concentration is taken. The measurements were made by inserting the instrument’s probe into the plastic bag while manipulating the sample to ensure volatilization of the soil gases. These readings provide a real-time indication of the relative concentration of combustible vapours encountered in the subsurface during drilling and are used to aid in the assessment of the vertical and horizontal extent of contamination and the selection of soil samples for analysis. The field screening measurements, in ppmv hexane equivalents, are presented with the borehole logs provided in Appendix C.

4.5 Soil Sample Submission

Soil samples were selected for laboratory analysis based on combustible vapour measurements and visual and olfactory evidence of impacts, where observed. One worst case soil sample from each borehole was submitted for laboratory analysis of metals, VOC, PAH, PHC, and BTEX.

4.6 Groundwater Monitoring Well Installation

Groundwater monitoring wells were installed in each borehole by Downing. The monitoring wells were installed in general accordance with the Ontario Water Resources Act - R.R.O. 1990, Regulation 903 (as-amended).

The monitoring wells consisted of a 3.0 m length of 37 mm diameter Schedule 40 PVC screen and an appropriate length of PVC riser pipe. The annular space around the well was backfilled with sand to an average height of 0.3 m above the top of the screen. A bentonite seal was added from the top of the sand pack to approximately 0.3 m below ground surface. The monitoring wells were completed with flush mount protector at the asphalt surface. Details of the monitoring well installations are shown on the Borehole Logs provided in Appendix C.

The installation details of the installed monitoring wells are summarized in Table 4.1.

Table 4.1: Monitoring Well Installation Details

Monitoring Well/Piezometer	Ground Elevation (MASL)	Top of Sand Elevation (m)	Top of Screen Elevation (m)	Bottom of Screen Elevation (m)	Bottom of Borehole Elevation (m)	Depth of Borehole (mbgs)
BH1	100.47	94.7	94.4	91.3	91.3	9.15
BH2	100.69	98.7	98.4	95.3	94.5	6.2
BH3	100.69	97.7	97.4	94.3	94.4	6.3

Note: Elevations were collected using a high precision GPS unit and a geodetic datum was established at the Phase Two Property.
mbgs – metres below ground surface
MASL metres above mean sea level

When the monitoring wells are no longer required, they must be decommissioned in accordance with the procedure outlined in the Ontario Water Resources Act - R.R.O. 1990, Regulation 903 - Amended to O. Reg. 128/03.

Measures taken to minimize the potential for cross contamination or the introduction of contaminants during well construction included:

- The use of well pipe components (e.g. riser pipe and well screens) with factory machined threaded flush coupling joints;
- Construction of wells without the use of glues or adhesives;
- Removing the protective plastic wraps from well components at the time of borehole insertion to prevent contact with the ground and other surfaces;
- Cleaning of augers between sampling locations; and,
- The use of hollow stem augers to prevent loose and potentially contaminated material in overlying layers from sloughing into the boreholes and coming into contact with groundwater.

4.7 Field Measurement of Water Quality Parameters

The static water level was measured, the depth of each well was recorded and the well sampled. EXP used an interface probe to measure the possible presence of light non-aqueous phase liquid (LNAPL) in the monitoring well. The meter was calibrated by Pine Environmental Limited prior to the fieldwork using standard pH and conductivity solution.

4.8 Groundwater: Sampling

Groundwater samples were collected from the monitoring wells on April 16, 2019. The monitoring activities consisted of measuring the depth to groundwater in each monitoring well so that groundwater flow and direction below the Phase Two Property could be assessed. The water level measurements were recorded on water level log sheets. The water level meter probe was decontaminated between monitoring well locations with a spray bottle of water and alconox solution, paper towel, then potable water.

The well was then sampled using a “low flow” technique whereby the well was continuously purged using an electric pump (equipped with dedicated tubing) and parameters within the purged water were monitored using a groundwater chemistry multi-meter probe (YSI 550) at 3-minute intervals. These parameters include: pH, conductivity, temperature, and salinity. Once these parameters were found to deviate less than 10% over three testing events, equilibrium was deemed to have occurred and a sample of the groundwater was collected. The samples submitted for metals analysis were filtered in the field using an in-line 0.45 µm filter.

The purge water was also continuously monitored for visual and olfactory evidence of petroleum and solvent impact (sheen and odour). The groundwater sampling during the completion of this Phase Two ESA was undertaken in accordance with the Sampling and Analysis Plan presented in Appendix A.

The groundwater samples were collected in laboratory provided sample bottles and submitted to Maxxam Analytics for analysis of metals, VOC, PHC, and BTEX. The groundwater samples were placed in clean coolers containing ice prior to and during transportation to the subcontract laboratory.

4.9 Sediment: Sampling

As no water body was present at the Phase Two Property, sediment sampling was not part of the Phase Two ESA.

4.10 Analytical Testing

The contracted laboratory selected to perform chemical analysis on all soil and water samples was Maxxam Analytics. Maxxam is an accredited laboratory under the Standards Council of Canada/Canadian Association for Laboratory Accreditation in accordance with ISO/IEC 17025:1999- *General Requirements for the Competence of Testing and Calibration Laboratories*.

4.11 Elevation Survey

An elevation survey was conducted to obtain vertical control of the newly installed monitoring well locations. The top of casing and ground surface elevation of each monitoring well location was surveyed using a high precision GPS unit. The geodetic reference was provided by the City of Ottawa GeoOttawa website.

4.12 Residue Management

The minor amount of drill cuttings was placed in steel drums at the Phase Two property.

Purge water was also stored in a steel drum at the Phase Two property.

4.13 Quality Assurance and Quality Control Measures

A QA/QC program was also implemented to ensure that the analytical results received are accurate and dependable. A QA/QC program is a system of documented checks that validate the reliability of the data collected regarding any given Site. Quality Assurance is a system that ensures that quality control procedures are correctly performed and documented. Quality Control refers to the established procedures observed both in the field and in the laboratory, designed to ensure that the resulting end data meet intended quality objectives. The QA/QC program implemented by EXP incorporated the following components:

- Collection and analysis of blind duplicate soil and groundwater samples to ensure analytical precision;

- Using dedicated and/or disposal sampling equipment;
- Using a trip blank for VOC during groundwater sampling;
- Following proper decontamination protocols to minimize cross-contamination;
- Maintaining field notes and completing field forms to document on-Site activities; and,
- Using only laboratory supplied sample containers and following prescribed sample protocols, including proper preservation, meeting sample hold times, proper chain of custody documentation, to ensure integrity of the samples.

Maxxam Analytics's QA/QC program involved the systematic analysis of control standards for the purpose of optimizing the measuring system as well as establishing system precision and accuracy and included calibration standards, method blanks, reference standards, spiked samples, surrogates and duplicates.

5 Review and Evaluation

5.1 Geology

The detailed soil profiles encountered in the boreholes are provided on the attached borehole logs (Appendix C). Boundaries of soils indicated on the logs are intended to reflect transition zones for the purpose of environmental assessment and should not be interpreted as exact planes of geological change. A brief description of the soil stratigraphy at the Phase Two property, in order of depth, is summarized in the following sections. The interpreted Phase Two property geology is shown on the enclosed cross section (Figure 5, Appendix B).

5.1.1 Fill Material

A 12 to 20 mm layer of asphalt was observed in BH1 and BH2. A 50 cm layer of topsoil was found at the ground surface in BH3. Sand and gravel fill material was observed in BH1 and BH2 and ranged in thickness from 0.6 m to 1.5 m. No petroleum odours were identified in the fill material.

5.1.2 Native Material

Below the topsoil was a layer of sandy silty till that extended to the bedrock surface that ranged from 5.1 m to 6.0 m. No petroleum odours were identified in the native soil.

The grain size analyses showed that less than 50% of the soil had a grain size of silt or finer. This indicates that the native soil is coarse grained. The results of the grain size analyses are found in Appendix A.

5.1.3 Bedrock

Shale bedrock was encountered from 5.1 m to 6.0 m bgs.

5.2 Aquifers

In the Ottawa area, the regional aquifers consist of both bedrock and overburden sources, with the two key aquifers consisting of the highly weathered and fractured portion of the upper bedrock surface and overlying sand and gravel deposits (contact zone aquifer) and deeper bedrock aquifers.

In southeastern Ontario, there are four main bedrock aquifers (Singer et al., 2003):

- Nepean-March-Oxford Aquifer
- Rockcliffe Aquifer
- Ottawa Group Aquifer
- Billing-Carlsbad-Queenston Aquifer

In the vicinity of the Phase One Property, the primary bedrock aquifer is the Ottawa Group. This aquifer is considered to have good water yielding capacity with generally fair to good water quality (RRCA and SNCA, 2008).

The contact zone aquifer, which generally includes the sand and gravel deposits and underlying fractured bedrock, is present across the Ottawa region, with more than 90% of the water extracted in eastern Ontario is extracted from the Contact Zone Aquifer (RRCA and SNCA, 2008). The contact zone aquifer varies in thickness across the region due to the large variation in the zone of upper bedrock fracturing.

Regional groundwater flow in both the contact zone and bedrock have been interpreted to be to the northeast towards the Ottawa River, generally following bedrock topography.

Recharge of aquifers regionally is limited due to the confining silty clay layer resulting from the former Champlain Sea. It has been estimated that only 10% of precipitation that falls in the Ottawa region infiltrates into the ground to recharge the aquifers, with the remainder of the precipitation being lost to evapotranspiration or runoff to rivers and lakes (City of Ottawa, 2011).

5.3 Groundwater Elevations and Flow Direction

The monitoring well network advanced as part of this Phase Two ESA consists of three monitoring wells (MW19-1 to MW19-3) screened within the overburden and limestone bedrock at the Phase Two property.

Groundwater elevations and water levels were measured at the Phase Two property on April 16, 2019. Groundwater was encountered at a depth of 3.17 m bgs in BH2 to 3.57 m bgs in BH1. No petroleum sheens were observed in the monitoring wells during either sampling event.

A summary of the elevation survey and groundwater levels for each well are shown on Table 5.1.

Table 5.1: Groundwater Elevations

Monitoring Well ID	Ground Elevation (MASL)	April 16, 2019	
		Water Level (mbg)	Water Level (MASL)
BH1	100.47	3.57	96.90
BH2	100.69	3.17	97.52
BH3	100.69	3.22	97.47

Note: Elevations were referenced using a high precision GPS unit and a geodetic datum was established at the Phase Two Property.
MASL – metres above sea level
mbg – metres below ground

Based on the groundwater elevations from April 16, 2019, the groundwater flow direction is to the south as shown on Figure 6 in Appendix B. EXP notes that groundwater flow direction and level can be influenced by utility trenches and other subsurface structures and may migrate in the bedding stone of nearby subsurface utility trenches.

5.4 Groundwater: Hydraulic Gradients

The horizontal hydraulic gradient, between each monitoring well pair, is calculated using the following equation:

$$i = \Delta h/\Delta s$$

Where,

i = horizontal hydraulic gradient;
Δh (m) = groundwater elevation difference; and,
Δs (m) = separation distance.

The horizontal hydraulic gradients for the groundwater flow components identified in the overburden aquifer (i.e. south flow) based on the April 2019 groundwater elevations and was 0.045.

5.5 Single Well Response Tests (SWRTs) Analysis

A single well response test was conducted on BH1 as a part of this Phase Two ESA. The calculated hydraulic conductivity of the shale bedrock in BH1 was 4.4 x 10^{-6} m/s.

5.6 Groundwater: Hydraulic Conductivity

The horizontal hydraulic conductivity in the overburden unit was estimated from the analysis of the soil types observed during the drilling activities and from a review of the grain size analysis. The majority of the native soils consisted of sandy silt overlying silty sand and gravel till or shale bedrock. The water table was found within the shale bedrock and boulder cobbly till 3.5 m from ground surface. Based on estimates provided by *Freeze and Cherry (1979)* the approximate horizontal hydraulic conductivity for shale bedrock ranges from 10^{-9} m/s to 10^{-12} m/s. Since the calculated hydraulic conductivity of the shale at the site was much higher than this range, it indicates that the shale at the site is likely weathered and fractured.

5.7 Soil Texture

Based on the grain size analysis of three soil samples, the soil texture at the water table at the Phase Two property was assessed to be coarse textured (refer to the three grain-size/hydrometer analyses in Appendix E) consisting of sandy silt till. Therefore, the soil texture is coarse grained.

5.8 Soil: Field Screening

Field screening involved using the combustible vapour meter to measure vapour concentrations, in parts per million volume (ppmv) hexane equivalent, in the collected soil samples in order to assess the presence of soil gases which would imply potential petroleum hydrocarbon impact. The vapour readings obtained during the drilling activities are presented on the borehole logs in Appendix D. As indicated, vapour readings ranged from 0 ppmv to 25 ppmv.

Inspection of the soil cores retrieved from the boreholes did not indicate the presence of sheen, the presence of a separate organic phase, or other evidence of a non-aqueous phase liquid (NAPL) either in the surficial fill or overburden soil materials. No petroleum staining or odours were observed in any of the soil samples.

5.9 Soil Quality

In accordance with the scope of work, chemical analyses were performed on selected soil samples recovered from the boreholes. The selection of representative “worst case” soil samples from each borehole was based on field visual or olfactory evidence of impacts and/or presence of potential water bearing zones. Summaries of the soil analytical results are found in Appendix D. Copies of the laboratory Certificates of Analysis for the tested soil samples are provided in Appendix E.

The MECP Table 3 SCS are applicable if soil pH is in the range of 5 to 11 for subsurface soil (greater than 1.5 m below soil surface). The Certificates of Analysis includes a pH measurement taken from the subsurface. Two shallow soil samples and two deeper soil samples were submitted for pH analysis with

results of 7.55 to 7.99. The pH values were within the acceptable range for the application of MECP Table 3 SCS.

5.9.1 Petroleum Hydrocarbons

Three (3) soil samples and a blind duplicate were submitted for PHC and BTEX analyses. The concentrations of PHC and BTEX measured in the analysed soil samples were less than the MECP 2011 Table 3 SCS, with the exception of PHC F1 and F2 in the soil sample from BH1 and PHC F2 in the soil sample from BH2, as shown in Table 1 in Appendix D. The area of PHC impact to soil is shown on Figure 7 and on cross-sections shown on Figures 10A and 11A.

5.9.2 Metals

Three (3) soil samples and a blind duplicate were submitted for metals analyses. The concentrations of metals measured in the analysed soil samples were less than the MECP 2011 Table 3 SCS, as shown in Table 2 in Appendix D.

5.9.3 Volatile Organic Compounds

Three (3) soil samples and a blind duplicate were submitted for VOC analyses. The concentrations of VOC measured in the analysed soil samples were generally less than the MECP 2011 Table 3 SCS, with the exception of hexane in the soil sample from BH1, as shown in Table 3 in Appendix D. The area of VOC impact to soil is shown on Figure 9 and on cross-sections shown on Figures 10B and 11C.

5.9.4 Polycyclic Aromatic Hydrocarbons

Three (3) soil samples and a blind duplicate were submitted for PAH analyses. As shown in Table 4 in Appendix D, the concentrations of PAH measured in the analysed soil samples were less than the MECP 2011 Table 3 SCS, with the exception of benzo(a)pyrene and fluoranthene in the sample from BH2. The area of PAH impact to soil is shown on Figure 8 and on the cross-section shown on Figure 11B.

5.9.5 Chemical Transformation and Soil Contaminant Sources

There are two soil samples located east of the building that had one or more MECP Table 3 SCS exceedances of PHC F1, PHC F2, hexane, benzo(a)pyrene and fluoranthene. The maximum soil concentrations measured at the Phase Two property are presented in Table 5. Chemical transformations are a concern at the Phase Two property. However, based on the obtained results, soils are not expected to be acting as a contaminant mass that could impact the Site's groundwater.

5.9.6 Evidence of Non-Aqueous Phase Liquid

Inspection of the soil cores retrieved from the boreholes did not indicate the presence of non-aqueous phase liquid (NAPL), staining or sheen. Odours were not observed during soil sampling activities. NAPLs are not expected to be present at the Phase Two property.

5.10 Groundwater Quality

Representative groundwater samples were collected from the newly installed monitoring wells to assess groundwater quality at the Phase Two property. Evidence of free phase product (i.e. visible film or sheen), and odour was not noted during well development or purging.

The groundwater analytical results are summarized on Tables 5 to 7 in Appendix D and the Certificates of Analysis are enclosed in Appendix E.

5.10.1 Petroleum Hydrocarbons

Three (3) groundwater samples and a blind duplicate were submitted for the chemical analysis of PHC and BTEX. As shown in Table 6 in Appendix D, the concentrations of PHC and BTEX parameters in the groundwater samples were non-detect and below the MECP Table 3 SCS.

5.10.2 Metals

Three (3) groundwater samples and a blind duplicate were submitted for the chemical analysis of metals. As shown in Table 7 in Appendix D, the concentrations of metals parameters in the groundwater samples were less than the MECP Table 3 SCS.

5.10.3 Volatile Organic Compounds

Three (3) groundwater samples and a blind duplicate and a trip blank were submitted for the chemical analysis of volatile organic compounds (VOC). As shown in Table 8 in Appendix D, the concentrations of VOC parameters in the groundwater sample were non-detect and below the MECP Table 3 SCS.

5.10.4 Chemical Transformation and Contaminant Sources

There were no exceedances of the MECP Table 3 SCS in the groundwater samples. The maximum groundwater concentrations measured at the Phase Two property are presented in Table 9.

5.10.5 Evidence of Non-Aqueous Phase Liquid

Inspection of the groundwater monitoring wells did not indicate the presence of non-aqueous phase liquid (NAPL), staining or sheen. Odours were not observed during groundwater sampling activities. NAPLs are not expected to be present at the Phase Two property.

5.11 Sediment Quality

As there were no water bodies on the Phase Two property, surface water and sediment sampling were not required.

5.12 Quality Assurance and Quality Control Results

Quality assurance and quality control measures were taken during the field activities to meet the objectives of the sampling and quality assurance plan to collect unbiased and representative samples to characterize existing conditions in the fill/upper overburden materials and groundwater at the Phase Two property. QA/QC measures, as described in Section 4.13, included:

- Using dedicated and/or disposal sampling equipment;
- Following proper decontamination protocols to minimize cross-contamination;
- Maintaining field notes and completing field forms to document on-site activities; and,
- Using only laboratory supplied sample containers and following prescribed sample protocols, including proper preservation, meeting sample hold times, proper chain of custody documentation, to ensure integrity of the samples.

Review of field activity documentation indicated that recommended sample volumes were collected from groundwater for each analytical test group into appropriate containers and preserved with proper chemical reagents in accordance with the protocols set out in the *Protocol for Analytical Methods used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act* (MOE, 2004). Samples were preserved at the required temperatures in insulated coolers and met applicable holding time requirements, when relinquished to the receiving laboratory. Where the concentrations of the analyzed representative soil sample and/or the duplicate were not greater than five times the laboratory MDL, RPDs could not be calculated. The results of the analyses where the concentrations were at least five times the laboratory MDL compared to the duplicate sample concentrations were within an acceptable degree of variance. The RPD results are found in Tables 10 to 16 in Appendix D. Since laboratory duplicate measures laboratory precision while field duplicates measures laboratory and field precision, alert limits for field duplicates are two times the laboratory RPD.

Duplicate soil sample pair BH3 SS5 and its duplicate BH10 SS3 were submitted for chemical analysis of BTEX, PHC, VOC and duplicate soil sample pair BH1 SS1 and its duplicate BH10 SS2 were submitted for chemical analysis of PAH and metals. For QA/QC purposes, the analytical sample results are quantitatively evaluated by calculating the relative percent difference (RPD) between the samples and their duplicates. The concentrations of BTEX and PHC F1 were generally less than the laboratory reported detection limits for both the primary and duplicate samples. The RPD for PHC and VOC were less that the alert limits and therefore the soil data is acceptable from a RPD perspective. The RPD for several PAH parameters exceeded the alert limits which shows that the duplicate sample had relatively higher concentrations and they were heterogeneous.

Duplicate groundwater sample pair BH1 and its duplicate DUP-1 were submitted for chemical analysis of VOC, PHC and metals. The concentrations of VOC and PHC were less than the laboratory reported detection limits for both the primary and duplicate samples. The RPDs for metals were less than the alert limits and therefore the data is acceptable from a RPD perspective.

Certificates of Analysis were received from Maxxam Analytics reporting the results of all the chemical analyses performed on the submitted soil and groundwater samples. Copies of the laboratory Certificates of Analysis are provided in Appendix E. A review of the Certificates of Analysis prepared by the laboratory indicates that they were in compliance with the requirements set out under subsection 47(3) of O.Reg. 511/09.

The analytical program conducted by laboratory included analytical test group specific QA/QC measures to evaluate the accuracy and precision of the analytical results and the efficiency of analyte recovery during solute extraction procedures. The laboratory QA/QC program consisted of the preparation and analysis of laboratory duplicate samples to assess precision and sample homogeneity, method blanks to assess analytical bias, spiked blanks and QC standards to evaluate analyte recovery, matrix spikes to evaluate matrix interferences and surrogate compound recoveries (VOCs only) to evaluate extraction efficiency. The laboratory QA/QC results are presented in the Quality Assurance Report provided in the Certificate of Analysis prepared by the laboratory. The QA/QC results are reported as percent recoveries for matrix spikes, spike blanks and QC standards, relative percent difference for laboratory duplicates and analyte concentrations for method blanks.

The laboratory QA/QC results were assessed against test group control limits in the case of spiked blanks, matrix spikes and surrogate recoveries and alert criteria in the case of method blanks and laboratory duplicates. Review of the laboratory QA/QC results reported by the laboratory indicated that they were within acceptable control limits or below applicable alert criteria for the sampled media and analytical test groups. Based on the assessment of the QA/QC, the analytical results reported by the laboratory are of acceptable quality and data qualifications are not required.

6 Phase Two Conceptual Site Model

This section presents a Conceptual Site Model (CSM) providing a narrative, graphical and tabulated description integrating information related to the Phase Two property's geologic and hydrogeological conditions, areas of potential environmental concern/potential contaminating activities, the presence and distribution of contaminants of concern, contaminant fate and transport, and potential exposure pathways.

For the purposes of this Phase Two CSM, the information relied upon was taken from all current and previous environmental reports conducted for the Phase Two property. However, the data relied upon was limited to the most recent information to convey the current Phase Two property conditions.

6.1 Site Identification Information

The Phase Two property is located on the north side of Montgomery Street, at the corner of Montgomery Street and Selkirk Street in Ottawa, as shown on Figure 1 in Appendix B. The Phase Two property is occupied by a large 2-storey single family home with one (1) below grade level (currently vacant). Additionally, a restaurant is attached to the eastern side of the building with slab-on-grade construction (currently vacant). An asphalt parking area is located along the eastern side of the property, and landscaped areas are present along the western property boundary (Figure 2 in Appendix B). The Phase Two property is located within a municipally serviced area of the City of Ottawa. At the time of the investigation, the Phase Two property was owned by Maybach Homes.

Refer to the following table for the Phase Two property identification information.

Civic Address	337 Montgomery Street, Ottawa, ON
Current Land Use	Residential and Commercial
Proposed Land Use	Residential
Legal Description	PLAN 49 LOT 23 LOT 25 LOT 27; PT LOT 70, City of Ottawa
Property Identification Number	042370063
UTM Coordinates	447903.1 m E, 5031143.5 m N
Phase One Property Area	0.1 ha
Property Owner	Maybach Homes Inc.
Owner Contact	Mr. Mike Baroud
Owner Address	485 Kirkwood Avenue, Ottawa, ON

6.2 Physical Site Description

The Phase Two CSM provides a narrative and graphical interpretation of the Phase Two property surface features, near surface geologic and hydrogeologic conditions, PCOCs, contaminant fate and transport mechanisms, and relevant receptors and exposure pathways. These components are discussed in the following sections and summarized in Table 1 in the Tables appendix.

The Phase Two property is located in a residential area of Ottawa where potable water is supplied by the City of Ottawa and therefore the MECP Table 3 Site Condition Standards (SCS) are applied to the Phase Two property. The City of Ottawa obtains its water from the Ottawa River, located approximately 5.5 km northeast of the Phase Two property.

In accordance with Section 41 of the Ontario Regulation 153/04 (as amended), the Phase Two property is not an environmentally sensitive area. The Phase Two property is not located within an area of natural significance and it does not include land that is within 30 metres of an area of natural significance.

Based on the Phase Two ESA investigation, the Phase Two property is not a shallow soil property as defined in Section 43.1 of the regulation. It does it include all or part of a water body or is adjacent to a water body or includes land that is within 30 metres of a water body.

6.3 Geological and Hydrogeological Setting

Based on the Phase Two ESA, a 12 to 20 mm layer of asphalt was observed in BH1 and BH2. A 50 cm layer of topsoil was found at the ground surface in BH3. Sand and gravel fill material was observed in BH1 and BH2 and ranged in thickness from 0.6 m to 1.5 m. No petroleum odours were identified in the fill material. Below the topsoil was a layer of sandy silty till that extended to the bedrock surface that ranged from 5.1 m to 6.0 m. No petroleum odours were identified in the native soil.

The Phase Two property stratigraphy characteristics are summarized in Table 6.1.

Table 6.1: Site Geological Characteristics

Stratigraphy	Details	Minimum Depth Observed (m bgs)	Maximum Depth Observed (m bgs)	Approximate Elevation Range (m ASL)
Surface	Asphalt / Concrete / Topsoil	0	0.6	100.69 to 100.10
	Fill Material – Gravel/Crushed Stone	0.2	1.5	99.2 to 100.4
Overburden	Silty Sand and Gravel Till	0.2	6.0	94.4 to 100.1
Bedrock	shale	5.1	6.0	94.4

The geology of the Phase Two property is illustrated on the cross-sections (Figures 9A to 10D).

Black shale bedrock was encountered at a depth of 5.1 m to 6.0 m. Groundwater was encountered at a depth of 3.17 m bgs in BH2 to 3.57 m bgs in BH1. No petroleum sheens were observed in the monitoring wells during the sampling event.

Topographically, the Phase Two property is relatively flat. The Rideau River is approximately 330 m east from the Phase Two property. Regional groundwater flow direction is inferred to be in the eastern direction towards the Rideau River. Based on the groundwater elevations, the groundwater flow direction is to the south.

Refer to Table 6.2 for the Phase Two property hydrogeology characteristics based on groundwater monitoring observations.

Table 6.2: Site Hydrogeology Characteristics

Location	Observations
Depth to Groundwater	3.17 m to 3.57 m bgs
Groundwater Elevation	96.90 m AMSL to 97.52 m AMSL

Location	Observations
Direction of Groundwater Flow	South
Hydraulic Conductivity (1)	4.4 x 10^{-6} m/s
Horizontal Hydraulic Gradient	0.045 m/m

m bgs = meters below ground surface; m AMSL = meters above mean sea level

(1) Based on values calculated in the Phase Two ESA (EXP, 2019)

The hydrogeology of the Phase Two property is illustrated on the groundwater elevation plans (Figure 6) and are based on the most recent groundwater information collected from the Phase Two property.

6.3.3 Site Sensitivity

The Phase Two property Sensitivity classification with respect to the conditions set out under Section 41 and 43.1 of O.Reg.153/04 were evaluated to determine if the Phase Two property is sensitive, as presented in Table 6.7.

Table 6.3: Site Sensitivity

Sensitivity	Classification	Does Sensitivity Apply to Phase Two Property?
Section 41 applies if	(i) property is within an area of natural significance	No
	(ii) property includes or is adjacent to an area of natural significance or part of such an area	No
	(iii) property includes land that is within 30 m of an area of natural significance or part of such an area	No
	(iv) soil at property has a pH value for surface soil less than 5 or greater than 9	No
	(v) soil at property has a pH value for sub-surface soil less than 5 or greater than 11	No
	(vi) a qualified person is of the opinion that, given the characteristics of the property and the certifications the qualified person would be required to make in a record of Phase Two Property condition in relation to the property as specified in Schedule A, it is appropriate to apply this section to the property	No
Section 43.1 applies if	(i) property is a shallow soil property	No
	(ii) property includes all or part of a water body or is adjacent to a water body or includes land that is within 30 m of a water body	No

6.3.6 Land Use

Based on a review of historical aerial photographs, chain of title for the property, historical maps, and other records review, it appears the Phase One property was initially developed with the 2-story single-family home in the early 1930s. An additional building located on the eastern portion of the property which may

have been a residential garage or stable. The Phase One property has been used for residential and various restaurant businesses since that time.

The intended future land use of the Phase Two property is residential.

6.4 Subsurface Structures and Utilities

The Phase Two property is municipally serviced by underground utilities such as bell, gas, water and sewer. The groundwater flow pattern in the overburden could be influenced by buried services.

6.5 Potentially Contaminating Activities

As per Ontario Regulation (O.Reg.) 153/04, a Potential Contaminating Activity (PCA) is defined as one of fifty-nine (59) industrial operations set out in Table 2 of Schedule D that occurs or has occurred in a Phase One study area. The following PCAs were identified:

- PCA 1 – 337 Montgomery Street – Suspected former heating tank location on the subject site. (PCA#28 – Gasoline and Associated Products Stored in Fixed Tanks). This contributes to an APEC.
- PCA 2 – 350 Montgomery Street – Former automotive repair garage, 20 m south of the subject property (#10 – Commercial Autobody Shops). Based on the close proximity, this contributes to an APEC.
- PCA 3 and PCA4 – neighbouring single family residences – Suspected former heating tanks at these locations within 20 m of the subject site. (PCA#28 – Gasoline and Associated Products Stored in Fixed Tanks). These are considered to contribute to an APEC.
- PCA 5 – 52 MacArthur Avenue – Active automotive repair garage, 100 m south of the subject property (PCA#10 Commercial Autobody Shops). Based on intervening distance and the downgradient location, this is not considered an environmental concern for the Phase Two property.
- PCA 6 – 381 Marguerite Street -Dry cleaners from 1986 to 2001, 185 m south from the Phase One property (PCA#37 Operation of Dry Cleaning Operations). Due to relatively far intervening distance and the downgradient location, this does not represent an APEC for the Phase Two property.
- PCA 7 –120 Montreal Road - Private/retail fuel storage tanks in 1996 and 2009, 200 m north from the Phase One property. (PCA#28 – Gasoline and Associated Products Stored in Fixed Tanks). Due to relatively far intervening distance and the downgradient location, this is not considered an environmental concern for the Phase Two property.
- PCA 8 – 94 Montreal Road -Dry cleaner from 1986 to 2009, 200 m north from the Phase One property (PCA#37 Operation of Dry Cleaning Operations). Due to relatively far intervening distance and the downgradient location, this is not considered an environmental concern for the Phase Two property.
- PCA 9 – 307 Montgomery Street – Elementary School listed as a waste generator from 1994 – 2015 (135 m northwest from the Phase One property). Due to intervening distance and the downgradient location, this is not considered an environmental concern for the Phase Two property.
- PCA 10 – Former railway tracks running north south along the present-day route of the Vanier Parkway 110 m east from the Phase One property, (PCA#46 Rail Yards, Tracks and Spurs). Based on intervening distance, cross-gradient location, and short migration nature of the typical contaminant for railway operations (metals, creosote), this is not considered an environmental concern for the Phase Two property.

- PCA 11 – Former Champlain Oil Products was present at the southeast corner of McArthur Road and the Vanier Parkway at a distance of 180 m to the southeast. (PCA#28 – Gasoline and Associated Products Stored in Fixed Tanks). Due to relatively far intervening distance, this does not represent an APEC for the Phase Two property.

No other PCAs that took place within the vicinity of the Phase Two property (approximately 250 m radius) were identified.

6.5.1 Areas of Potential Environmental Concern / Potential Contaminants of Concern

As per Ontario Regulation 153/04 (as amended), Potential Contaminating Activity (PCA) is defined as one of the 59 industrial operations set out in Table 2 of Schedule D that occurs or has occurred on the Phase Two property or within the Phase One ESA study area. Based on Phase One ESA, the identified areas of potential environmental concern (APEC) and potential contaminants of concern (PCOC) are summarized in the table below and are shown on Figure 2 in Appendix B.

Table 5.2: Areas of Potential Environmental Concern

Area of Potential Environmental Concern (APEC)	Location of APEC on Phase One Property	Potentially Contaminating Activity (PCA)	Location of PCA (On-Site or Off-Site)	Contaminants of Concern	Media Potentially Impacted (Groundwater, Soil and/or Sediment)
1. Potential soil and groundwater impact from a former on-site heating oil above ground storage tank	Central part of Site	#28: Gasoline and Associated Products Storage in Fixed Tanks	On-Site	Petroleum hydrocarbons (PHCs), benzene, toluene, ethylbenzene and xylenes (BTEX)	Soil and groundwater
2. Potential groundwater impact from a historic automotive repair garage	Southern half of the Site	#10: Commercial Autobody Shops	20 m off-site south	PHC, BTEX, volatile organic compounds (VOCs), and metals	Soil and groundwater
3. Potential soil and groundwater impact from a former heating oil above ground storage tanks on neighbouring residential properties	East part of Site	28: Gasoline and Associated Products Storage in Fixed Tanks	20 m off-site	PHC, BTEX	Soil and groundwater

6.5.2 Investigation and Remediation

The Phase Two ESA was conducted to assess the soil and groundwater quality at the Phase Two property. As indicated in the APEC and PCOC Table (above), the analytical program of the Phase Two ESA included testing of soil for PHC, VOC, PAH, and metals from the boreholes and VOC, PHC and metals in the groundwater from the monitoring wells on the Phase Two property. The monitoring well locations are shown on Figure 5 in Appendix B.

6.5.3 Contaminants of Concern (COC)

Soil

Based on the results of the investigation, there are two soil samples located east of the building that had one or more MECP Table 3 SCS exceedances of PHC F1, PHC F2, hexane, benzo(a)pyrene and/or fluoranthene.

A variety of physical, chemical and biochemical mechanisms affect the fate and transport of the potential COCs in soil, the contribution of which is dependent on the soil conditions and the chemical/physical properties of the COCs. Relevant fate and transport mechanisms are natural attenuation mechanisms, including advection mixing, mechanical dispersion/molecular diffusion, phase partitions (i.e. sorption and volatilization), and possibly abiotic or biotic chemical reactions, which effectively reduce COC concentrations.

Concentrations of the COCs in soil will be reduced by the effects of molecular diffusion and the creation of concentration gradients. As non-volatile chemical constituents PHC F3, benzo(a)pyrene and fluoranthene may undergo abiotic or biotic chemical reactions associated with the soil mineral particles and the micro-organisms present in the overburden material.

As a result of the various natural attenuation mechanisms in the soil environment, the concentrations of any COCs in soil will be reduced at the Phase Two property. The soil impacts are shown on the geologic cross sections (Figures 10A to 11C).

Based on the results of the investigation, there are two soil samples located east of the building that had one or more exceedances of PHC F1, PHC F2, hexane, F3, benzo(a)pyrene and/or fluoranthene of the MECP Table 3 SCS. The estimated volume of impacted soil is approximately 1,600 m^3. This is based on a shallow area of PAH impact at BH2 with a volume of 300 m^3 and a deeper area of PHC impact at BH1 and BH2 with a volume of 1,300 m^3.

Groundwater

Based on the results of the investigation, there are no contaminants of concern in groundwater at the Phase Two property.

6.5.4 Contaminant Fate and Transport

Human Health Receptors and Exposure Pathways

The Phase Two property is used for residential and commercial purposes and is occupied by a residence and restaurant. The Phase Two property will be redeveloped to medium density residential in the future. The potential on-Site human receptors currently comprise residents, long-term workers, short-term workers, property visitors (adult, teen, child, toddler and infant), and construction workers. The future potential residential land use on-Site human receptors comprise residents (adult, teen, child, toddler and infant) and short-term visitors (adult, teen, child, toddler and infant).

The potential on-site exposure pathways for the construction workers are inadvertent soil ingestion, soil particulate inhalation, soil dermal contact, incidental groundwater ingestion, groundwater dermal contact and ambient vapour inhalation (sourced from soil, due to potential work conducted in a trench scenario).

The potential on-site exposure pathways for the short-term (outdoor) workers are soil particulate inhalation, soil dermal contact, and inadvertent soil ingestion.

The potential on-site exposure pathways for the long-term (indoor) workers, residents and property visitors indoor air inhalation (sourced from soil).

Ecological Receptors and Exposure Pathways

The Phase Two property is comprised of developed residential and commercial lands capable of supporting some terrestrial ecological receptors. Relevant terrestrial receptors are terrestrial vegetation, such as trees, grasses and weeds; soil invertebrates, such as earthworms, millipedes and beetles; terrestrial birds, such as pigeons, sparrows and robins; and small terrestrial mammals, such as moles, voles, and mice.

The potential on-site exposure pathways for terrestrial vegetation are root uptake (soil and groundwater), and stem and foliar uptake of vapours (sourced from soil and/or groundwater).

The potential on-site exposure pathways for soil invertebrates are soil particulate inhalation, soil dermal contact, soil ingestion, vapour inhalation (sourced from soil and/or groundwater), and dermal contact and ingestion of groundwater.

The potential on-site exposure pathways for mammals and birds are soil particulate inhalation, soil dermal contact, soil ingestion, vapour inhalation (sourced from soil and/or groundwater), animal tissue ingestion (as a result of biotransformation of soil and/or groundwater), and dermal contact and ingestion of groundwater.

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7 Conclusions and Recommendations

Based on the Phase Two ESA results, the following summary is provided:

- On April 5, 2019, three boreholes (BH 1 to BH3) were advanced at the Phase Two Property and were instrumented with a monitoring well.
- Based on the Phase Two ESA, a 12 to 20 mm layer of asphalt was observed in BH1 and BH 2. A 50 cm layer of topsoil was found at the ground surface in MW19-3. Sand and gravel fill material was observed in BH 1 and BH 2 and ranged in thickness from 0.6 m to 1.5 m. No petroleum odours were identified in the fill material. Below the topsoil was a layer of sandy silty till that extended to the bedrock surface that ranged from 5.1 m to 6.0 m. No petroleum odours were identified in the native soil.
- Shale bedrock was encountered at a depth of 5.1 m to 6.0 m. Groundwater was encountered at a depth of 3.17 m bgs in BH 2 to 3.57 m bgs in BH 1. No petroleum sheens were observed in the monitoring wells during the sampling event. Based on the groundwater elevations, the groundwater flow direction is to the south.
- Based on the results of the investigation, there are two soil samples located east of the building that had one or more MECP Table 3 SCS exceedances of PHC F1, PHC F2, hexane, benzo(a)pyrene and/or fluoranthene.

  The estimated volume of impacted soil is approximately 1,600 m^3. This is based on a shallow area of PAH impact at BH 2 with a volume of 300 m^3 and a deeper area of PHC impact at BH 1 and BH 2 with a volume of 1,300 m^3.
- All of the groundwater samples had concentrations of metals, VOC, PHC and BTEX that were less than the 2011 MECP Table 3 SCS

It is recommended that the impacted soil be removed from the Phase Two property. If the wells are no longer needed, they should be decommissioned in accordance with Ontario Regulation 903.

8 General Limitations

The information presented in this report is based on a limited investigation designed to provide information to support an assessment of the current environmental conditions within the Phase Two property. The conclusions and recommendations presented in this report reflect Phase Two property conditions existing at the time of the investigation.

More specific information with respect to the conditions between samples, or the lateral and vertical extent of materials may become apparent during excavation operations. The interpretation of the borehole information must, therefore, be validated during any such excavation operations. Consequently, during the future development of the property, conditions not observed during this investigation may become apparent. Should this occur, EXP Services Inc. should be contacted to assess the situation, and the need for additional testing and reporting. EXP has qualified personnel to provide assistance in regards to any future geotechnical and environmental issues related to this property.

The environmental investigation was completed to address the intent of applicable provincial Regulations, Guidelines, Policies, Standards, Protocols and Objectives administered by the MECP. It should also be noted that current environmental Regulations, Guidelines, Policies, Standards, Protocols and Objectives are subject to change, and such changes, when put into effect, could alter the conclusions and recommendations noted throughout this report. Achieving the study objectives stated in this report has required us to arrive at conclusions based upon the best information presently known to us. No investigative method can completely eliminate the possibility of obtaining partially imprecise or incomplete information; it can only reduce the possibility to an acceptable level. Professional judgment was exercised in gathering and analyzing the information obtained and in the formulation of the conclusions. Like all professional persons rendering advice we do not act as absolute insurers of the conclusions we reach, but we commit ourselves to care and competence in reaching those conclusions. Our undertaking at EXP, therefore, is to perform our work within limits prescribed by our clients, with the usual thoroughness and competence of the engineering profession. It is intended that the outcome of this investigation assist in reducing the client's risk associated with environmental impairment. Our work should not be considered 'risk mitigation'. No other warranty or representation, either expressed or implied, is included or intended in this report.

This report was prepared for the exclusive use of Maybach Homes Inc. and may not be reproduced in whole or in part, without the prior written consent of EXP, or used or relied upon in whole or in part by other parties for any purposes whatsoever. Any use which a third party makes of this report, or any part thereof, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. EXP Services Inc. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

We trust this report satisfies your immediate requirements. If you have any questions regarding the information in this report, please do not hesitate to contact this office.

9 References

This study was conducted in general accordance with the applicable Regulations, Guidelines, Policies, Standards, Protocols and Objectives administered by the Ministry of the Environment. Specific reference is made to the following:

- City of Ottawa. 2011. Characterization of Ottawa's Watersheds: An Environmental Foundation Document with Supporting Information Base. March.
- Environmental Protection Act, R.S.O. 1990, Chapter E.19, as amended, September 2004.
- EXP Services Inc., May 8, 2019. *Phase One Environmental Site Assessment, 337 Montgomery Street, Ottawa, Ontario*.
- Ministry of the Environment [MOE] (1996) Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario. Ontario Ministry of the Environment, December 1996.
- MOE (2011) Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act. Ontario Ministry of the Environment, April 15, 2011.
- MOE (2011) Guide for Completing Phase Two Environmental Site Assessments under Ontario Regulation 153/04. Ontario Ministry of the Environment, June 2011.
- MOE (2011) Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act. Ontario Ministry of the Environment, March 2004, amended as of July 1, 2011.
- Ontario Regulation 153/04, made under the Environmental Protection Act, May 2004, last amended to O.Reg.333/13.
- Ontario Water Resources Act – R.R.O. 1990, Regulation 903, amended to O.Reg. 128/03, August 2003.
- Groundwater, Freeze and Cheery 1979. Prentice Hall.
- Singer, S.N., C.K. Cheng, M.G. Scafe. 2003. Hydrogeology of Southern Ontario. Hydrogeology of Ontario Series – Report 1. Prepared for Ministry of Environment.
- WESA. 2006. Watershed Characterization: Geologic Model and Conceptual Hydrogeological Model, Raisin Region CA and South Nation Conservation, Source Protection Plan Partnership.

Tables

Table 1

Characteristic	Description
Minimum Depth to Bedrock	5.1 m
Minimum Depth to Overburden Groundwater	3.17 (April 16, 2019)
Shallow Soil Property	No, bedrock deeper than 2.0 m
Proximity to water body or ANSI	330 m west
Soil pH	7.55 and 7.99
Soil Texture	Coarse
Current Property Use	Residential/Commercial
Future Property Use	Residential
Proposed Future Building	Over entire Site
Areas where soil has been brought to the Phase One Property	None identified

Appendix A – Sampling and Analysis Plan

1 Introduction

This appendix presents the Sampling and Analysis Plan (SAAP) that was developed in support of the Phase Two Environmental Site Assessment (ESA) for the property located at 337 Montgomery Street in Ottawa, Ontario (hereinafter referred to as the 'site'). The SAAP presents the procedures and measures that will be undertaken during field investigative activities to characterize the site conditions and meet the data quality objectives of the Phase Two ESA.

The SAAP presents the sampling program proposed for the site, the recommended procedures and protocols for sampling and related field activities, the data quality objectives, and the quality assurance/ quality control measures that will be undertaken to provide for the collection of accurate, reproducible and representative data. These components are described in further detail below.

2 Field Sampling Program

The field sampling program was developed to provide for the collection of samples of the soil and groundwater for chemical analysis of petroleum hydrocarbons (PHC), benzene, toluene, ethylbenzene and xylenes (collectively known as 'BTEX'), volatile organic compounds (VOC), polycyclic aromatic hydrocarbons (PAH), and/or metals. The soil sampling media is to consist of the overburden materials. The soil sampling will be location-specific to assess for the potential presence of PHC, BTEX, VOC, and/or metals based on the identification of potential areas of potential environmental concern identified in a Phase One ESA completed by EXP in 2019. Vapour readings will also be taken in the field to determine samples to be submitted for laboratory analysis.

Each of the groundwater samples will be submitted for analysis of metals, VOC, PHC and BTEX. The monitoring well network is to comprise of two monitoring wells.

Vertical control of the boreholes and monitoring wells will be obtained through the completion of an elevation survey with reference to a geodetic benchmark. Groundwater flow and direction in the overburden aquifer will also be determined through groundwater level measurements and the elevations established in the site elevation survey.

3 Field Methods

To meet the requirements of the field sampling program, the following field investigative methods will be undertaken:

- Borehole Drilling;
- Soil Sampling;
- Monitoring Well Installation;
- Groundwater Level Measurements;
- Elevation Survey; and,
- Groundwater Sampling.

The field investigative methods will be performed following the procedures and protocols set out in EXP's standard operating procedures and are outlined below:

3.1 Borehole Drilling

Boreholes will be advanced at the site to facilitate the collection of soil samples for chemical analysis and geologic characterization; and, for the installation of groundwater monitoring wells. A total of three (3) boreholes are proposed to be advanced at the site, up to a maximum overburden depth of approximately 6 m below grade, to provide for the collection of samples of the surficial and overburden materials beneath the site. The borehole locations will be selected to delineate the extent and magnitude of PCOC related impacts to the soils and the groundwater.

Prior to borehole drilling, utility clearances will be obtained from public and private locators, as required. The borehole drilling program will be conducted by a licensed driller under the oversight of EXP field staff. All drilling equipment will be cleaned prior to the commencement of drilling at each borehole location.

3.2 Soil Sampling

Soil samples will be collected for chemical analysis and geologic property characterization. The soil samples will be collected using 5 cm diameter, 60 cm long, stainless steel split-spoon sampling devices advanced ahead of the direct push drilling equipment at continuous intervals. The split spoon sampling devices will be attached to drill rods and advanced into the soil by means of a standard penetrating hammer. Upon retrieval from the boreholes, the split-spoon samplers will be placed on a flat surface and disassembled by drilling personnel to provide access of the recovered cores. Geologic and sampling details of the recovered cores will be logged and the samples will be assessed for the potential presence of non-aqueous phase liquids. Samples for chemical analysis will be selected on the basis of visual and olfactory evidence of impacts and at specific intervals to define the lateral and vertical extent of known impacts.

Recommended volumes of soil samples selected for chemical analysis will be collected into pre-cleaned, laboratory supplied, analytical test group specific containers. The samples will be placed into clean insulated coolers chilled with ice for storage and transport. Samples intended for analysis of VOC, BTEX and PHC F1-F2 will be collected into 40 ml vials. The samples will be assigned unique identification numbers, and the date, time, location, and requested analyses for each sample will be documented in a bound field note book. The samples will be submitted to the contract laboratory within analytical test group holding times under Chain of Custody (COC) protocols. New disposable chemical resistant gloves will be used for each soil core to prevent sample cross-contamination.

3.3 Monitoring Well Installation

It is proposed that all three boreholes will be instrumented as a groundwater monitoring well installed with slotted screens intercepting either the native overburden material or the shallow bedrock, where the water table aquifer is expected, extending to depths of approximately 6 m below grade. The monitoring ells will be constructed using 37 mm diameter, Schedule 40, PVC riser pipe and number 10 slot size (0.25 mm) well screens. The base of the well screens will be sealed with threaded flush PVC end caps. All well pipe connections will be factory machined threaded flush couplings. The annular space around the well screens will be backfilled with silica sand, to an average height of 0.3 m above the top of the screen. Granular bentonite will be placed in the borehole annulus from the top of the sand pack to approximately 0.3 m below grade. The monitoring wells will be completed with a flush-mounted protective steel casing cemented into place.

3.4 Monitoring Well Development

The newly installed monitoring wells will be developed to remove fine sediment particles potentially lodged in the sand pack and well screen to enhance hydraulic communication with the surrounding formation waters.

Standing water volumes will be determined by means of an electronic water level meter. Prior to collecting groundwater samples, the monitoring wells will be developed using low flow sampling techniques to reduce the amount of sediment in the samples. Well development details will be documented on a well development log sheet or in a bound hard cover notebook. All development waters will be collected and stored in labeled, sealed containers.

3.5 Groundwater Level Measurements

Groundwater level measurements will be recorded for the monitoring wells to determine groundwater flow and direction in the water table aquifer beneath the site. Water levels will be measured with respect to the top of the casing by means of an electronic water level meter. The water levels will be recorded on water level log sheets. The water level meter probe will be decontaminated between monitoring well locations.

3.6 Elevation Survey

An elevation survey will be conducted to obtain vertical control of all monitoring well locations. The top of casing and ground surface elevation of each monitoring well location will be surveyed against a known geodetic benchmark, or if unavailable, against a suitable arbitrary benchmark. Elevations measured against using a high precision GPS unit and a benchmark with an assigned elevation will be recorded as meters above mean sea level (m AMSL). The elevation survey will be accurate to within ± 0.5 cm.

3.7 Groundwater Sampling

Groundwater samples will be collected from the monitoring well for chemical analysis. The well will be sampled using a “low flow” technique whereby the wells are continuously purged using an electric pump (equipped with dedicated tubing) and parameters within the purged water are monitored using a groundwater chemistry multi-meter at 3 minute intervals. These parameters include: pH, conductivity, temperature, and salinity. Once these parameters are found to deviate less than 10% over three testing events, equilibrium is deemed to have occurred and a sample of the groundwater will be collected. The purge water will also be continuously monitored for visual and olfactory evidence of petroleum and solvent impact (sheen and odour).

Recommended groundwater sample volumes will be collected into pre-clean laboratory-supplied vials or bottles provided with analytical test group specific preservatives, as required. The samples will be placed in an insulated cooler chilled with ice for storage and transport. Each VOC vial will be inverted and inspected for gas bubbles prior to being placed in the cooler to ensure that no head-space is present. All groundwater samples will be assigned unique identification numbers, and the date, time, project number, company name, location and requested analyses for each sample will be documented in a bound hard cover notebook. The samples will be submitted to the contractual laboratory within analytical test group holding times under COC protocols. New disposable chemical resistant gloves will be used for each sampling location to prevent sample cross-contamination.

4 Field Quality Assurance/Quality Control Program

The objective of the field quality assurance/quality control (QA/QC) program is to obtain soil and groundwater samples and other field measurements that provide data of acceptable quality that meets the objectives of the Phase Two ESA. The objectives of the QA/QC program will be achieved through the implementation of procedures for the collection of unbiased (i.e. non-contaminated) samples, sample documentation and the collection of appropriate QC samples to provide a measure of sample reproducibility and accuracy. The field QA/QC measures will comprise:

- Decontamination Protocols;
- Equipment Calibration;
- Sample Preservation;
- Sample Documentation; and,
- Field Quality Control Samples.

Details on the field QA/QC measures are provided below.

4.1 Decontamination Protocols

Decontamination protocols will be followed during field sampling where non-dedicated sampling equipment is used to prevent sample cross contamination. The split spoon soil sampling device will be cleaned/decontaminated between sampling intervals in according with SOP requirements. For the monitoring well installation, well components are not to come into contact with the ground surface prior to insertion into boreholes. Electronic water level meters will be decontaminated between monitoring well locations during well development, and purging activities. For hydraulic conductivity tests, the electronic water level meters will be decontaminated between sampling locations. All decontamination fluids will be collected and stored in sealed, labeled containers.

4.2 Equipment Calibration

All equipment requiring calibration will be calibrated in the field according to manufacturer's requirements using analytical grade reagents, or by the supplier prior to conducting field activities, and subsequently checked in the field. The calibration of all pre-calibrated instruments will be checked in the field using analytical grade reagents and re-calibrated as required. For multiple day sampling events, equipment calibration will be checked prior to the beginning of sampling activities. All calibration data will be documented in a bound hard cover notebook.

4.3 Sample Preservation

All samples will be preserved using appropriate analytical test group specific reagents, as required, and upon collection placed in pre-chilled insulated coolers packed with ice for storage and transport.

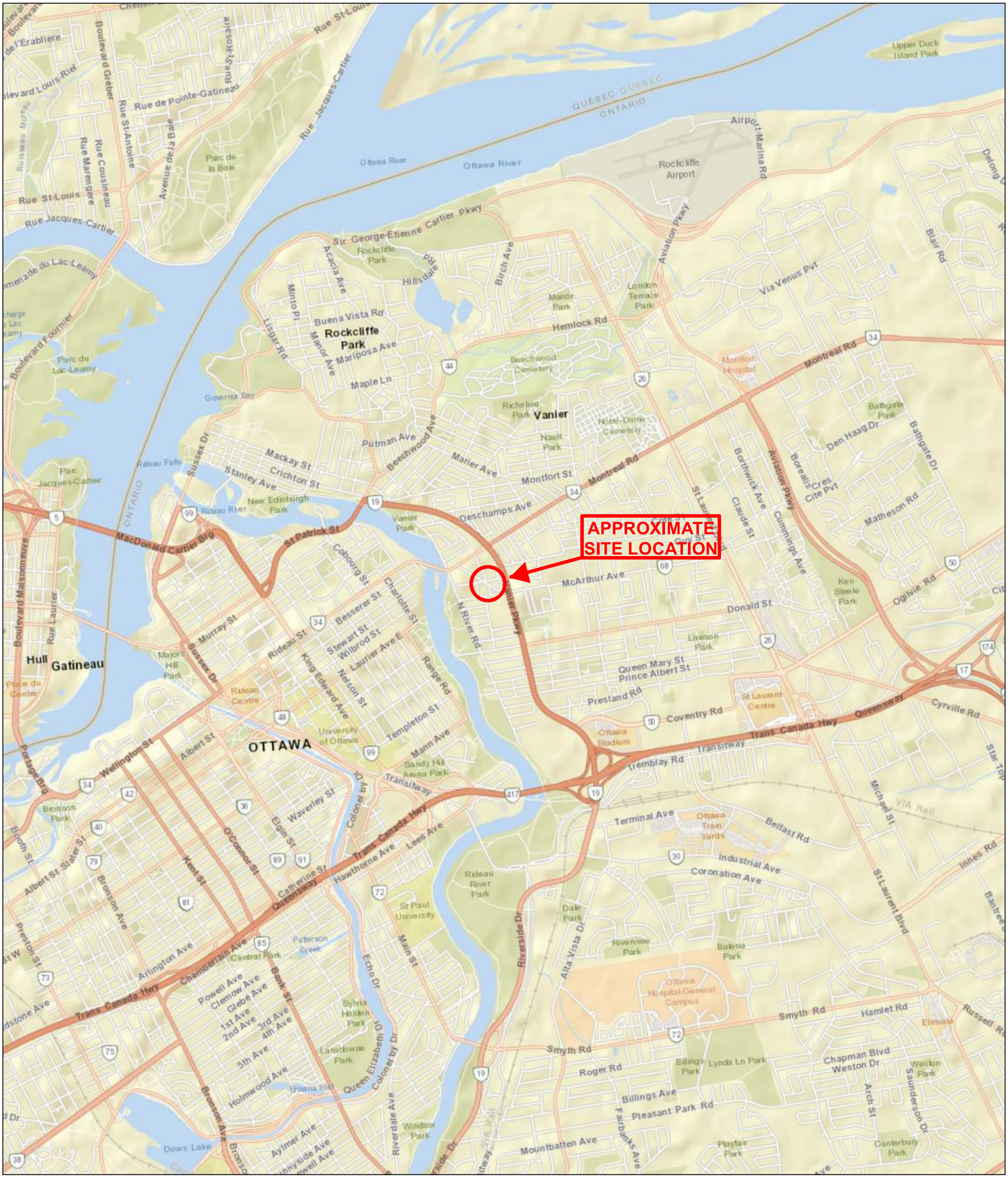
4.4 Sample Documentation

All samples will be assigned a unique identification number, which is to be recorded along with the date, time, project number, company name, location and requested analysis in a bound field notebook. All samples will be handled and transported following COC protocols.

4.5 Field Quality Control

Field quality controls samples will be collected to evaluate the accuracy and reproducibility of the field sampling procedures. For soil and groundwater sampling, one (1) field duplicate is to be collected for every ten (10) samples submitted for chemical analysis. The field duplicate samples will be assessed by calculating the relative percent difference and comparing to the analytical test group specific acceptance criteria.

Appendix B – Figures



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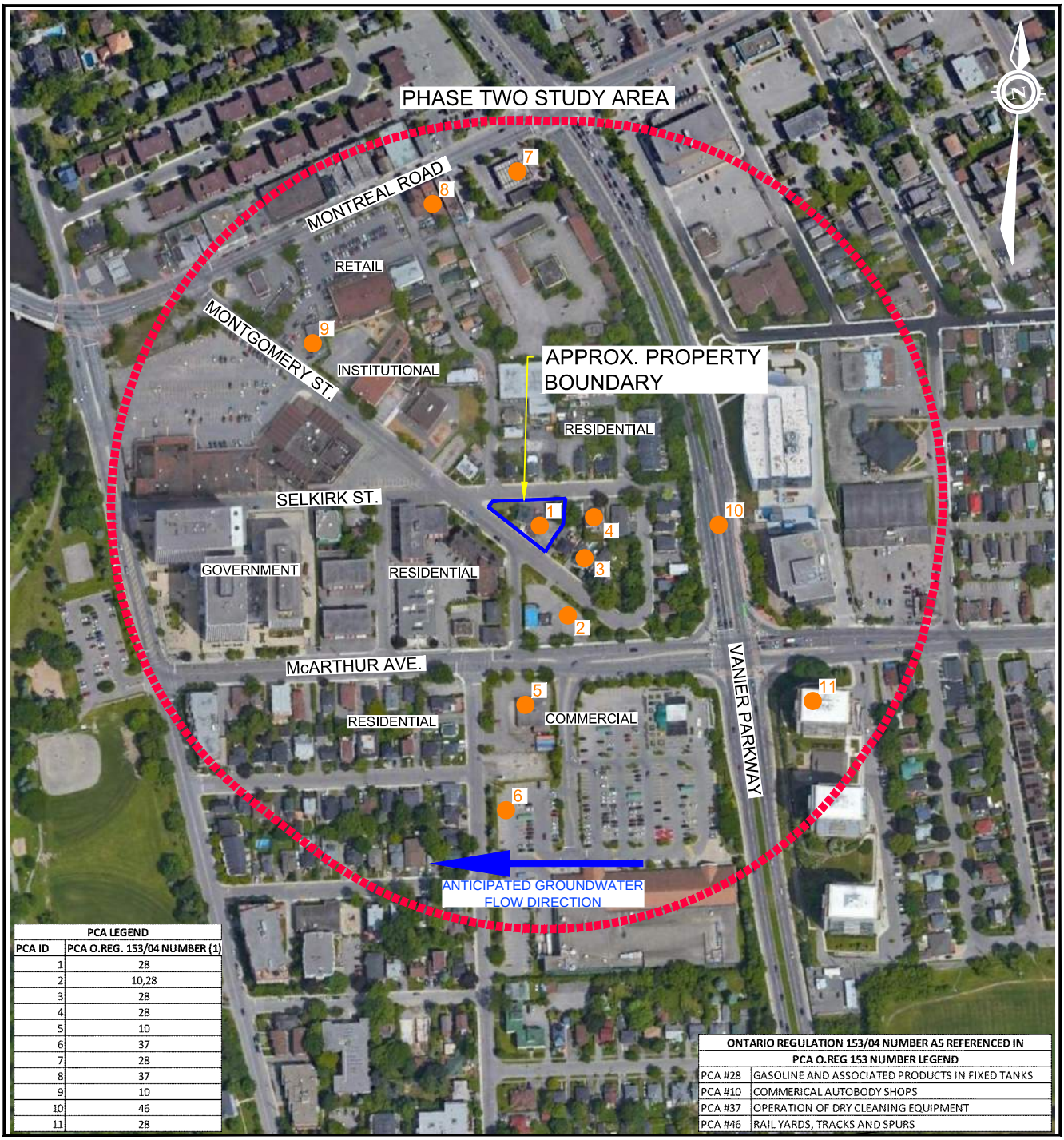

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2	10,28
3	28
4	28
5	10
6	37
7	28
8	37
9	10
10	46
11	28

ONTARIO REGULATION 153/04 NUMBER A5 REFERENCED IN PCA O.REG 153 NUMBER LEGEND	
PCA #28	GASOLINE AND ASSOCIATED PRODUCTS IN FIXED TANKS
PCA #10	COMMERICAL AUTOBODY SHOPS
PCA #37	OPERATION OF DRY CLEANING EQUIPMENT
PCA #46	RAIL YARDS, TRACKS AND SPURS

LEGEND

PROPERTY BOUNDARIES

1 PCA IDENTIFIER

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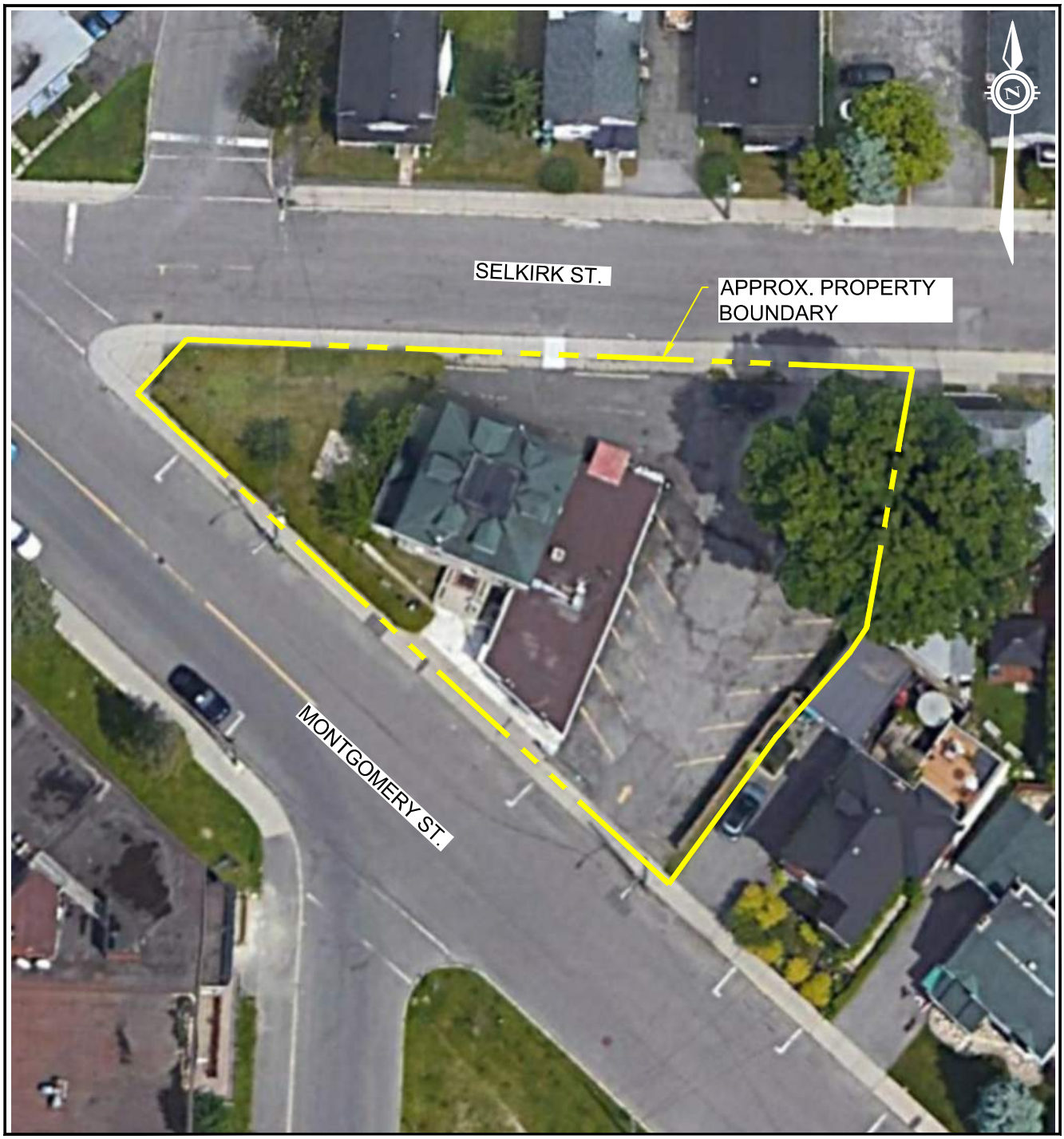

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scale 1:4000	CLIENT: MAYBACH HOMES INC.	project no. OTT-00241785-A0
date APRIL 2019	TITLE: PHASE TWO ESA - SITE PLAN 337 MONTGOMERY STREET, OTTAWA, ON	FIG 3
drawn by M.N.		

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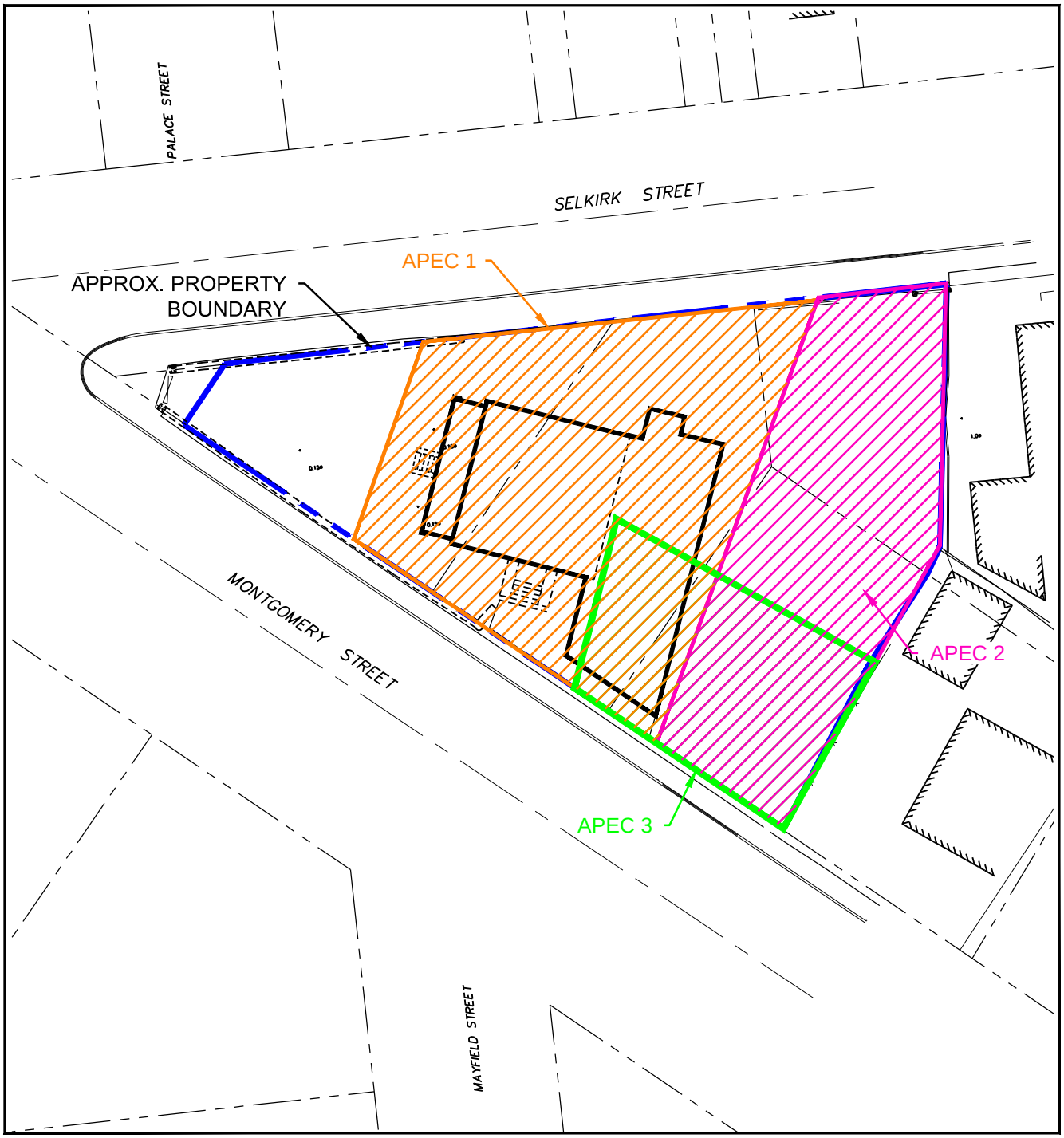

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date APRIL 2019	TITLE: PHASE TWO ESA - SITE PLAN AND APECS 337 MONTGOMERY STREET, OTTAWA, ON	FIG 4
drawn by M.N.		

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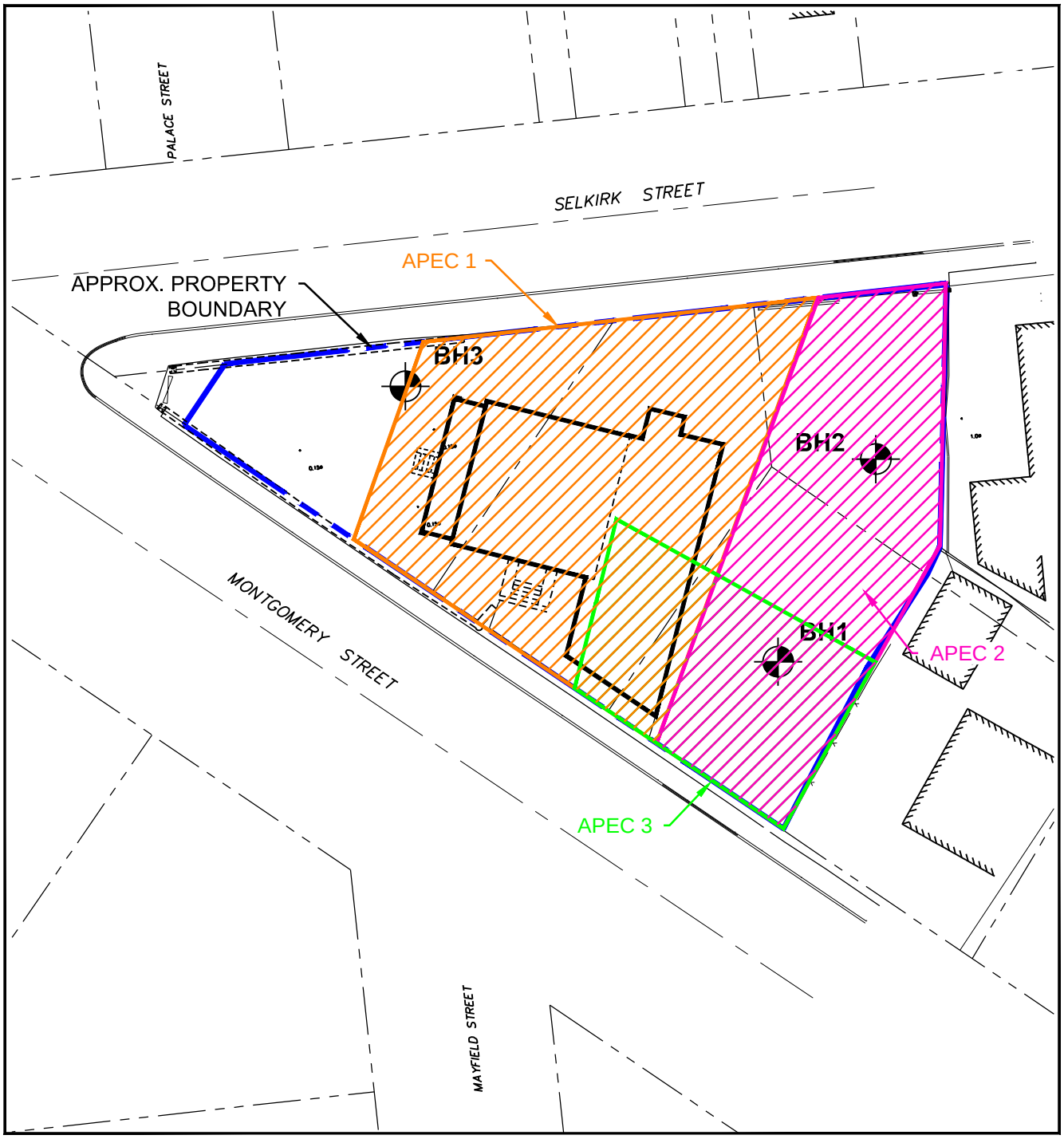

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scale 1:4000	CLIENT: MAYBACH HOMES INC.	project no. OTT-00241785-A0
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drawn by M.N.		

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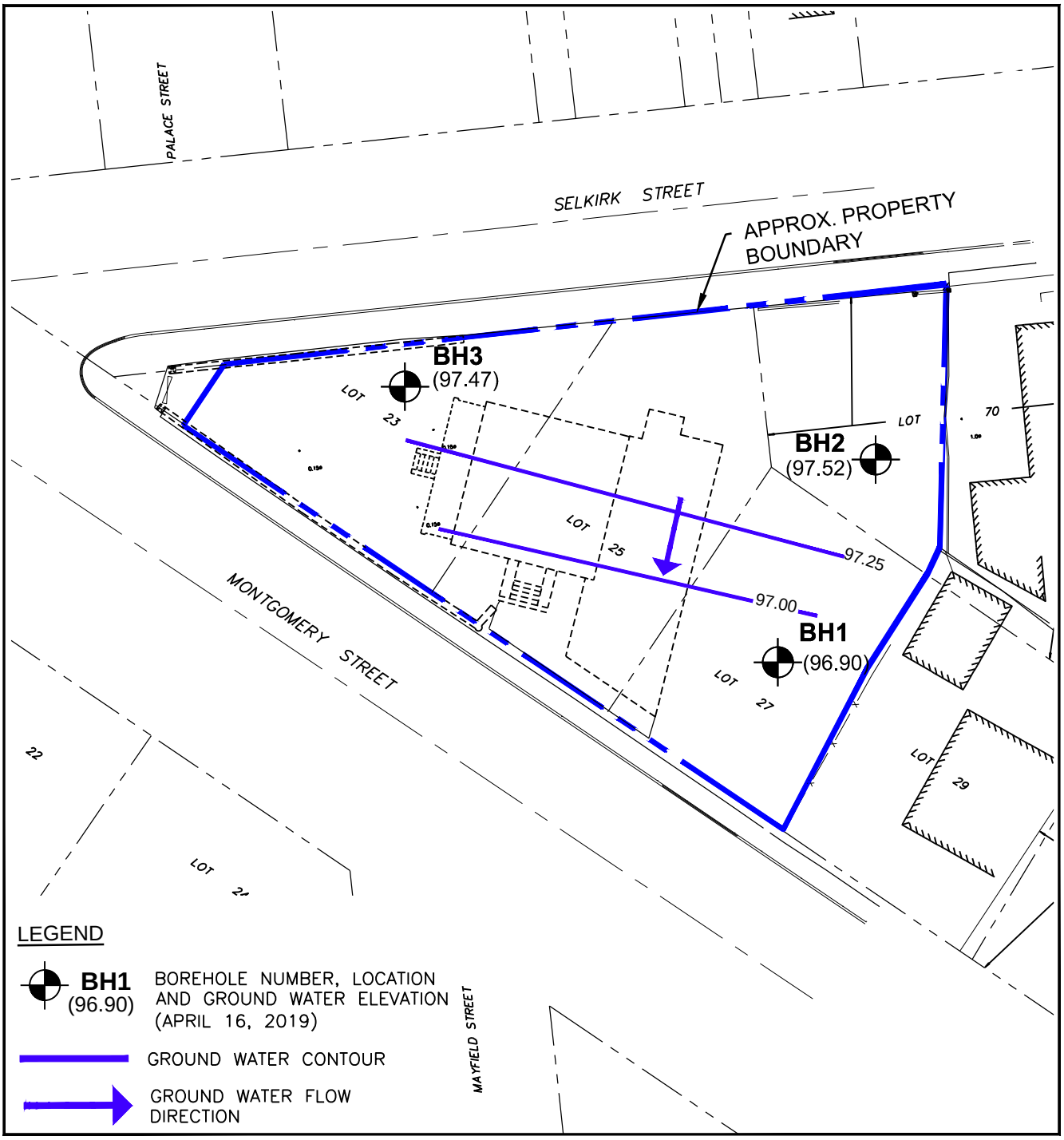

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drawn by M.N.			

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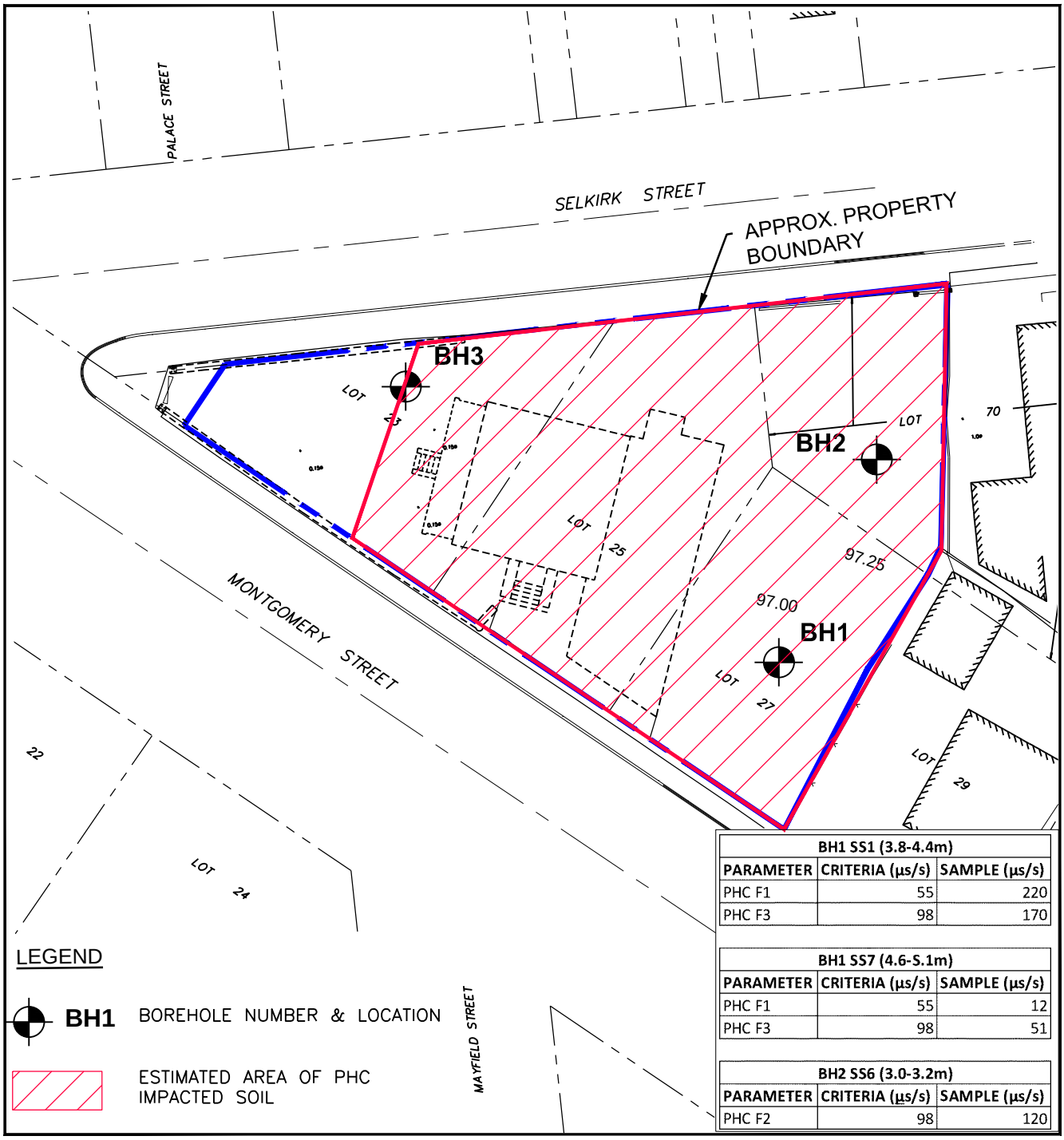

BH1 SS1 (3.8-4.4m)		
PARAMETER	CRITERIA (µs/s)	SAMPLE (µs/s)
PHC F1	55	220
PHC F3	98	170

BH1 SS7 (4.6-S.1m)		
PARAMETER	CRITERIA (µs/s)	SAMPLE (µs/s)
PHC F1	55	12
PHC F3	98	51

BH2 SS6 (3.0-3.2m)		
PARAMETER	CRITERIA (µs/s)	SAMPLE (µs/s)
PHC F2	98	120

0 40m 80m 160m

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date APRIL 2019	TITLE: PHASE TWO ESA - PHC IMPACTS IN SOIL 337 MONTGOMERY STREET, OTTAWA, ON	FIG 7
drawn by M.N.		

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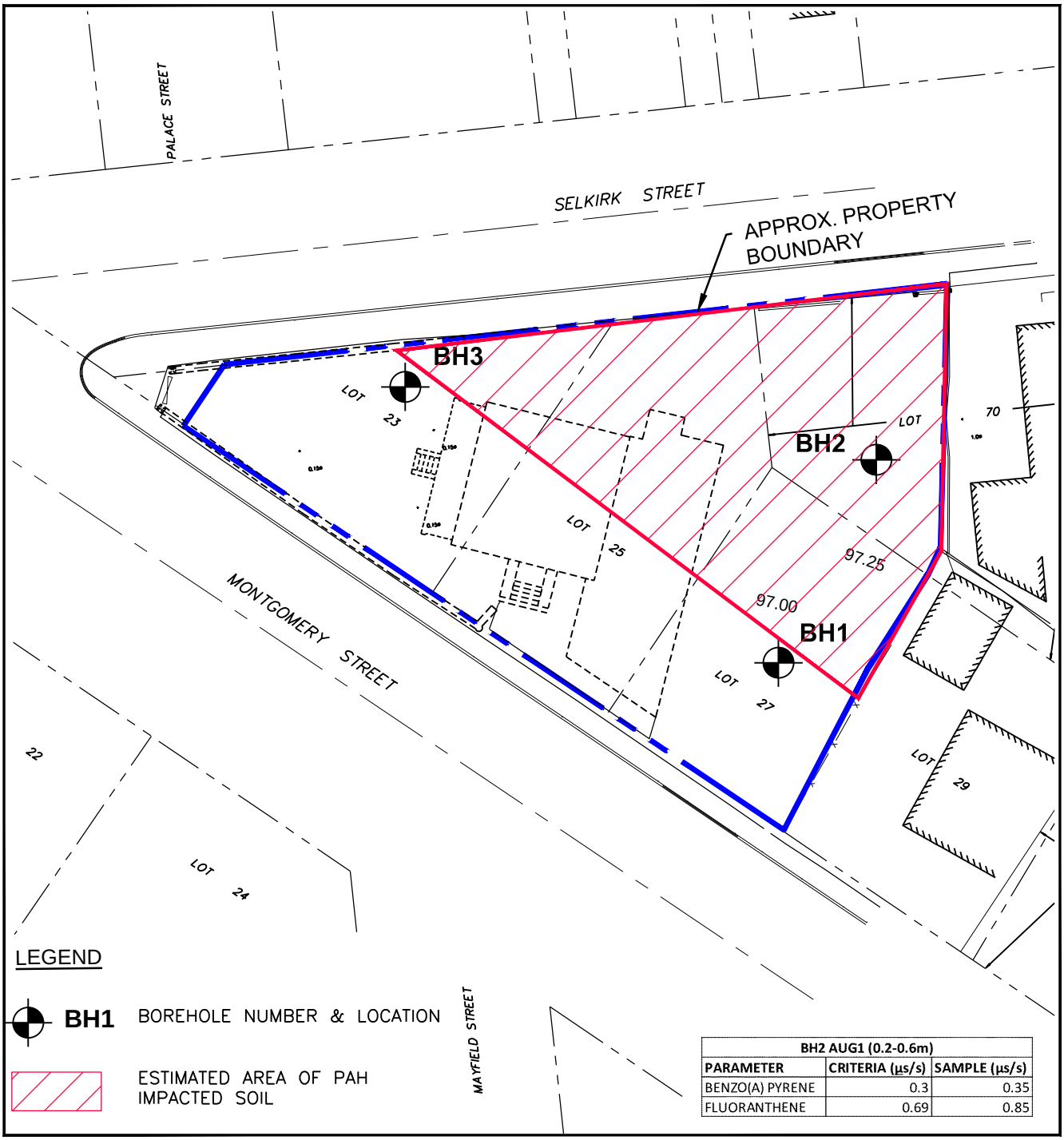

BH2 AUG1 (0.2-0.6m)		
PARAMETER	CRITERIA (µs/s)	SAMPLE (µs/s)
BENZO(A) PYRENE	0.3	0.35
FLUORANTHENE	0.69	0.85

0 40m 80m 160m

HORIZONTAL 1:4000

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scale 1:4000	CLIENT:	MAYBACH HOMES INC.	project no. OTT-00241785-A0
date APRIL 2019	TITLE:	PHASE TWO ESA - PAH IMPACTS IN SOIL 337 MONTGOMERY STREET, OTTAWA, ON	FIG 8
drawn by M.N.			

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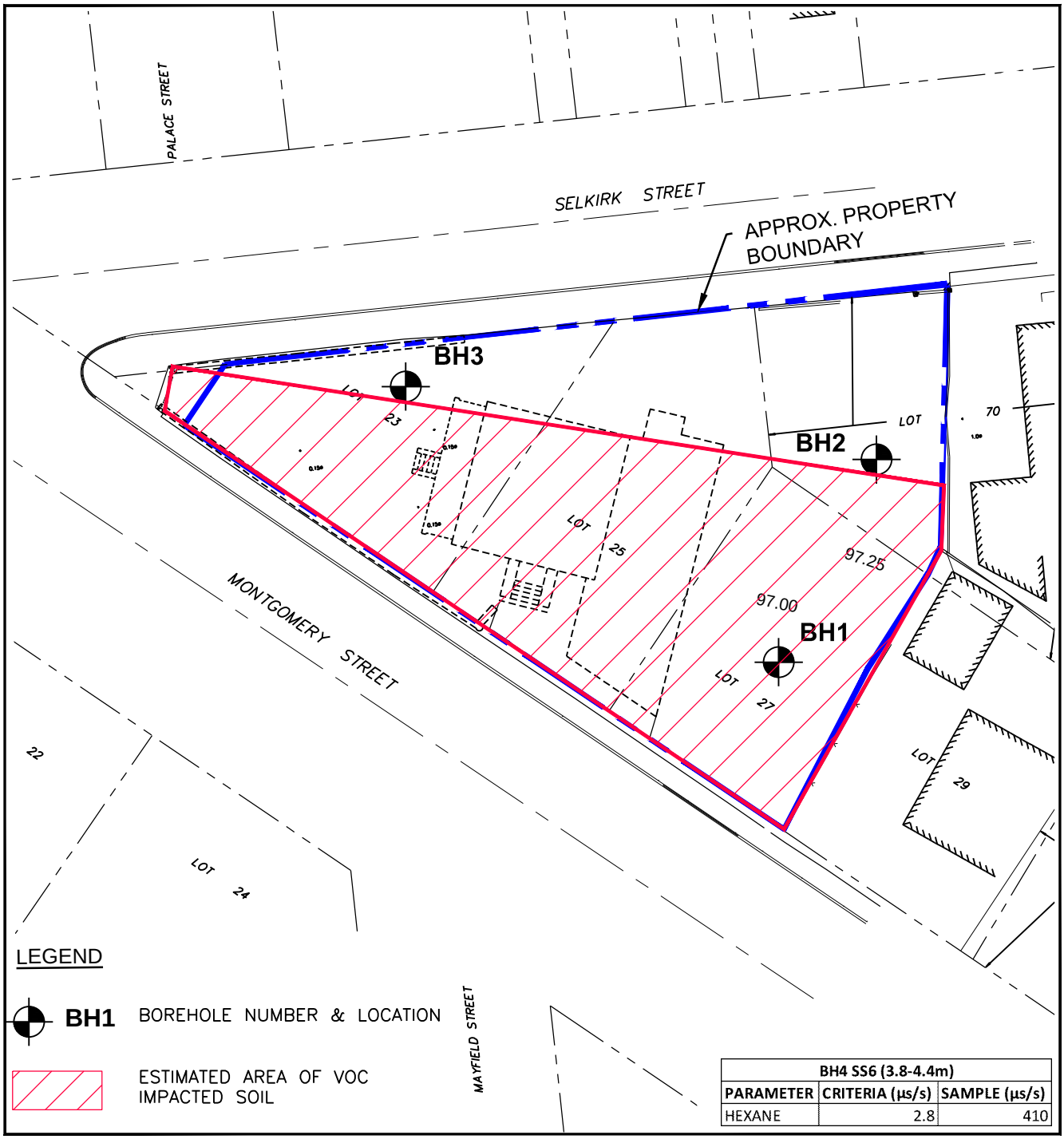

BH4 SS6 (3.8-4.4m)		
PARAMETER	CRITERIA (µs/s)	SAMPLE (µs/s)
HEXANE	2.8	410

0 40m 80m 160m

HORIZONTAL 1:4000

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scale 1:4000	CLIENT:	MAYBACH HOMES INC.	project no. OTT-00241785-A0
date APRIL 2019	TITLE:	PHASE TWO ESA - VOC IMPACTS IN SOIL 337 MONTGOMERY STREET, OTTAWA, ON	FIG 9
drawn by M.N.			

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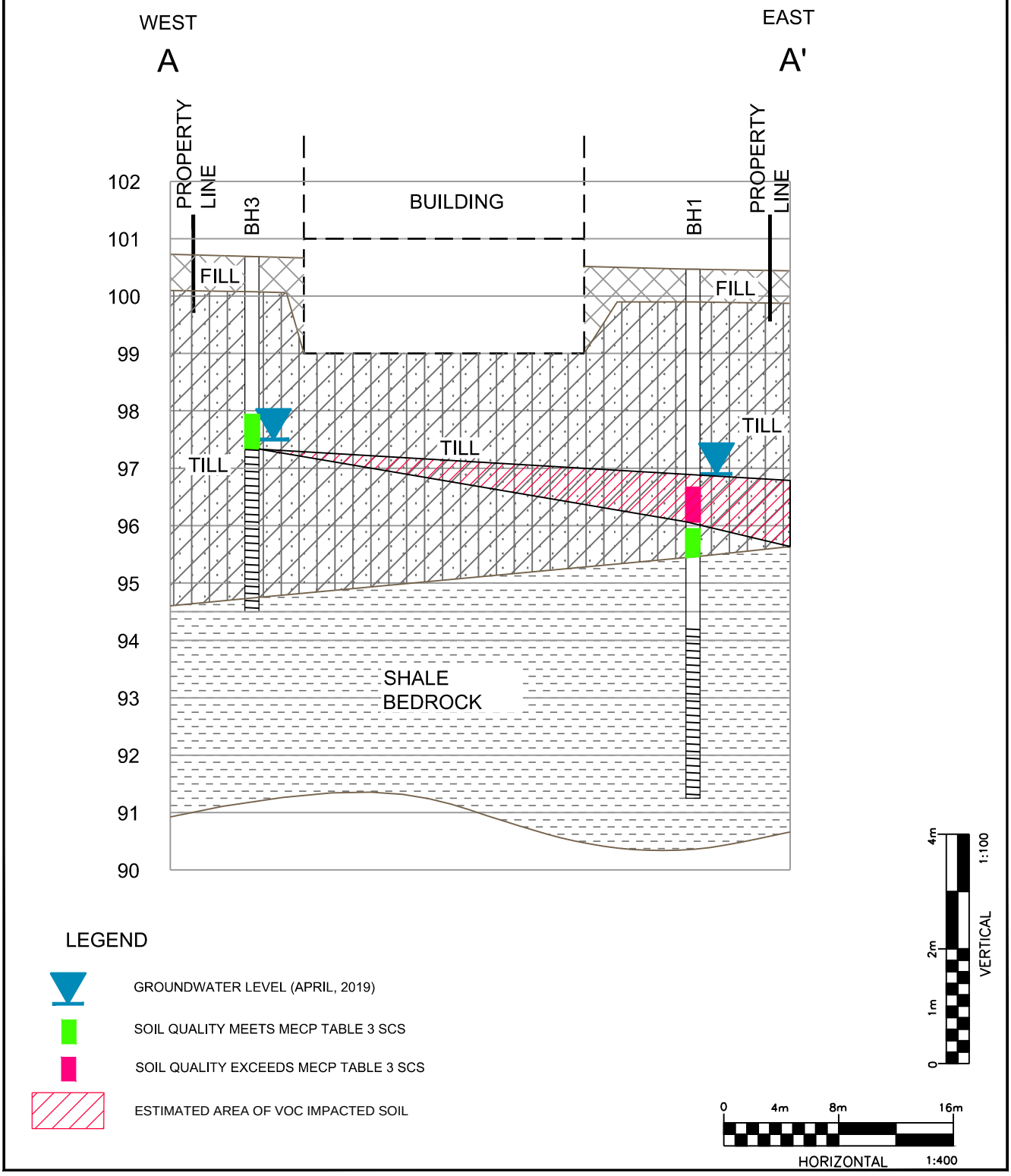

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scale 1:400 HORZ., 1:100 VERT.	CLIENT: MAYBACH HOMES INC.	project no. OTT-00241785-A0
date APRIL 2019	TITLE: PHASE TWO ESA - CROSS-SECTION A-A' WITH PHC IMPACTS IN SOIL 337 MONTGOMERY STREET, OTTAWA, ON	FIG 10A
drawn by A.O.		

Filename: p:\projects\environmental\240000s\241000\241785-b0 p1&2esa 337 montgomery st ottawa\working dwgs\phase two\241785-a0 fig 4.dwg
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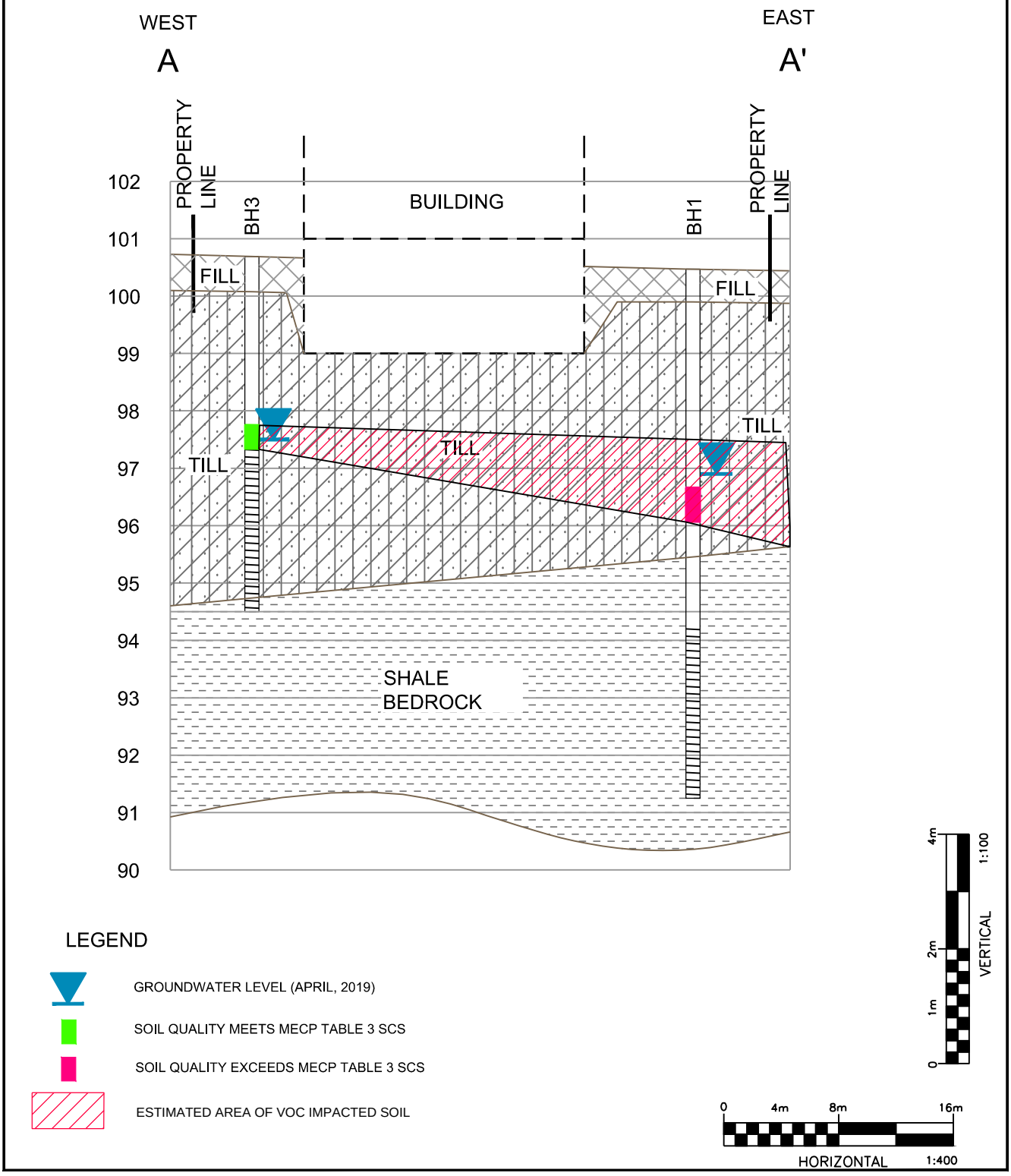

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scale: 1:400 HORZ., 1:100 VERT.	CLIENT: MAYBACH HOMES INC.	project no.: OTT-00241785-A0
date: APRIL 2019	TITLE: PHASE TWO ESA - CROSS-SECTION A-A' WITH VOC IMPACTS IN SOIL 337 MONTGOMERY STREET, OTTAWA, ON	FIG 10B
drawn by: A.O.		

Filename: p:\projects\environmental\240000s\241000\241785-b0 p1&2esa 337 montgomery st ottawa\working dwgs\phase two\241785-a0 fig 4.dwg
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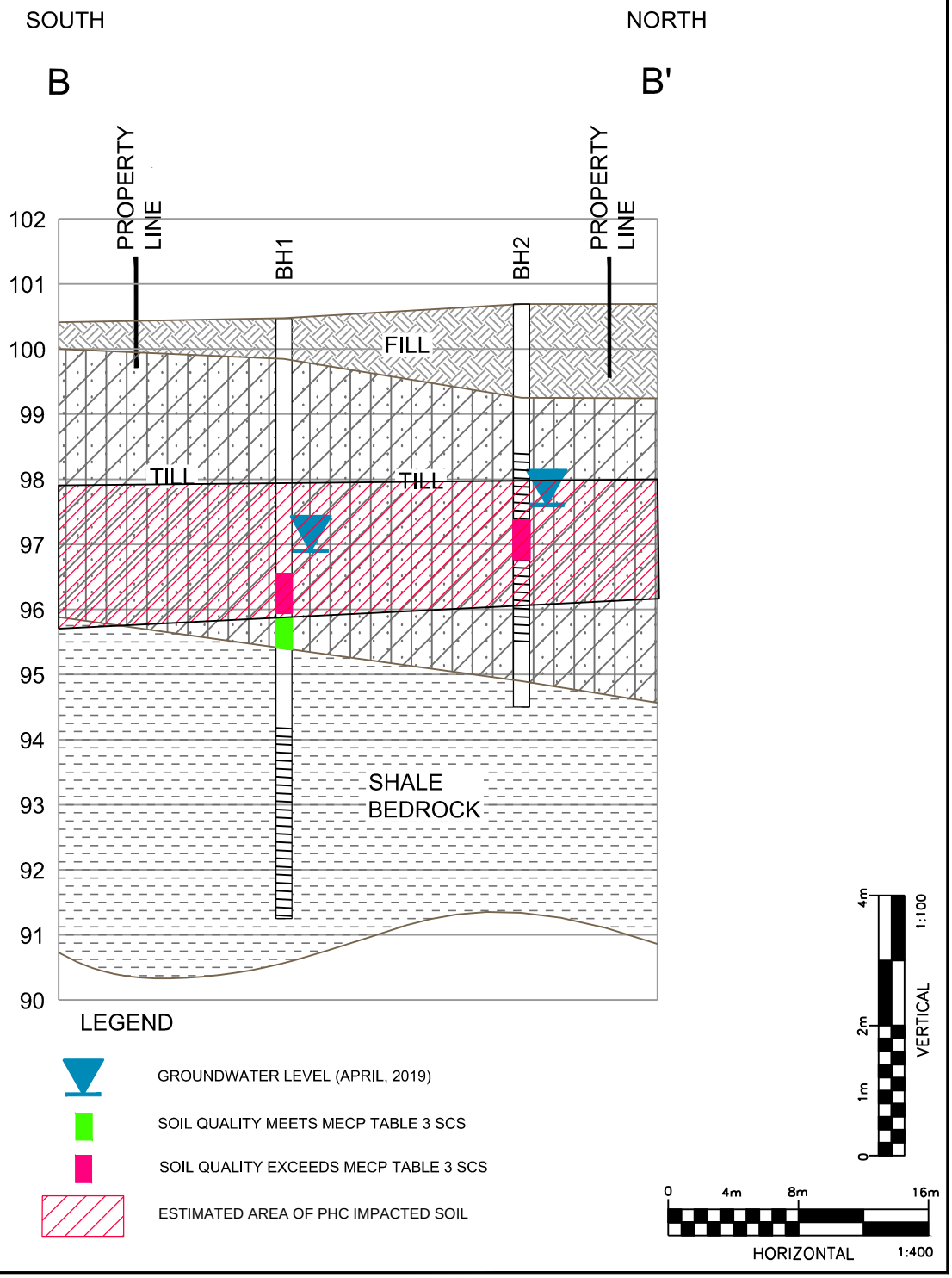

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scale 1:400 HORZ., 1:100 VERT.	CLIENT: MAYBACH HOMES INC.	project no. OTT-00241785-A0
date APRIL 2019	TITLE: PHASE TWO ESA - CROSS-SECTION B-B' WITH PHC IMPACTS IN SOIL 337 MONTGOMERY STREET, OTTAWA, ON	FIG 11A
drawn by A.O.		

Filename: p:\projects\environmental\240000s\241000\241785-b0 p1&2esa 337 montgomery st ottawa\working dwgs\phase two\241785-a0 fig 4.dwg
Last Saved: 5/7/2019 2:24:37 PM
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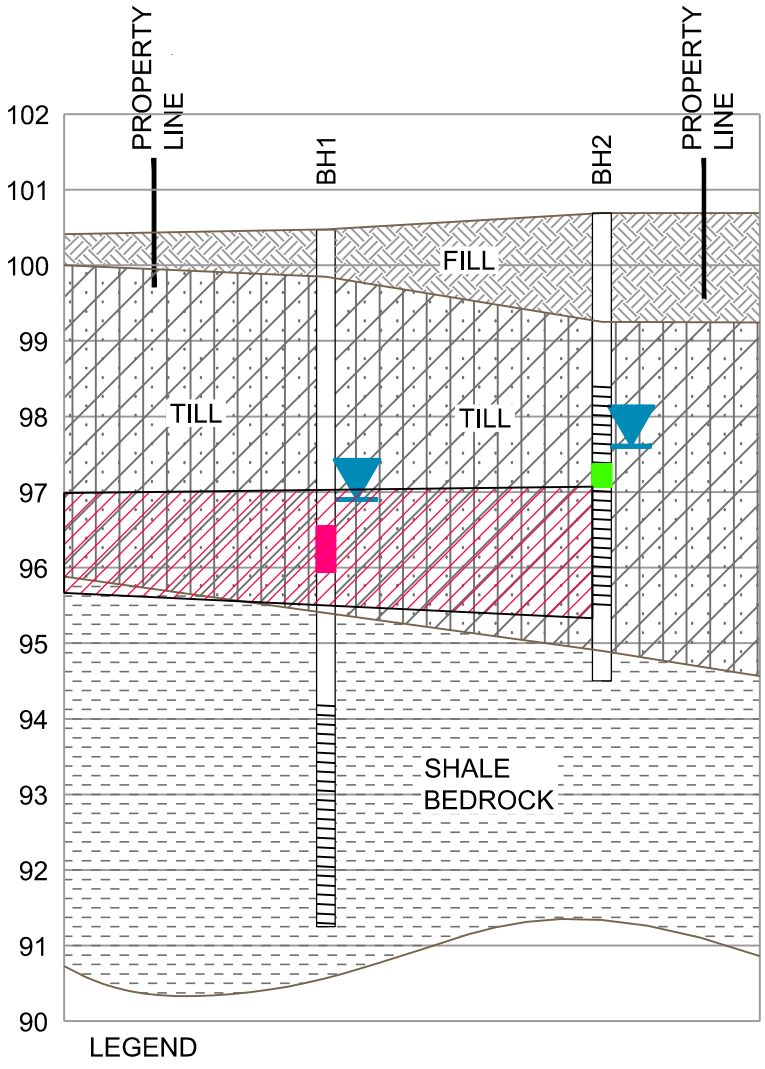
SOUTH

NORTH

B

B'



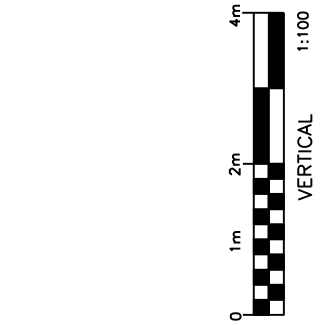
LEGEND

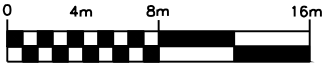
GROUNDWATER LEVEL (APRIL, 2019)

SOIL QUALITY MEETS MECP TABLE 3 SCS

SOIL QUALITY EXCEEDS MECP TABLE 3 SCS

ESTIMATED AREA OF PAH IMPACTED SOIL





HORIZONTAL 1:400

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scale 1:400 HORZ., 1:100 VERT.	CLIENT: MAYBACH HOMES INC.	project no. OTT-00241785-A0
date APRIL 2019	TITLE: PHASE TWO ESA - CROSS-SECTION B-B' WITH PAH IMPACTS IN SOIL 337 MONTGOMERY STREET, OTTAWA, ON	FIG 11B
drawn by A.O.		

Filename: p:\projects\environmental\240000s\241000\241785-b0 p1&2esa 337 montgomery st ottawa\working dwgs\phase two\241785-a0 fig 4.dwg
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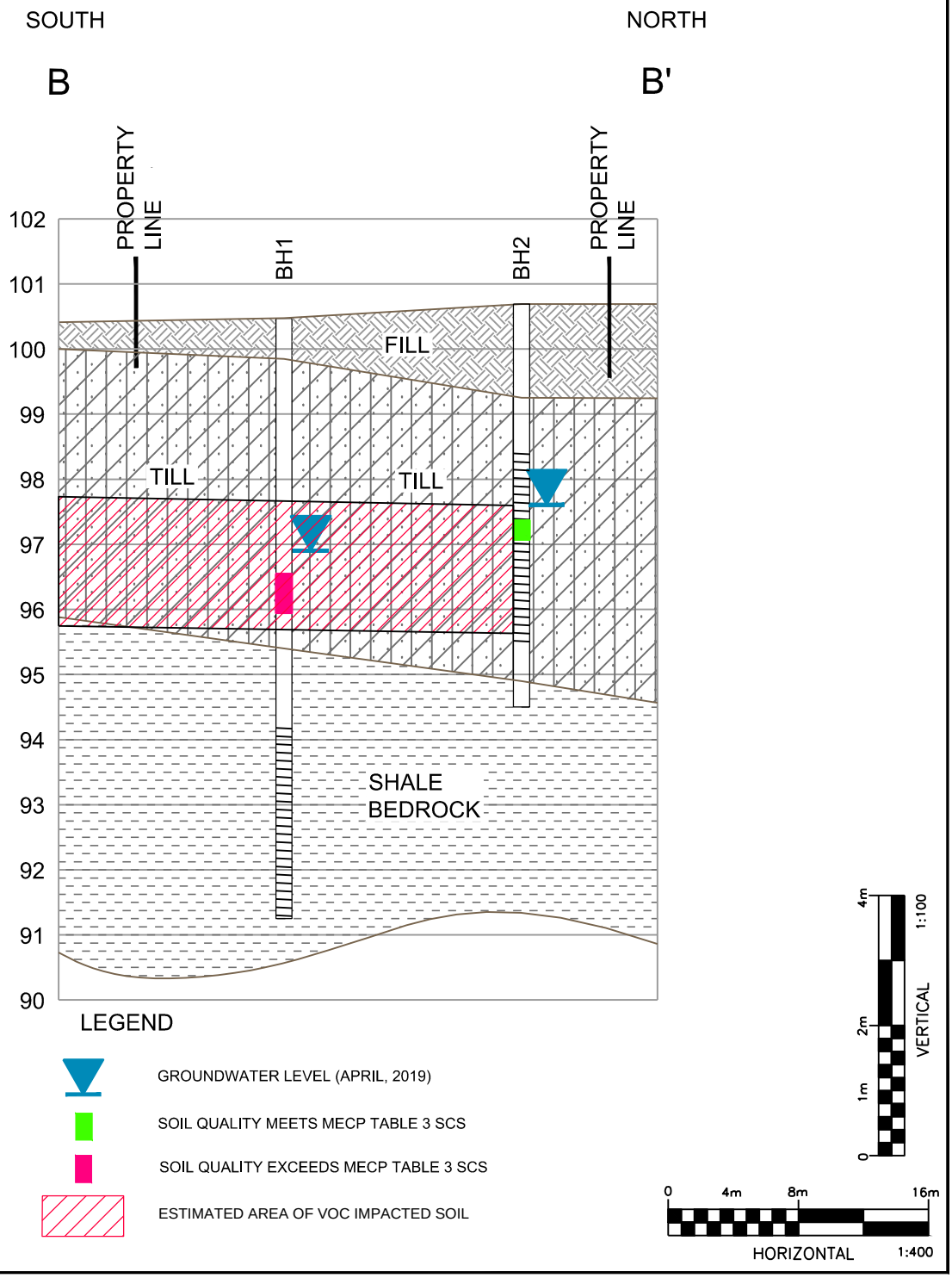

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scale: 1:400 HORZ., 1:100 VERT.	CLIENT: MAYBACH HOMES INC.	project no.: OTT-00241785-A0
date: APRIL 2019	TITLE: PHASE TWO ESA - CROSS-SECTION B-B' WITH VOC IMPACTS IN SOIL 337 MONTGOMERY STREET, OTTAWA, ON	FIG 11C
drawn by: A.O.		

Filename: p:\projects\environmental\240000s\241000\241785-b0 p1&2esa 337 montgomery st ottawa\working dwgs\phase two\241785-a0 fig 4.dwg
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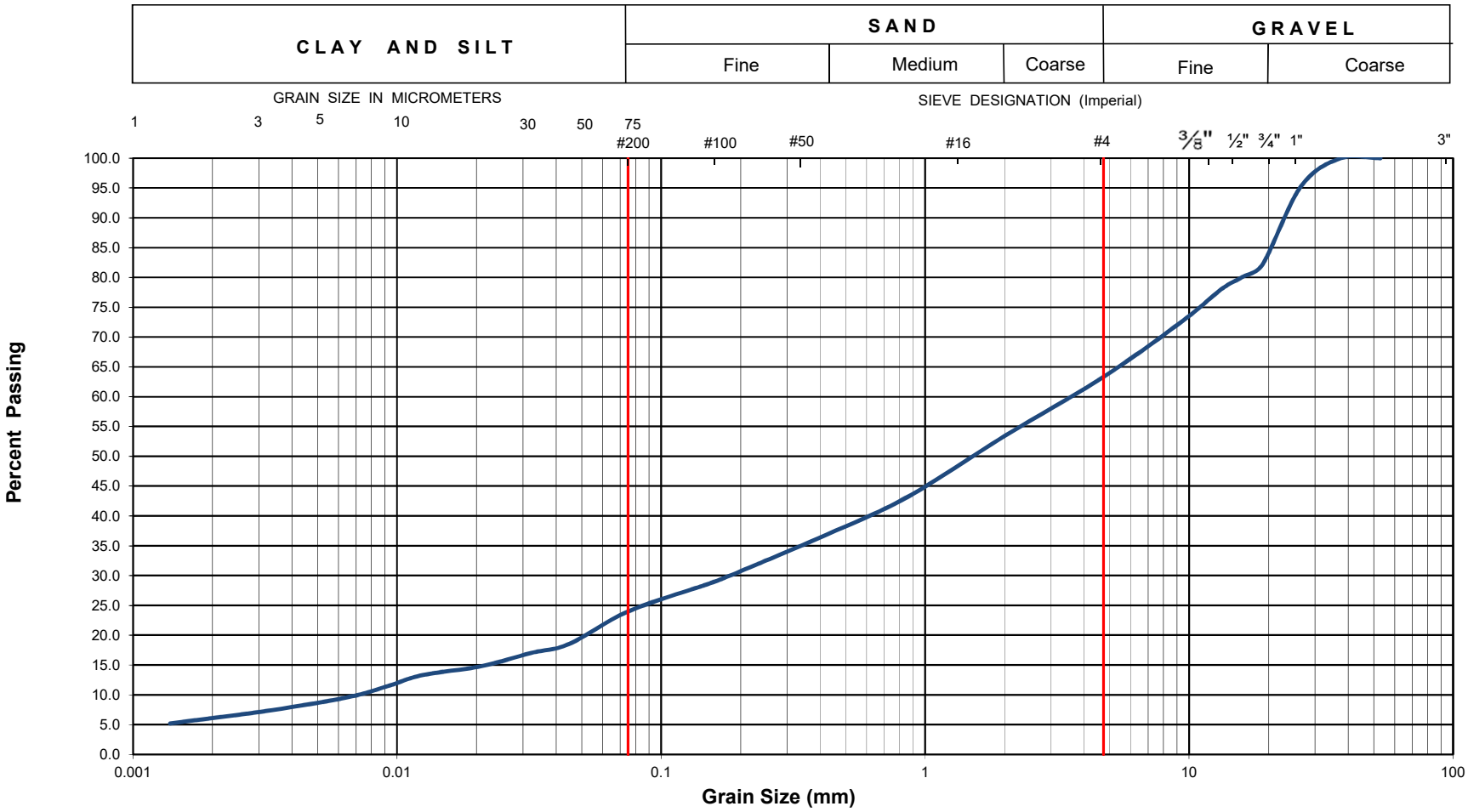
Grain-Size Distribution Curve
Method of Test For Particle Size Analysis of Soil
ASTM C-136/ASTM D422

Unified Soil Classification System



EXP Project No.:	**OTT-00241785-B0**	**Project Name :**	**Geotechnical Investigation**						
Client :	**N/S**	**Project Location :**	**337 Montgomery St. Ottawa. ON**						
Date Sampled :	**April 4, 2019**	**Borehole No:**	**BH1**		**Sample No.:**	**SS5**		**Depth (m) :**	**3.0-3.7**
Sample Description :		**% Silt and Clay**	**24**	**% Sand**	**39**	**% Gravel**	**37**	**Figure :**	**xxxx**
Sample Description :		**Silty Sand & Gravel (SM)**							

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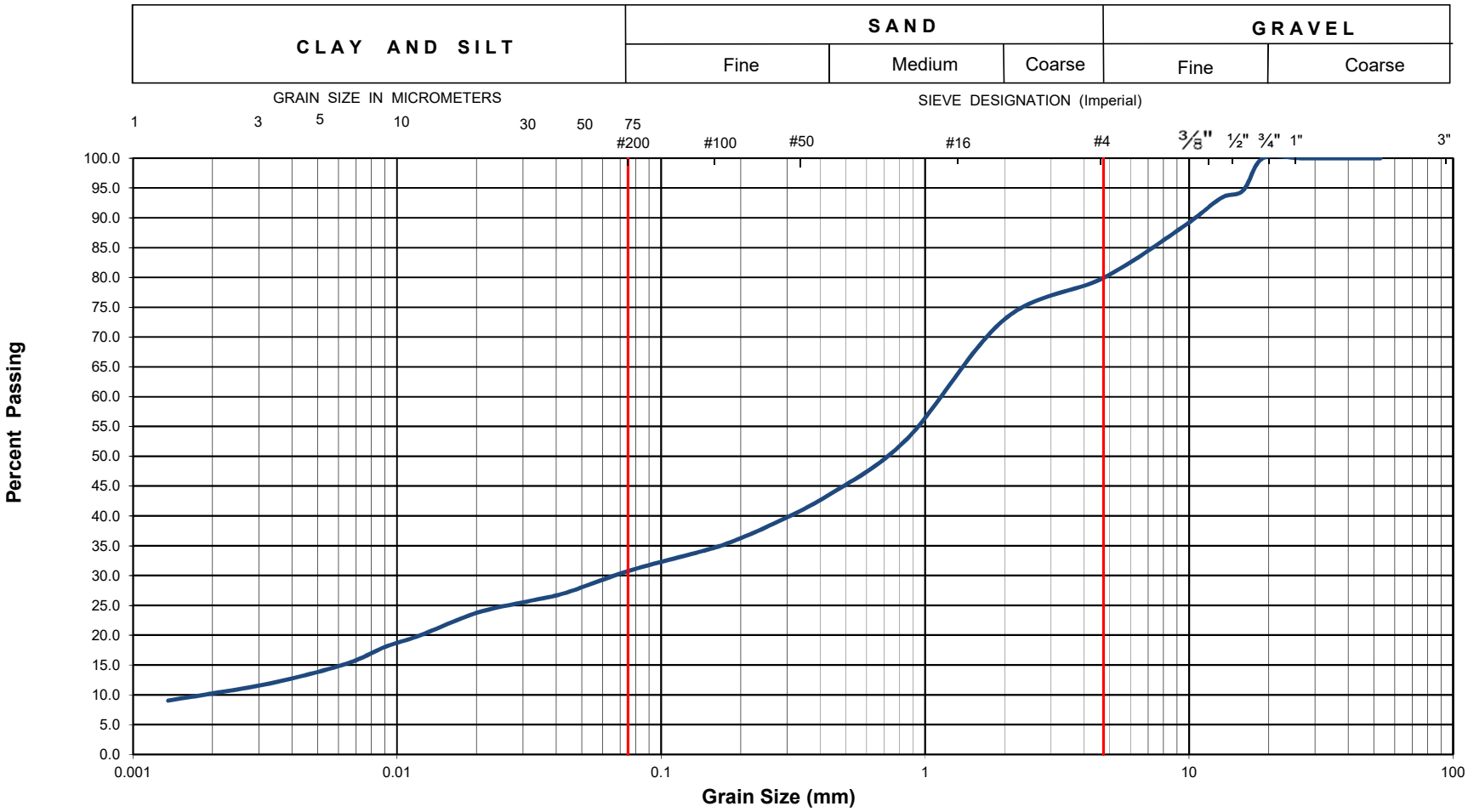
Grain-Size Distribution Curve
Method of Test For Particle Size Analysis of Soil
ASTM C-136/ASTM D422

Unified Soil Classification System



EXP Project No.:	**OTT-00241785-B0**	**Project Name :**	**Geotechnical Investigation**						
Client :	**N/S**	**Project Location :**	**337 Montgomery St. Ottawa. ON**						
Date Sampled :	**April 5, 2019**	**Borehole No:**	**BH3**		**Sample No.:**	**SS4**		**Depth (m) :**	**2.3-2.9**
Sample Description :		**% Silt and Clay**	**31**	**% Sand**	**49**	**% Gravel**	**20**	**Figure :**	**xxxx**
Sample Description :		**Silty Sand some Gravel (SM)**							

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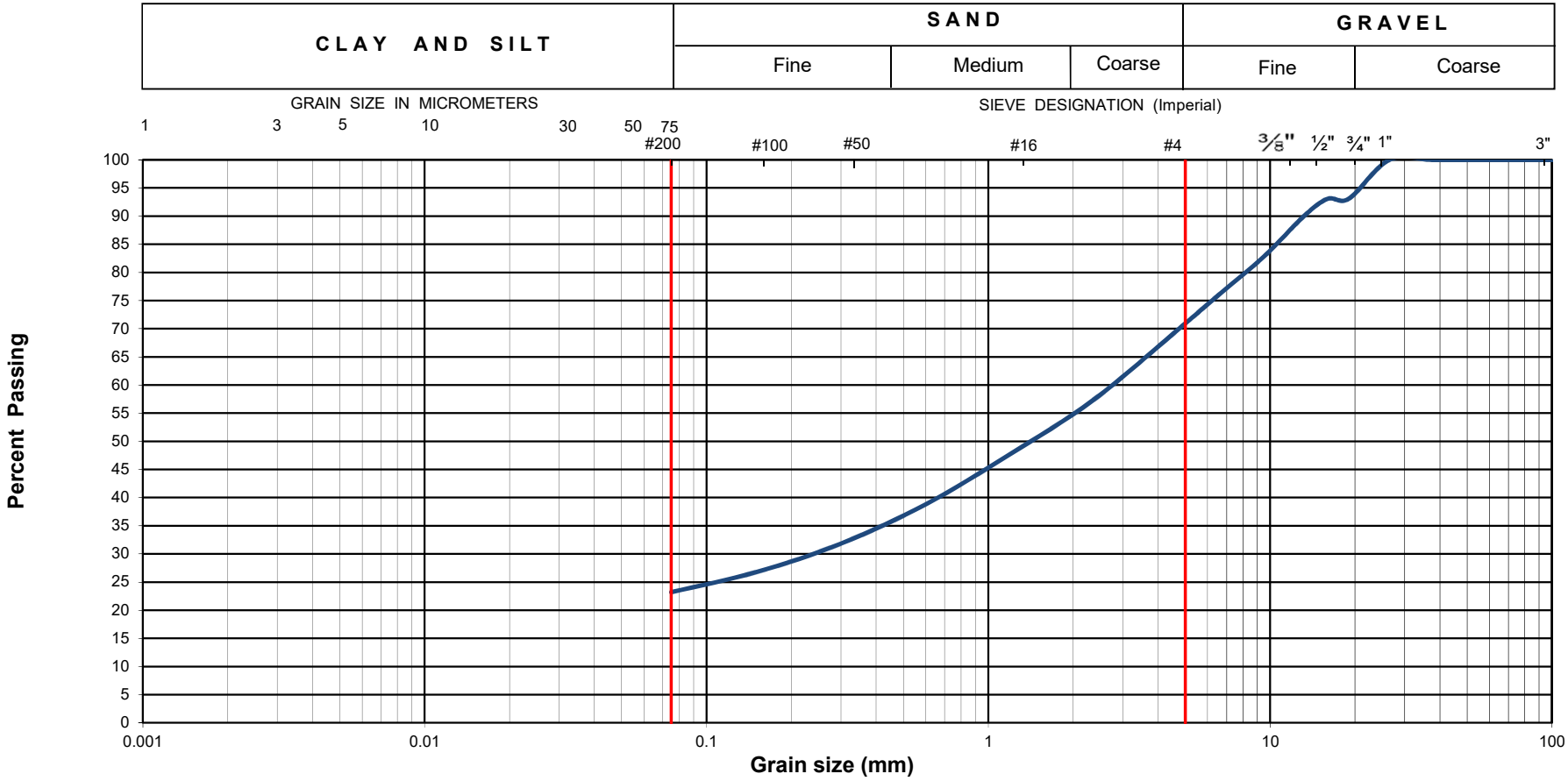
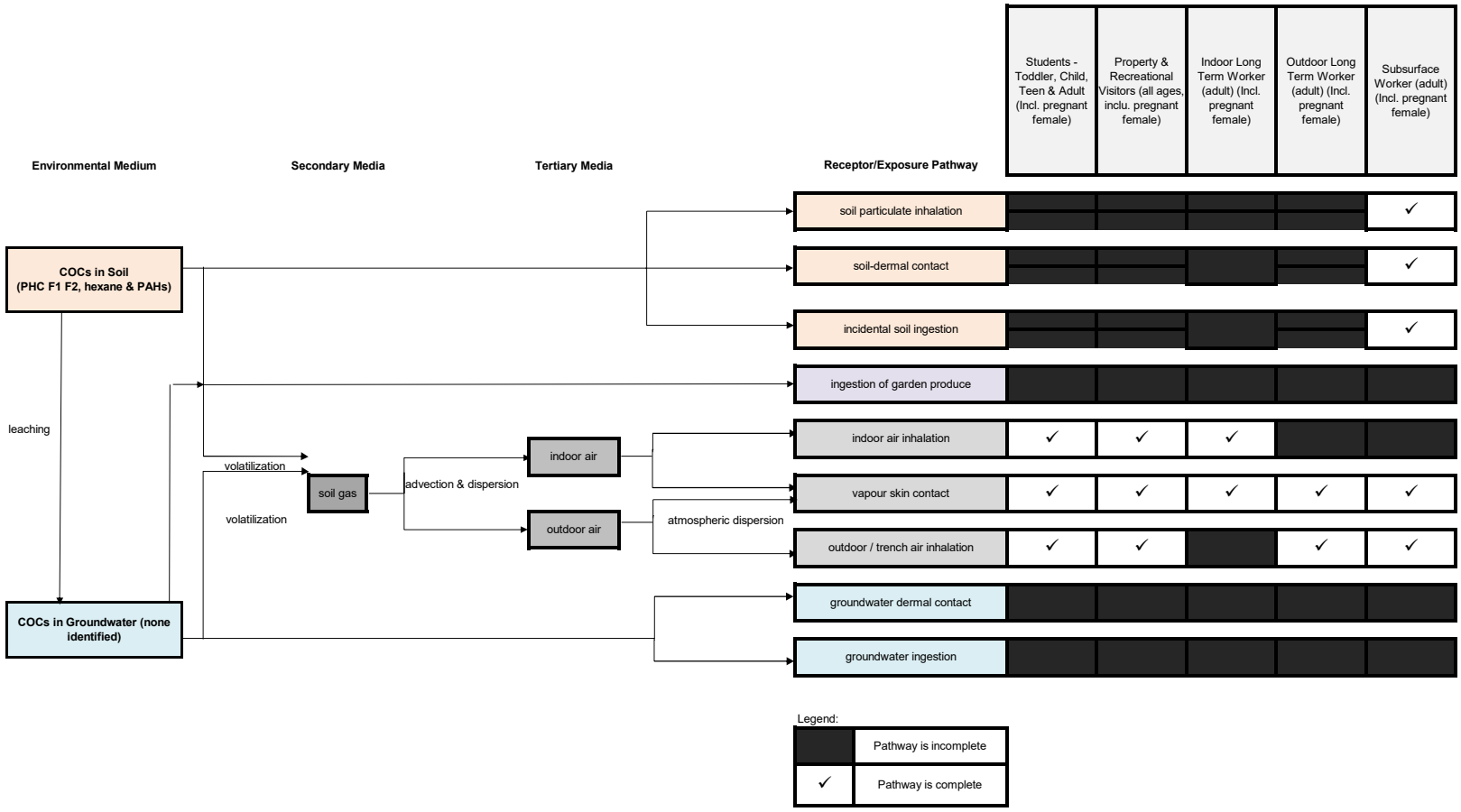
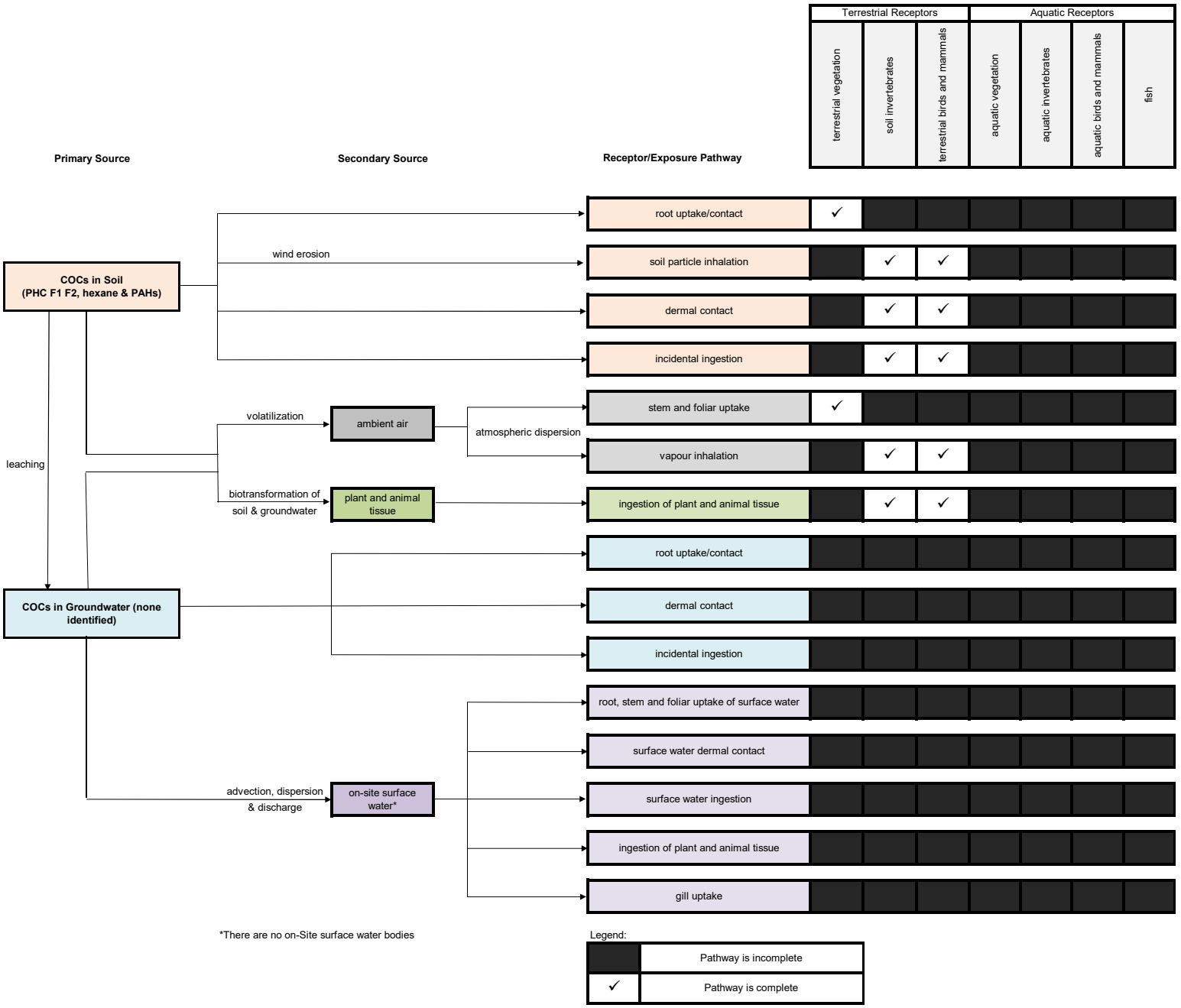
Grain-Size Distribution Curve
Method of Test For Sieve Analysis of Aggregate
ASTM C-136

Unified Soil Classification System



EXP Project No.:	**OTT-00241758-B0**	**Project Name :**	**Geotechnical Investigation**						
Client :	**N/S**	**Project Location :**	**337 Montgomery St. Ottawa. ON**						
Date Sampled :	**April 4, 2019**	**Borehole No:**	**BH1**	**Sample:**	**SS3**	**Depth (m) :**	**1.5-2.1**		
Sample Composition :		**Gravel (%)**	**30**	**Sand (%)**	**48**	**Silt & Clay (%)**	**22**	**Figure :**	**xxx**
Sample Description :		**Silty Gravel - Sand Mixture (SM)**							


Environmental Medium
Secondary Media
Tertiary Media
Receptor/Exposure Pathway
Students - Toddler, Child, Teen & Adult (Incl. pregnant female)
Property & Recreational Visitors (all ages, inclu. pregnant female)
Indoor Long Term Worker (adult) (Incl. pregnant female)
Outdoor Long Term Worker (adult) (Incl. pregnant female)
Subsurface Worker (adult) (Incl. pregnant female)
COCs in Soil (PHC F1 F2, hexane & PAHs)
COCs in Groundwater (none identified)
leaching
volatilization
volatilization
soil gas
advection & dispersion
indoor air
outdoor air
atmospheric dispersion
soil particulate inhalation
soil-dermal contact
incidental soil ingestion
ingestion of garden produce
indoor air inhalation
vapour skin contact
outdoor / trench air inhalation
groundwater dermal contact
groundwater ingestion
Legend:
Pathway is incomplete
Pathway is complete


Terrestrial Receptors
Aquatic Receptors
terrestrial vegetation
soil invertebrates
terrestrial birds and mammals
aquatic vegetation
aquatic invertebrates
aquatic birds and mammals
fish
Primary Source
Secondary Source
Receptor/Exposure Pathway
COCs in Soil (PHC F1 F2, hexane & PAHs)
COCs in Groundwater (none identified)
wind erosion
volatilization
ambient air
atmospheric dispersion
leaching
biotransformation of soil & groundwater
plant and animal tissue
advection, dispersion & discharge
on-site surface water*
root uptake/contact
soil particle inhalation
dermal contact
incidental ingestion
stem and foliar uptake
vapour inhalation
ingestion of plant and animal tissue
root uptake/contact
dermal contact
incidental ingestion
root, stem and foliar uptake of surface water
surface water dermal contact
surface water ingestion
ingestion of plant and animal tissue
gill uptake
*There are no on-Site surface water bodies
Legend:
Pathway is incomplete
Pathway is complete

Appendix C: Borehole Logs

Explanation of Terms Used on Borehole Records

SOIL DESCRIPTION

Terminology describing common soil genesis:

Topsoil: mixture of soil and humus capable of supporting good vegetative growth.

Peat: fibrous fragments of visible and invisible decayed organic matter.

Fill: where fill is designated on the borehole log it is defined as indicated by the sample recovered during the boring process. The reader is cautioned that fills are heterogeneous in nature and variable in density or degree of compaction. The borehole description may therefore not be applicable as a general description of site fill materials. All fills should be expected to contain obstruction such as wood, large concrete pieces or subsurface basements, floors, tanks, etc.; none of these may have been encountered in the boreholes. Since boreholes cannot accurately define the contents of the fill, test pits are recommended to provide supplementary information. Despite the use of test pits, the heterogeneous nature of fill will leave some ambiguity as to the exact composition of the fill. Most fills contain pockets, seams, or layers of organically contaminated soil. This organic material can result in the generation of methane gas and/or significant ongoing and future settlements. Fill at this site may have been monitored for the presence of methane gas and, if so, the results are given on the borehole logs. The monitoring process does not indicate the volume of gas that can be potentially generated nor does it pinpoint the source of the gas. These readings are to advise of the presence of gas only, and a detailed study is recommended for sites where any explosive gas/methane is detected. Some fill material may be contaminated by toxic/hazardous waste that renders it unacceptable for deposition in any but designated land fill sites; unless specifically stated the fill on this site has not been tested for contaminants that may be considered toxic or hazardous. This testing and a potential hazard study can be undertaken if requested. In most residential/commercial areas undergoing reconstruction, buried oil tanks are common and are generally not detected in a conventional geotechnical site investigation.

Till: the term till on the borehole logs indicates that the material originates from a geological process associated with glaciation. Because of this geological process the till must be considered heterogeneous in composition and as such may contain pockets and/or seams of material such as sand, gravel, silt or clay. Till often contains cobbles (60 to 200 mm) or boulders (over 200 mm). Contractors may therefore encounter cobbles and boulders during excavation, even if they are not indicated by the borings. It should be appreciated that normal sampling equipment cannot differentiate the size or type of any obstruction. Because of the horizontal and vertical variability of till, the sample description may be applicable to a very limited zone; caution is therefore essential when dealing with sensitive excavations or dewatering programs in till materials.

Terminology describing soil structure:

Desiccated: having visible signs of weathering by oxidization of clay minerals, shrinkage cracks, etc.

Stratified: alternating layers of varying material or color with the layers greater than 6 mm thick.

Laminated: alternating layers of varying material or color with the layers less than 6 mm thick.

Fissured: material breaks along plane of fracture.

Varved: composed of regular alternating layers of silt and clay.

Slickensided: fracture planes appear polished or glossy, sometimes striated.

Blocky: cohesive soil that can be broken down into small angular lumps which resist further breakdown.

Lensed: inclusion of small pockets of different soil, such as small lenses of sand scattered through a mass of clay; not thickness.

Seam: a thin, confined layer of soil having different particle size, texture, or color from materials above and below.

Homogeneous: same color and appearance throughout.

Well Graded: having wide range in grain sized and substantial amounts of all predominantly on grain size.

Uniformly Graded: predominantly on grain size.

All soil sample descriptions included in this report follow the ASTM D2487-11 Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System). The system divides soils into three major categories: (1) coarse grained, (2) fine-grained, and (3) highly organic. The soil is then subdivided based on either gradation or plasticity characteristics. The system provides a group symbol (e.g. SM) and group name (e.g. silty sand) for identification. The classification excludes particles larger than 76 mm. Please note that, with the exception of those samples where a grain size analysis has been made, all samples are classified visually in accordance with ASTM D2488-09a Standard Practice for Description and Identification of Soils (Visual-Manual Procedure). Visual classification is not sufficiently accurate to provide exact grain sizing or precise differentiation between size classification systems. Others may use different classification systems; one such system is the ISSMFE Soil Classification.

ISSMFE SOIL CLASSIFICATION

CLAY	SILT			SAND			GRAVEL			COBBLES	BOULDERS
	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE		

0.002	0.006	0.02	0.06	0.2	0.6	2.0	6.0	20	60	200

EQUIVALENT GRAIN DIAMETER IN MILLIMETRES

CLAY (PLASTIC) TO	FINE	MEDIUM	CRS.	FINE	COARSE
SILT (NONPLASTIC)	SAND			GRAVEL	

UNIFIED SOIL CLASSIFICATION

Terminology describing materials outside the USCS, (e.g. particles larger than 76 mm, visible organic matter, construction debris) is based upon the proportion of these materials present and as described below in accordance with Note 16 in ASTM D2488-09a:

Table a: Percent or Proportion of Soil, Pp

	Criteria
Trace	Particles are present but estimated to be less than 5%
Few	5≤Pp≤10%
Little	15≤Pp≤25%
Some	30≤Pp≤45%
Mostly	50≤Pp≤100%

The standard terminology to describe cohesionless soils includes the compactness as determined by the Standard Penetration Test 'N' value:

Table b: Apparent Density of Cohesionless Soil

	'N' Value (blows/0.3 m)
Very Loose	N<5
Loose	5≤N<10
Compact	10≤N<30
Dense	30≤N<50
Very Dense	50≤N

The standard terminology to describe cohesive soils includes consistency, which is based on undrained shear strength as measured by insitu vane tests, penetrometer tests, unconfined compression tests or similar field and laboratory analysis, Standard Penetration Test 'N' values can also be used to provide an approximate indication of the consistency and shear strength of fine grained, cohesive soils:

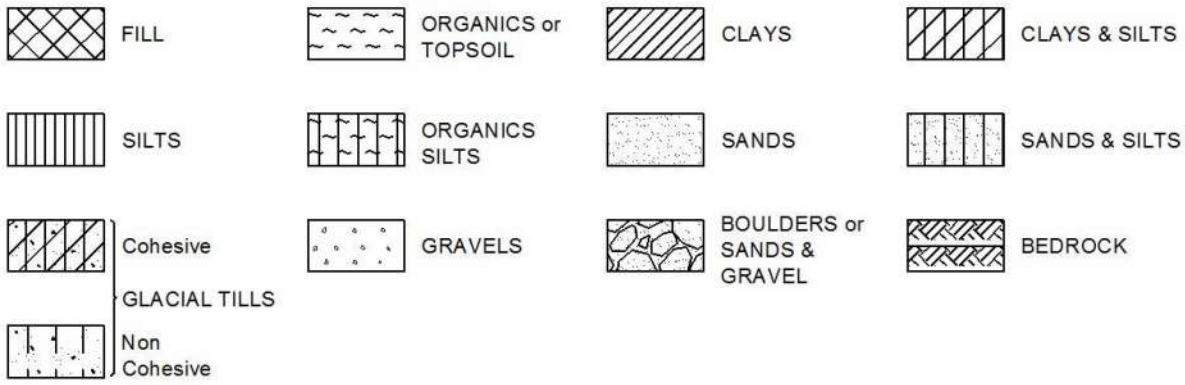
Table c: Consistency of Cohesive Soil

Consistency	Vane Shear Measurement (kPa)	'N' Value
Very Soft	<12.5	<2
Soft	12.5-25	2-4
Firm	25-50	4-8
Stiff	50-100	8-15
Very Stiff	100-200	15-30
Hard	>200	>30

Note: 'N' Value - The Standard Penetration Test records the number of blows of a 140 pound (64kg) hammer falling 30 inches (760mm), required to drive a 2 inch (50.8mm) O.D. split spoon sampler 1 foot (305mm). For split spoon samples where full penetration is not achieved, the number of blows is reported over the sampler penetration in meters (e.g. 50/0.15).

STRATA PLOT

Strata plots symbolize the soil or bedrock description. They are combinations of the following basic symbols:



WATER LEVEL MEASUREMENT

Log of Borehole BH1

Project No: OTT-00241758-B0

Project: PIIESA and Geotechnical Investigation

Location: 337 Montgomery Street, Ottawa, Ontario

Figure No. 3

Page. 1 of 1

Date Drilled: April 4th, 2019

Drill Type: CME 45 (track)

Datum: Assumed

Logged by: MAD Checked by: MGM/IT

Split Spoon Sample ⊠ | Auger Sample ◧ | SPT (N) Value ○ | Dynamic Cone Test ——— | Shelby Tube ■ | Shear Strength by Vane Test +S

Combustible Vapour Reading □ | Natural Moisture Content × | Atterberg Limits ⊣○⊢ | Undrained Triaxial at % Strain at Failure ⊕ | Shear Strength by Penetrometer Test ▲

GWL	SYMBOL	SOIL DESCRIPTION	Assumed m	Depth	Standard Penetration Test N Value / Shear Strength kPa	Combustible Vapour Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Natural Unit Wt. kN/m³
			100.47		20 40 60 80 / 50 100 150 200 kPa	250 500 750 / 20 40 60		
		ASPHALT ~ 12 mm	100.4	0	13	5	SS1	
		SAND AND GRAVEL FILL Sand and gravel with trace silt, brown with some orange mottling, moist, no odour, (compact).	99.8					
		SANDY SILTY TILL WITH SOME GRAVEL Occasional boudler and cobble, dark brown/grey, moist, no odour (dense).		1	40	5	SS2	
				2	42	5	SS3	
					42	5	SS4	
			97.4	3				
▽		**BOULDERY COBBLY TILL** Dark brown/grey, moist, organic gassy shale odour, (dense to very dense).	96.9		44	5	SS5	
				4	49	20	SS6	
					87	5	SS7	
			95.4	5				
		SHALE BEDROCK Black shale, some horizontal and vertical fractures above, (very poor to good quality). - Silt seam from 7.42m to 7.51m - Silt seam from 7.50m to 7.70m		6			Run 1	
				7			Run 2	
				8			Run 3	
			91.3	9				
		Borehole Terminated at 9.15 m Depth						

LOG OF BOREHOLE LOGS OF BOREHOLES MONTGOMERY - APRIL 2019.GPJ TROW OTTAWA.GDT 4/22/19

NOTES:

1. Borehole data requires interpretation by EXP before use by others
2. A flushmount monitoring well with a 51 mm slotted standpipe was installed in the borehole upon completion.
3. Field work was supervised by an exp representative.
4. See Notes on Sample Descriptions
5. Log to be read with EXP Report OTT-00241758-B0

WATER LEVEL RECORDS

Elapsed Time	Water Level (m)	Hole Open To (m)
completion	4.5	-
1 day	4.2	-
12 days	3.6	

CORE DRILLING RECORD

Run No.	Depth (m)	% Rec.	RQD %
1	5.05 - 6.12	94	16
2	6.12 - 7.57	100	79
3	7.57 - 9.14	100	74

Log of Borehole BH2

Project No: OTT-00241758-B0

Project: PIIESA and Geotechnical Investigation

Location: 337 Montgomery Street, Ottawa, Ontario

Figure No. 4

Page. 1 of 1

Date Drilled: April 4th, 2019

Drill Type: CME 45 (track)

Datum: Assumed

Logged by: MAD Checked by: MGM/IT

Split Spoon Sample
Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Shear Strength by Vane Test (S)
Combustible Vapour Reading
Natural Moisture Content
Atterberg Limits
Undrained Triaxial at % Strain at Failure
Shear Strength by Penetrometer Test

GWL	SYMBOL	SOIL DESCRIPTION	Assumed m	Depth
		ASPHALT ~ 20 mm	100.69	0
		SAND AND GRAVEL FILL Crushed stone, grey, moist, no odour, (compact).	100.6 / 100.5	
		SAND SILT FILL WITH GRAVEL Some roots present, dark brown with some orange, moist, no odour, (compact).	99.2	1
		SANDY SILTY TILL WITH SOME GRAVEL Occasional boudler and cobble, dark brown/grey, moist, no odour (dense).	98.4	2
		BOULDERY COBBLY TILL Dark brown/grey, moist, organic gassy shale odour, (dense to very dense).	97.52	3
		WEATHERED BEDROCK (Very poor quality).	95.5	5
		SHALE BEDROCK (Very poor quality).	94.9	6
		Borehole Terminated at 6.18 m Depth	94.5	

Standard Penetration Test N Value: 20 40 60 80
Shear Strength: 50 100 150 200 kPa
Combustible Vapour Reading (ppm): 250 500 750
Natural Moisture Content % / Atterberg Limits (% Dry Weight): 20 40 60

Sample	Natural Unit Wt. kN/m³	SPT N Value	Combustible Vapour Reading (ppm)
AUG1/SS2		17	10
SS3		12	5
SS4		50	25
SS5		50/130mm	15
SS6		70/200mm	10
RUN1			
RUN2			

NOTES:
1. Borehole data requires interpretation by EXP before use by others
2. A flushmount monitoring well with a 51 mm slotted standpipe was installed in the borehole upon completion.
3. Field work was supervised by an exp representative.
4. See Notes on Sample Descriptions
5. Log to be read with EXP Report OTT-00241758-B0

WATER LEVEL RECORDS

Elapsed Time	Water Level (m)	Hole Open To (m)
completion	3.6	-
12 days	3.2	

CORE DRILLING RECORD

Run No.	Depth (m)	% Rec.	RQD %
1	3.58 - 3.93	93	0
2	3.94 - 6.15	34	5

LOG OF BOREHOLE LOGS OF BOREHOLES MONTGOMERY - APRIL 2019.GPJ TROW OTTAWA.GDT 4/22/19

Log of Borehole BH3

Project No: OTT-00241758-B0

Project: PIIESA and Geotechnical Investigation

Location: 337 Montgomery Street, Ottawa, Ontario

Figure No. 5

Page. 1 of 1

Date Drilled: April 5th, 2019

Drill Type: CME 45 (track)

Datum: Assumed

Logged by: MAD Checked by: MGM/IT

Split Spoon Sample
Auger Sample
SPT (N) Value
Dynamic Cone Test
Shelby Tube
Shear Strength by Vane Test (S)

Combustible Vapour Reading
Natural Moisture Content
Atterberg Limits
Undrained Triaxial at % Strain at Failure
Shear Strength by Penetrometer Test

GWL	SYMBOL	SOIL DESCRIPTION	Assumed m	Depth	Standard Penetration Test N Value / Shear Strength kPa	Combustible Vapour Reading (ppm) / Natural Moisture Content % / Atterberg Limits (% Dry Weight)	SAMPLES	Natural Unit Wt. kN/m³
		TOPSOIL Sand with some gravel and trace organics, dark brown, moist, no odour, (loose).	100.69	0		10	SS1/AUG1B	
			100.1					
		SANDY SILTY TILL WITH SOME GRAVEL Occasional boudler and cobble, dark brown/grey, moist, no odour (dense).		1		15	SS2	
						15	SS3	
			98.3	2	59/280mm	10	SS4	
		BOULDERY COBBLE TILL Some gravel, dark brown, moist, no odour.						
			97.47	3	139/210mm	10	SS5	
							Run 1	
				4			Run 2	
							Run 3	
				5				
			94.7	6			Run 4	
		WEATHERED BEDROCK (Very poor quality).	94.4					
		Borehole Terminated at 6.25 m Depth						

LOG OF BOREHOLE LOGS OF BOREHOLES MONTGOMERY - APRIL 2019.GPJ TROW OTTAWA.GDT 4/22/19

NOTES:

1. Borehole data requires interpretation by EXP before use by others
2. A flushmount monitoring well with a 51 mm slotted standpipe was installed in the borehole upon completion.
3. Field work was supervised by an exp representative.
4. See Notes on Sample Descriptions
5. Log to be read with EXP Report OTT-00241758-B0

WATER LEVEL RECORDS

Elapsed Time	Water Level (m)	Hole Open To (m)
completion	3.3	-
12 days	3.2	

CORE DRILLING RECORD

Run No.	Depth (m)	% Rec.	RQD %
1	3.05 - 3.76	39	0
2	3.76 - 4.6	36	0
3	4.6 - 5.36	27	0
4	5.36 - 6.25	66	0

Appendix D - Analytical Summary Tables

TABLE 1 **SOIL ANALYTICAL RESULTS *(µg/g)***
Petroleum Hydrocarbons (PHCs) and BTEX
337 Montgomery Street, Ottawa

Parameter	MECP Table 3[1]	BH1 SS6	BH1 SS7	BH2 SS6	BH3 SS5	BH10 SS3
Sample Date (d/m/y)	Residential	5-Apr-19	5-Apr-19	5-Apr-19	5-Apr-19	Duplicate of
Sample Depth (mbsg)		3.8 - 4.4	4.6 - 5.1	3.0 - 3.2	3.0 - 3.2	BH3 SS5
Maxxam ID		JJQ531	JWL130	JJQ533	JJQ535	JJQ536
Date of Analysis		9-Apr-2019	17-Apr-2019	9-Apr-2019	9-Apr-2019	9-Apr-2019
Maxxam Certificate of Analysis		B990299	B9A0751	B990299	B990299	B990299
Benzene	0.21	<0.020	<0.02	<0.020	<0.020	<0.020
Ethylbenzene	2.1	<0.020	<0.02	<0.020	<0.020	<0.020
Toluene	2.3	0.25	<0.02	<0.020	0.24	0.26
Total Xylenes	3.1	0.56	<0.04	0.024	0.053	0.067
F1 (C6-C10) - BTEX	55	220	12	18	16	24
F2 (C10-C16 Hydrocarbons)	98	170	51	120	29	28
F3 (C16-C34 Hydrocarbons)	300	180	80	150	<50	<50
F4 (C34-C50 Hydrocarbons)	2800	<50	<50	<50	<50	<50
F4G (C34-C50 Hydrocarbons)	2800	NA	NA	NA	NA	NA

NOTES:

1	MECP *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the EPA, April 2011, Table 3 Non-Potable Residential SCS, coarse grained soil.*
Shaded	Concentration exceeds MECP Table 3 Residential SCS.
NA	Not analyzed
mbsg	Metres below surface grade

TABLE 2 SOIL ANALYTICAL RESULTS *(µg/g)*
METALS
337 Montgomery Street, Ottawa

Parameter	MECP Table 3[1]	BH1 SS1	BH10 SS2	BH2 AUG1	BH3 AUG1B
Sample Date (d/m/y)	Residential	5-Apr-19	Duplicate of	5-Apr-19	5-Apr-19
Sample Depth (mbsg)		0.2 - 0.8	BH1 SS1	0.2 - 0.6	0.0 - 0.6
Maxxam ID		JJQ530	JJQ539	JJQ532	JJQ534
Date of Analysis		10-Apr-2019	10-Apr-2019	10-Apr-2019	10-Apr-2019
Maxxam Certificate of Analysis		B990299	B990299	B990299	B990299
Antimony	7.5	0.92	0.64	0.31	0.39
Arsenic	18	6.3	7.4	4.6	6.8
Barium	390	93	110	72	120
Beryllium	4	0.72	0.70	0.39	0.80
Boron	120	5.5	<5.0	<5.0	9.2
Cadmium	1.2	0.35	0.46	0.38	0.38
Chromium	160	22	22	15	26
Cobalt	22	12	12	6.1	11
Copper	140	28	32	39	30
Lead	120	34	60	52	42
Molybdenum	6.9	2.9	2.9	1.1	2.1
Nickel	100	35	36	18	39
Selenium	2.4	<0.50	<0.50	<0.50	<0.50
Silver	20	<0.20	0.26	<0.20	<0.20
Thallium	1	0.44	0.41	0.19	0.43
Uranium	23	1.2	1.1	0.61	1.6
Vanadium	86	40	36	22	35
Zinc	340	69	91	81	99

NOTES:

1 MECP *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the EPA, April 2011, Table 3 Non-Potable Residential SCS, coarse grained soil.*

Shaded Concentration exceeds MECP Table 3 Residential SCS.

mbsg Metres below surface grade

TABLE 3 **SOIL ANALYTICAL RESULTS *(µg/g)***
VOLATILE ORGANIC COMPOUNDS
337 Montgomery Street, Ottawa

Parameter	MECP Table 3[1]	BH1 SS6	BH2 SS6	BH3 SS5	BH10 SS3
Sample Date (d/m/y)	Residential	5-Apr-19	5-Apr-19	5-Apr-19	Duplicate of
Sample Depth (mbsg)		4.6 - 5.2	3.0 - 3.2	3.0 - 3.2	BH3 SS5
Maxxam ID		JJQ531	JJQ533	JJQ535	JJQ536
Date of Analysis		9-Apr-2019	9-Apr-2019	9-Apr-2019	9-Apr-2019
Maxxam Certificate of Analysis		B990299	B990299	B990299	B990299
Acetone	16	<0.50	<0.50	<0.50	<0.50
Benzene	0.21	<0.020	<0.020	<0.020	<0.020
Bromodichloromethane	13	<0.050	<0.050	<0.050	<0.050
Bromoform	5.4	<0.050	<0.050	<0.050	<0.050
Bromomethane	0.05	<0.050	<0.050	<0.050	<0.050
Carbon Tetrachloride	0.05	<0.050	<0.050	<0.050	<0.050
Chlorobenzene	2.4	<0.050	<0.050	<0.050	<0.050
Chloroform	3.1	<0.050	<0.050	<0.050	<0.050
Dibromochloromethane	9.4	<0.050	<0.050	<0.050	<0.050
1,2-Dichlorobenzene	3.4	<0.050	<0.050	<0.050	<0.050
1,3-Dichlorobenzene	4.8	<0.050	<0.050	<0.050	<0.050
1,4-Dichlorobenzene	0.083	<0.050	<0.050	<0.050	<0.050
Dichlorodifluoromethane	16	<0.050	<0.050	<0.050	<0.050
1,1-Dichloroethane	3.5	<0.050	<0.050	<0.050	<0.050
1,2-Dichloroethane	0.05	<0.050	<0.050	<0.050	<0.050
1,1-Dichloroethylene	0.05	<0.050	<0.050	<0.050	<0.050
Cis-1,2-Dichloroethylene	3.4	<0.050	<0.050	<0.050	<0.050
Trans-1,2-Dichloroethylene	0.084	<0.050	<0.050	<0.050	<0.050
1,2-Dichloropropane	0.05	<0.050	<0.050	<0.050	<0.050
Cis-1,3-Dichloropropylene	0.05	<0.030	<0.030	<0.030	<0.030
Trans-1,3-Dichloropropylene					
Ethylbenzene	2.1	<0.020	<0.020	<0.020	<0.020
Ethylene Dibromide	0.05	<0.050	<0.050	<0.050	<0.050
Hexane	2.8	4.0	0.16	0.39	0.47
Methylene Chloride	0.1	<0.050	<0.050	<0.050	<0.050
Methyl Ethyl Ketone	16	<0.50	<0.50	<0.50	<0.50
Methyl Isobutyl Ketone	1.7	<0.50	<0.50	<0.50	<0.50
Methyl-t-Butyl Ether	0.75	<0.050	<0.050	<0.050	<0.050
Styrene	0.7	<0.050	<0.050	<0.050	<0.050
1,1,1,2-Tetrachloroethane	0.058	<0.050	<0.050	<0.050	<0.050
1,1,2,2-Tetrachloroethane	0.05	<0.050	<0.050	<0.050	<0.050
Tetrachloroethylene	0.28	<0.050	<0.050	<0.050	<0.050
Toluene	2.3	0.025	<0.020	0.024	0.026
1,1,1-Trichloroethane	0.38	<0.050	<0.050	<0.050	<0.050
1,1,2-Trichloroethane	0.05	<0.050	<0.050	<0.050	<0.050
Trichloroethylene	0.05	<0.050	<0.050	<0.050	<0.050
Trichlorofluoromethane	4.0	<0.050	<0.050	<0.050	<0.050
Vinyl Chloride	0.02	<0.020	<0.020	<0.020	<0.020
Total Xylenes	3.1	0.56	0.024	0.053	0.067

NOTES:

1	MECP *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the EPA, April 2011, Table 3 Non-Potable Residential SCS, coarse grained soil.*
Shaded	Concentration exceeds MECP Table 3 Residential SCS.
mbsg	Metres below surface grade

TABLE 4 SOIL ANALYTICAL RESULTS *(µg/g)*
POLYCYCLIC AROMATIC HYDROCARBONS
337 Montgomery Street, Ottawa

Parameter	MECP Table 3[1]	BH1 SS1	BH10 SS2	BH2 AUG1	BH2 SS3	BH3 AUG1B
Sample Date (d/m/y)	Residential	5-Apr-19	Duplicate of	5-Apr-19	5-Apr-19	5-Apr-19
Sample Depth (mbsg)		0.2 - 0.8	BH1 SS1	0.2 - 0.6	0.8 - 1.4	0.0 - 0.6
Maxxam ID		JJQ530	JJQ539	JJQ532	JWL130	JJQ534
Date of Analysis		10-Apr-2019	10-Apr-2019	10-Apr-2019	22-Apr-2019	10-Apr-2019
Maxxam Certificate of Analysis		B990299	B990299	B990299	B9A0751	B990299
Acenaphthene	7.9	0.016	0.024	<0.050	<0.05	<0.0050
Acenaphthylene	0.15	0.015	0.035	0.057	<0.05	<0.0050
Anthracene	0.67	0.031	0.063	0.069	<0.05	0.012
Benzo[a]anthracene	0.5	0.098	0.27	0.36	<0.05	0.073
Benzo[a]pyrene	0.3	0.095	0.29	0.35	<0.05	0.074
Benzo[b]fluoranthene	0.78	0.14	0.44	0.49	<0.05	0.11
Benzo[g,h,i]perylene	6.6	0.065	0.20	0.21	<0.05	0.061
Benzo[k]fluoranthene	0.78	0.050	0.16	0.19	<0.05	0.037
Chrysene	7	0.084	0.25	0.34	<0.05	0.073
Dibenz[a,h]anthracene	0.1	0.018	0.053	0.067	<0.05	0.015
Fluoranthene	0.69	0.23	0.56	0.85	0.056	0.20
Fluorene	62	0.015	0.024	<0.050	<0.05	<0.0050
Indeno[1,2,3-cd]pyrene	0.38	0.069	0.23	0.25	<0.05	0.066
Methylnaphthalene, 2-(1-)	0.99	<0.0071	0.012	<0.071	<0.071	<0.071
Naphthalene	0.6	<0.0050	0.0062	<0.050	<0.05	<0.0050
Phenanthrene	6.2	0.12	0.23	0.36	0.051	0.066
Pyrene	78	0.18	0.45	0.68	<0.05	0.15

NOTES:

1	MECP *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the EPA, April 2011, Table 3 Non-Potable Residential SCS, coarse grained soil.*
Shaded/ Bold	Concentration exceeds MECP Table 3 Residential SCS.
mbsg	Metres below surface grade

Table 5 - Maximum Concentrations in Soil
337 Montgomery Street, Ottawa, Ontario
OTT-00241785-B0

Parameter	Sample Location	Sample Depth (mbgs)	Sampling Date	Maximum Concentration	MECP Table 3
Petroleum Hydrocarbons					
F1 PHC (C6 - C10) - BTEX	BH1 SS6	3.8 - 4.4	5-Apr-19	220	55
F2 PHC (C10-C16)	BH1 SS6	3.8 - 4.4	5-Apr-19	170	98
F3 PHC (C16-C34)	BH1 SS6	3.8 - 4.4	5-Apr-19	180	300
F4 PHC (C34-C50)	BH1 SS6	3.8 - 4.4	5-Apr-19	<50	2800
Benzene	BH1 SS6	3.8 - 4.4	5-Apr-19	<0.02	0.21
Ethylbenzene	BH1 SS6	3.8 - 4.4	5-Apr-19	<0.02	2
Toluene	BH10 SS3	3.0 - 3.2	5-Apr-19	0.26	2.3
Xylenes, total	BH1 SS6	3.8 - 4.4	5-Apr-19	0.56	3.1
Polycylic Aromatic Hydrocarbons					
Acenaphthene	BH2 AUG1	0.2 - 0.6	5-Apr-19	<0.050	7.9
Acenaphthylene	BH2 AUG1	0.2 - 0.6	5-Apr-19	0.06	0.15
Anthracene	BH2 AUG1	0.2 - 0.6	5-Apr-19	0.07	0.67
Benzo(a)anthracene	BH2 AUG1	0.2 - 0.6	5-Apr-19	0.36	0.5
Benzo(a)pyrene	BH2 AUG1	0.2 - 0.6	5-Apr-19	0.3500	0.3
Benzo(b/j)fluoranthene	BH2 AUG1	0.2 - 0.6	5-Apr-19	0.4900	0.78
Benzo(g,h,i)perylene	BH2 AUG1	0.2 - 0.6	5-Apr-19	0.2100	6.6
Benzo(k)fluoranthene	BH2 AUG1	0.2 - 0.6	5-Apr-19	0.1900	0.78
Chrysene	BH2 AUG1	0.2 - 0.6	5-Apr-19	0.3400	7
Dibenz(a,h)anthracene	BH2 AUG1	0.2 - 0.6	5-Apr-19	0.0670	0.1
Fluoranthene	BH2 AUG1	0.2 - 0.6	5-Apr-19	0.85	0.69
Fluorene	BH2 AUG1	0.2 - 0.6	5-Apr-19	<0.050	62
Indeno(1,2,3-cd)pyrene	BH2 AUG1	0.2 - 0.6	5-Apr-19	0.2500	0.38
Methylnaphthalene, 2-(1-)	BH2 AUG1	0.2 - 0.6	5-Apr-19	<0.071	0.99
Naphthalene	BH2 AUG1	0.2 - 0.6	5-Apr-19	<0.050	0.6
Phenanthrene	BH2 AUG1	0.2 - 0.6	5-Apr-19	0.3600	6.2
Pyrene	BH2 AUG1	0.2 - 0.6	5-Apr-19	0.0680	78
Inorganic Parameters					
Antimony	BH1 SS1	0.2 - 0.8	5-Apr-19	0.92	7.5
Arsenic	BH10 SS2	0.2 - 0.8	5-Apr-19	7.4	18.0
Barium	BH3 AUG1B	0.0 - 0.6	5-Apr-19	120.0	390.0
Beryllium	BH3 AUG1B	0.0 - 0.6	5-Apr-19	0.8	4.0
Boron	BH3 AUG1B	0.0 - 0.6	5-Apr-19	9.2	120.0
Cadmium	BH10 SS2	0.2 - 0.8	5-Apr-19	0.46	1.2
Chromium	BH3 AUG1B	0.0 - 0.6	5-Apr-19	26.0	160.0
Cobalt	BH1 SS1	0.2 - 0.8	5-Apr-19	12.0	22.0
Copper	BH2 AUG1	0.0 - 0.6	5-Apr-19	39.0	140.0
Lead	BH10 SS2	0.2 - 0.8	5-Apr-19	60.0	120.0
Molybdenum	BH1 SS1	0.2 - 0.8	5-Apr-19	2.9	6.9
Nickel	BH3 AUG1B	0.0 - 0.6	5-Apr-19	39.0	100.0
Selenium	BH1 SS1	0.2 - 0.8	5-Apr-19	<0.50	2.4
Silver	BH1 SS1	0.2 - 0.8	5-Apr-19	<0.20	20.0
Thallium	BH1 SS1	0.2 - 0.8	5-Apr-19	0.44	1.0
Uranium	BH3 AUG1B	0.0 - 0.6	5-Apr-19	1.6	23.0
Vanadium	BH1 SS1	0.2 - 0.8	5-Apr-19	40.0	86.0
Zinc	BH3 AUG1B	0.0 - 0.6	5-Apr-19	99.0	340.0

NOTES:

Analysis by Maxxam Analytics
All results are in ppm on dry weight basis
Non-detectable results are shown as "< (RDL)" where RDL represents the reporting detection limit.

Results were compared to Ontario Ministry of Environment, Conservation and Parks (MECP), Soil, Groundwater and Sediment Standards for use under Part XV.1 of the Environmental Protection Act, April 2011, Table 3 Full Depth Generic Site Condition Standards (SCS) in a Non- Potable Ground Water Condition for Residential/Parkland/Institutional property use and coarse textured soils.

Table 5 - Maximum Concentrations in Soil
337 Montgomery Street, Ottawa, Ontario
OTT-00241785-B0

Parameter	Sample Location	Sample Depth (mbgs)	Sampling Date	Maximum Concentration	MECP Table 3
Volatile Organic Compounds					
Acetone	BH1 SS6	3.8 - 4.4	5-Apr-19	<0.50	16
Benzene	BH1 SS6	3.8 - 4.4	5-Apr-19	<0.020	0.21
Bromodichloromethane	BH1 SS6	3.8 - 4.4	5-Apr-19	<0.050	13
Bromoform	BH1 SS6	3.8 - 4.4	5-Apr-19	<0.050	5.4
Bromomethane	BH1 SS6	3.8 - 4.4	5-Apr-19	<0.050	0.05
Carbon Tetrachloride	BH1 SS6	3.8 - 4.4	5-Apr-19	<0.050	0.05
Chlorobenzene	BH1 SS6	3.8 - 4.4	5-Apr-19	<0.050	2.4
Chloroform	BH1 SS6	3.8 - 4.4	5-Apr-19	<0.050	3.1
Dibromochloromethane	BH1 SS6	3.8 - 4.4	5-Apr-19	<0.050	9.4
1,2-Dichlorobenzene	BH1 SS6	3.8 - 4.4	5-Apr-19	<0.050	3.4
1,3-Dichlorobenzene	BH1 SS6	3.8 - 4.4	5-Apr-19	<0.050	4.8
1,4-Dichlorobenzene	BH1 SS6	3.8 - 4.4	5-Apr-19	<0.050	0.083
Dichlorodifluoromethane	BH1 SS6	3.8 - 4.4	5-Apr-19	<0.050	16
1,1-Dichloroethane	BH1 SS6	3.8 - 4.4	5-Apr-19	<0.050	3.5
1,2-Dichloroethane	BH1 SS6	3.8 - 4.4	5-Apr-19	<0.050	0.05
1,1-Dichloroethylene	BH1 SS6	3.8 - 4.4	5-Apr-19	<0.050	0.05
Cis-1,2-Dichloroethylene	BH1 SS6	3.8 - 4.4	5-Apr-19	<0.050	3.4
Trans-1,2-Dichloroethylene	BH1 SS6	3.8 - 4.4	5-Apr-19	<0.050	0.084
1,2-Dichloropropane	BH1 SS6	3.8 - 4.4	5-Apr-19	<0.050	0.05
Cis-1,3-Dichloropropylene	BH1 SS6	3.8 - 4.4	5-Apr-19	<0.030	0.05
Trans-1,3-Dichloropropylene	BH1 SS6	3.8 - 4.4	5-Apr-19		
Ethylbenzene	BH1 SS6	3.8 - 4.4	5-Apr-19	<0.020	2.1
Ethylene Dibromide	BH1 SS6	3.8 - 4.4	5-Apr-19	<0.050	0.05
Hexane	BH1 SS6	3.8 - 4.4	5-Apr-19	4.0	2.8
Methylene Chloride	BH1 SS6	3.8 - 4.4	5-Apr-19	<0.050	0.1
Methyl Ethyl Ketone	BH1 SS6	3.8 - 4.4	5-Apr-19	<0.50	16
Methyl Isobutyl Ketone	BH1 SS6	3.8 - 4.4	5-Apr-19	<0.50	1.7
Methyl-t-Butyl Ether	BH1 SS6	3.8 - 4.4	5-Apr-19	<0.050	0.75
Styrene	BH1 SS6	3.8 - 4.4	5-Apr-19	<0.050	0.7
1,1,1,2-Tetrachloroethane	BH1 SS6	3.8 - 4.4	5-Apr-19	<0.050	0.058
1,1,2,2-Tetrachloroethane	BH1 SS6	3.8 - 4.4	5-Apr-19	<0.050	0.05
Tetrachloroethylene	BH1 SS6	3.8 - 4.4	5-Apr-19	<0.050	0.28
Toluene	BH1 SS6	3.8 - 4.4	5-Apr-19	0.025	2.3
1,1,1-Trichloroethane	BH1 SS6	3.8 - 4.4	5-Apr-19	<0.050	0.38
1,1,2-Trichloroethane	BH1 SS6	3.8 - 4.4	5-Apr-19	<0.050	0.05
Trichloroethylene	BH1 SS6	3.8 - 4.4	5-Apr-19	<0.050	0.05
Trichlorofluoromethane	BH1 SS6	3.8 - 4.4	5-Apr-19	<0.050	4.0
Vinyl Chloride	BH1 SS6	3.8 - 4.4	5-Apr-19	<0.020	0.02
Total Xylenes	BH1 SS6	3.8 - 4.4	5-Apr-19	0.56	3.1

NOTES:

Analysis by Maxxam Analytics
All results are in ppm on dry weight basis
Non-detectable results are shown as "< (RDL)" where RDL represents the reporting detection limit.

Results were compared to Ontario Ministry of Environment, Conservation and Parks (MECP), Soil, Groundwater and Sediment Standards for use under Part XV.1 of the Environmental Protection Act, April 2011, Table 3 Full Depth Generic Site Condition Standards (SCS) in a Non- Potable Ground Water Condition for Residential/Parkland/Institutional property use and coarse textured soils.

TABLE 6 GROUNDWATER ANALYTICAL RESULTS *(µg/L)*
PETROLEUM HYDROCARBONS and BTEX
337 Montgomery Street, Ottawa

Parameter	MECP Table 3[1]	BH1	DUP-1	BH2	BH3
Sample Date (d/m/y)		16-Apr-19	Duplicate of	16-Apr-19	16-Apr-19
Screened Interval (mbsg)		6.1 - 9.1	BH1	1.9 - 4.9	3.0 - 6.0
Maxxam ID		JLV697	JLV700	JLV698	JLV699
Date of Analysis		24-Apr-2019	24-Apr-2019	24-Apr-2019	24-Apr-2019
Maxxam Certificate of Analysis		B9A0656	B9A0656	B9A0656	B9A0656
Benzene	44	<0.20	<0.20	<0.20	<0.20
Toluene	18000	<0.20	<0.20	<0.20	<0.20
Ethylbenzene	2300	<0.20	<0.20	<0.20	<0.20
Total Xylenes	4200	<0.20	<0.20	<0.20	<0.20
PHC F1	750	<25	<25	<25	<25
PHC F2	150	<100	<100	<100	<100
PHC F3	500	<200	<200	<200	<200
PHC F4	500	<200	<200	<200	<200

NOTES:

1 MECP *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the EPA, April 2011, Table 3 Non-Potable Residential SCS, coarse grained soil.*

Shaded Concentration exceeds MECP Table 3 Residential SCS.

NA Not Analyzed

NV No Value

mbsg Metres below surface grade

TABLE 7 GROUNDWATER ANALYTICAL RESULTS *(µg/L)*
PETROLEUM HYDROCARBONS and BTEX
337 Montgomery Street, Ottawa

Parameter	MECP Table 3[1]	BH1	DUP-1	BH2	BH3
Sample Date (d/m/y)		2-Apr-19	Duplicate of	2-Apr-19	2-Apr-19
Screened Interval		6.1 - 9.1	BH1	1.9 - 4.9	3.0 - 6.0
Maxxam ID		JLV697	JLV700	JLV698	JLV699
Date of Analysis		22-Apr-2019	22-Apr-2019	22-Apr-2019	22-Apr-2019
Maxxam Certificate of Analysis		B9A0656	B9A0656	B9A0656	B9A0656
Antimony	20000	<0.50	<0.50	<0.50	<0.50
Arsenic	1900	<1.0	<1.0	<1.0	<1.0
Barium	29000	98	95	53	120
Beryllium	67	<0.50	<0.50	<0.50	<0.50
Boron	45000	61	62	49	43
Cadmium	2.7	<0.10	<0.10	<0.10	<0.10
Chromium	810	<5.0	<5.0	<5.0	<5.0
Cobalt	66	<0.50	<0.50	0.67	<0.50
Copper	87	1.0	<1.0	1.9	1.5
Lead	25	<0.50	<0.50	<0.50	<0.50
Molybdenum	9200	4.6	5.1	3.8	5.0
Nickel	490	3.8	3.7	5.2	4.5
Selenium	63	3.6	3.6	5.4	2.3
Silver	1.5	<0.10	<0.10	<0.10	<0.10
Sodium	2300000	390000	400000	520000	190000
Thallium	510	<0.050	<0.050	<0.050	<0.050
Uranium	420	7.6	7.5	15	7.2
Vanadium	250	<0.50	<0.50	<0.50	<0.50
Zinc	1100	<5.0	<5.0	<5.0	<5.0

NOTES:

1 MECP *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the EPA, April 2011, Table 3 Non-Potable Residential SCS, coarse grained soil.*

Shaded Concentration exceeds MECP Table 3 Residential SCS.

mbsg Metres below surface grade

TABLE 8 GROUNDWATER ANALYTICAL RESULTS *(µg/L)*
VOLATILE ORGANIC COMPOUNDS
337 Montgomery Street, Ottawa

Parameter	MECP Table 3[1]	BH1	DUP-1	BH2	BH3	TRIP BLANK
Sample Date (d/m/y)		2-Apr-19	Duplicate of	2-Apr-19	2-Apr-19	2-Apr-19
Screened Interval		6.1 - 9.1	BH1	1.9 - 4.9	3.0 - 6.0	3.0 - 6.0
Maxxam ID		JLV697	JLV700	JLV698	JLV699	JLV701
Date of Analysis		24-Apr-2019	24-Apr-2019	24-Apr-2019	24-Apr-2019	24-Apr-2019
Maxxam Certificate of Analysis		B9A0656	B9A0656	B9A0656	B9A0656	B9A0656
Acetone	130000	<10	<10	<10	<10	<10
Benzene	44	<0.20	<0.20	<0.20	<0.20	<0.20
Bromodichloromethane	85000	<0.50	<0.50	<0.50	<0.50	<0.50
Bromoform	37000	<1.0	<1.0	<1.0	<1.0	<1.0
Bromomethane	5.8	<0.50	<0.50	<0.50	<0.50	<0.50
Carbon Tetrachloride	0.79	<0.20	<0.20	<0.20	<0.20	<0.20
Chlorobenzene	630	<0.20	<0.20	<0.20	<0.20	<0.20
Chloroform	240	<0.20	<0.20	0.68	0.35	<0.20
Dibromochloromethane	82000	<0.50	<0.50	<0.50	<0.50	<0.50
1,2-Dichlorobenzene	4600	<0.50	<0.50	<0.50	<0.50	<0.50
1,3-Dichlorobenzene	9600	<0.50	<0.50	<0.50	<0.50	<0.50
1,4-Dichlorobenzene	8	<0.50	<0.50	<0.50	<0.50	<0.50
Dichlorodifluoromethane	4400	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane	320	<0.20	<0.20	<0.20	<0.20	<0.20
1,2-Dichloroethane	1.6	<0.50	<0.50	<0.50	<0.50	<0.50
1,1-Dichloroethylene	1.6	<0.20	<0.20	<0.20	<0.20	<0.20
Cis-1,2-Dichloroethylene	1.6	<0.50	<0.50	<0.50	<0.50	<0.50
Trans-1,2-Dichloroethylene	1.6	<0.50	<0.50	<0.50	<0.50	<0.50
1,2-Dichloropropane	16	<0.20	<0.20	<0.20	<0.20	<0.20
Cis-1,3-Dichloropropylene	5.2	<0.30	<0.30	<0.30	<0.30	<0.30
Trans-1,3-Dichloropropylene		<0.40	<0.40	<0.40	<0.40	<0.40
Ethylbenzene	2300	<0.20	<0.20	<0.20	<0.20	<0.20
Ethylene Dibromide	0.25	<0.20	<0.20	<0.20	<0.20	<0.20
Hexane	51	<1.0	<1.0	<1.0	<1.0	<1.0
Methylene Chloride	610	<2.0	<2.0	<2.0	<2.0	<2.0
Methyl Ethyl Ketone	470000	<10	<10	<10	<10	<10
Methyl Isobutyl Ketone	140000	<5.0	<5.0	<5.0	<5.0	<5.0
Methyl-t-Butyl Ether	190	<0.50	<0.50	<0.50	<0.50	<0.50
Styrene	1300	<0.50	<0.50	<0.50	<0.50	<0.50
1,1,1,2-Tetrachloroethane	3.3	<0.50	<0.50	<0.50	<0.50	<0.50
1,1,2,2-Tetrachloroethane	3.2	<0.50	<0.50	<0.50	<0.50	<0.50
Tetrachloroethylene	1.6	<0.20	<0.20	<0.20	<0.20	<0.20
Toluene	18000	<0.20	<0.20	<0.20	<0.20	<0.20
1,1,1-Trichloroethane	640	<0.20	<0.20	<0.20	<0.20	<0.20
1,1,2-Trichloroethane	4.7	<0.50	<0.50	<0.50	<0.50	<0.50
Trichloroethylene	1.5	<0.20	<0.20	<0.20	<0.20	<0.20
Trichlorofluoromethane	2500	<0.50	<0.50	<0.50	<0.50	<0.50
Vinyl Chloride	0.5	<0.20	<0.20	<0.20	<0.20	<0.20
Total Xylenes	4200	<0.20	<0.20	<0.20	<0.20	<0.20

NOTES:

1 MECP *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the EPA, April 2011, Table 3 Non-Potable Residential SCS, coarse grained soil.*

Shaded Concentration exceeds MECP Table 3 Residential SCS.

mbsg Metres below surface grade

Table 9 - Maximum Concentrations in Groundwater
337 Montgomery Street, Ottawa, Ontario
OTT-00241785-B0

Parameter	Sample Location	Screen Interval (mbgs)	Sampling Date	Maximum Concentration	MECP Table 3
Petroleum Hydrocarbons					
F1 PHC (C6 - C10) - BTEX	All Locations	6.1 - 9.1	16-Apr-19	<25	750
F2 PHC (C10-C16)	All Locations	6.1 - 9.1	16-Apr-19	<100	150
F3 PHC (C16-C34)	All Locations	6.1 - 9.1	16-Apr-19	<200	500
F4 PHC (C34-C50)	All Locations	6.1 - 9.1	16-Apr-19	<200	500
Benzene	All Locations	6.1 - 9.1	16-Apr-19	<0.20	44
Ethylbenzene	All Locations	6.1 - 9.1	16-Apr-19	<0.20	2300
Toluene	All Locations	6.1 - 9.1	16-Apr-19	<0.20	180000
Xylenes, total	All Locations	6.1 - 9.1	16-Apr-19	<0.40	4200
Inorganic Parameters					
Antimony	All Locations	6.1 - 9.1	16-Apr-19	<0.50	20000
Arsenic	All Locations	6.1 - 9.1	16-Apr-19	<1.0	1900
Barium	BH3	3.0 - 6.0	16-Apr-19	120	29000
Beryllium	All Locations	6.1 - 9.1	16-Apr-19	<0.050	67
Boron	DUP1	6.1 - 9.1	16-Apr-19	62	45000
Cadmium	All Locations	6.1 - 9.1	16-Apr-19	<0.10	2.7
Chromium	All Locations	6.1 - 9.1	16-Apr-19	<5.0	810
Cobalt	BH2	1.9 - 4.9	16-Apr-19	0.67	66
Copper	BH2	1.9 - 4.9	16-Apr-19	1.90	87
Lead	All Locations	6.1 - 9.1	16-Apr-19	<0.50	25
Molybdenum	DUP1	6.1 - 9.1	16-Apr-19	5.10	9200
Nickel	BH2	1.9 - 4.9	16-Apr-19	5.20	490
Sodium	BH2	1.9 - 4.9	16-Apr-19	520,000.00	2300000
Selenium	BH2	1.9 - 4.9	16-Apr-19	5.40	63
Silver	All Locations	6.1 - 9.1	16-Apr-19	<0.10	1.5
Thallium	All Locations	6.1 - 9.1	16-Apr-19	<0.050	510
Uranium	BH2	1.9 - 4.9	16-Apr-19	15.0	420
Vanadium	All Locations	6.1 - 9.1	16-Apr-19	<0.50	250
Zinc	All Locations	6.1 - 9.1	16-Apr-19	<5.0	1100

NOTES:

Analysis by Maxxam Analytics

All results are in ppb

Non-detectable results are shown as "< (RDL)" where RDL represents the reporting detection limit.

Results were compared to Ontario Ministry of Environment, Conservation and Parks (MECP), Soil, Groundwater and Sediment Standards for use under Part XV.1 of the Environmental Protection Act, April 2011, Table 3 Full Depth Generic Site Condition Standards (SCS) in a Non- Potable Ground Water Condition for all types of property use and coarse textured soils.

Table 9 - Maximum Concentrations in Groundwater
337 Montgomery Street, Ottawa, Ontario
OTT-00241785-B0

Parameter	Sample Location	Screen Interval (mbgs)	Sampling Date	Maximum Concentration	MECP Table 3
Volatile Organic Compounds					
Acetone	All Locations	6.1 - 9.1	16-Apr-19	<10	130000
Benzene	All Locations	6.1 - 9.1	16-Apr-19	<0.20	44
Bromodichloromethane	All Locations	6.1 - 9.1	16-Apr-19	<0.50	85000
Bromoform	All Locations	6.1 - 9.1	16-Apr-19	<1.0	37000
Bromomethane	All Locations	6.1 - 9.1	16-Apr-19	<0.50	5.8
Carbon Tetrachloride	All Locations	6.1 - 9.1	16-Apr-19	<0.20	0.79
Chlorobenzene	All Locations	6.1 - 9.1	16-Apr-19	<0.20	630
Chloroform	All Locations	6.1 - 9.1	16-Apr-19	<0.20	240
Dibromochloromethane	All Locations	6.1 - 9.1	16-Apr-19	<0.50	82000
1,2-Dichlorobenzene	All Locations	6.1 - 9.1	16-Apr-19	<0.50	4600
1,3-Dichlorobenzene	All Locations	6.1 - 9.1	16-Apr-19	<0.50	9600
1,4-Dichlorobenzene	All Locations	6.1 - 9.1	16-Apr-19	<0.50	8
Dichlorodifluoromethane	All Locations	6.1 - 9.1	16-Apr-19	<1.0	4400
1,1-Dichloroethane	All Locations	6.1 - 9.1	16-Apr-19	<0.20	320
1,2-Dichloroethane	All Locations	6.1 - 9.1	16-Apr-19	<0.50	1.6
1,1-Dichloroethylene	All Locations	6.1 - 9.1	16-Apr-19	<0.20	1.6
Cis-1,2-Dichloroethylene	All Locations	6.1 - 9.1	16-Apr-19	<0.50	1.6
Trans-1,2-Dichloroethylene	All Locations	6.1 - 9.1	16-Apr-19	<0.50	1.6
1,2-Dichloropropane	All Locations	6.1 - 9.1	16-Apr-19	<0.20	16
Cis-1,3-Dichloropropylene	All Locations	6.1 - 9.1	16-Apr-19	<0.30	5.2
Trans-1,3-Dichloropropylene	All Locations	6.1 - 9.1	16-Apr-19	<0.40	
Ethylbenzene	All Locations	6.1 - 9.1	16-Apr-19	<0.20	2300
Ethylene Dibromide	All Locations	6.1 - 9.1	16-Apr-19	<0.20	0.25
Hexane	All Locations	6.1 - 9.1	16-Apr-19	<1.0	51
Methylene Chloride	All Locations	6.1 - 9.1	16-Apr-19	<2.0	610
Methyl Ethyl Ketone	All Locations	6.1 - 9.1	16-Apr-19	<10	470000
Methyl Isobutyl Ketone	All Locations	6.1 - 9.1	16-Apr-19	<5.0	140000
Methyl-t-Butyl Ether	All Locations	6.1 - 9.1	16-Apr-19	<0.50	190
Styrene	All Locations	6.1 - 9.1	16-Apr-19	<0.50	1300
1,1,1,2-Tetrachloroethane	All Locations	6.1 - 9.1	16-Apr-19	<0.50	3.3
1,1,2,2-Tetrachloroethane	All Locations	6.1 - 9.1	16-Apr-19	<0.50	3.2
Tetrachloroethylene	All Locations	6.1 - 9.1	16-Apr-19	<0.20	1.6
Toluene	All Locations	6.1 - 9.1	16-Apr-19	<0.20	18000
1,1,1-Trichloroethane	All Locations	6.1 - 9.1	16-Apr-19	<0.20	640
1,1,2-Trichloroethane	All Locations	6.1 - 9.1	16-Apr-19	<0.50	4.7
Trichloroethylene	All Locations	6.1 - 9.1	16-Apr-19	<0.20	1.5
Trichlorofluoromethane	All Locations	6.1 - 9.1	16-Apr-19	<0.50	2500
Vinyl Chloride	All Locations	6.1 - 9.1	16-Apr-19	<0.20	0.5
Total Xylenes	All Locations	6.1 - 9.1	16-Apr-19	<0.20	4200

NOTES:

Analysis by Maxxam Analytics

All results are in ppb

Non-detectable results are shown as "< (RDL)" where RDL represents the reporting detection limit.

Results were compared to Ontario Ministry of Environment, Conservation and Parks (MECP), Soil, Groundwater and Sediment Standards for use under Part XV.1 of the Environmental Protection Act, April 2011, Table 3 Full Depth Generic Site Condition Standards (SCS) in a Non- Potable Ground Water Condition for all types of property use and coarse textured soils.

TABLE 10 RELATIVE PERCENT DIFFERENCES
PETROLEUM HYDROCARBONS - SOIL
337 Montgomery Street, Ottawa, Ontario

Parameter	Units	RDL	BH3 SS5	BH10 SS3	RPD (%)	Alert Limit (%)
			5-Apr-19	5-Apr-19		
Petroleum Hydrocarbons						
PHC F_1 (>C_6-C10)	ug/g	10	16	24	40	60
PHC F_2 (>C_{10}-C_{16})	ug/g	10	29	28	4	60
PHC F_3 (>C_{16}-C_{34})	ug/g	50	<50	<50	nc	60
PHC F_4 (>C_{34}-C_{50})	ug/g	50	<50	<50	nc	60
Volatiles						
Benzene	ug/g	0.020	<0.020	<0.020	nc	100
Ethylbenzene	ug/g	0.020	<0.020	<0.020	nc	100
Toluene	ug/g	0.020	0.24	0.26	8	100
Total Xylenes	ug/g	0.020	0.053	0.067	nc	100

NOTES:

Analysis by Maxxam Analytics
All results on dry weight basis; <RDL means not detected at reporting detection limit (RDL)
- means "not analysed"
nc means "not calculable" - one (or both) of the results are <5x RDL
Exceedances of alert limits are shown in **bold**
Alert Limit- since laboratory duplicate measures laboratory precision while field duplicates measures laboratory and field precision, the alert limits for field duplicates are two times the laboratory RPD .

TABLE 11 RELATIVE PERCENT DIFFERENCES
METALS - SOIL
337 Montgomery Street, Ottawa, Ontario

Parameter	Units	RDL	BH1 SS2	BH10 SS2	RPD (%)	Alert Limit (%)
			5-Apr-19	5-Apr-19		
Inorganic Parameters						
Antimony	ug/g	0.20	0.92	0.64	nc	60
Arsenic	ug/g	1.0	6.3	7.4	16	60
Barium	ug/g	0.50	93	110	17	60
Beryllium	ug/g	0.20	0.72	0.70	nc	60
Boron	ug/g	5.0	5.5	<5.0	nc	60
Cadmium	ug/g	0.10	0.35	0.46	nc	60
Chromium	ug/g	1.0	22	22	0	60
Cobalt	ug/g	0.10	12	12	0	60
Copper	ug/g	0.50	28	32	13	60
Lead	ug/g	1.0	34	60	55	60
Molybdenum	ug/g	0.50	2.9	2.9	0	60
Nickel	ug/g	0.50	35	36	3	60
Selenium	ug/g	0.50	<0.50	<0.50	nc	60
Silver	ug/g	0.20	<0.20	0.26	nc	60
Thallium	ug/g	0.050	0.44	0.41	7	60
Uranium	ug/g	0.050	1.2	1.1	9	60
Vanadium	ug/g	5.0	40	36	11	60
Zinc	ug/g	5.0	69	91	28	60

NOTES:

Analysis by Maxxam Analytics

All results on dry weight basis; <RDL means not detected at reporting detection limit (RDL)

- means "not analysed"

nc means "not calculable" - one (or both) of the results are <5x RDL

Exceedances of alert limits are shown in **bold**

Alert Limit- since laboratory duplicate measures laboratory precision while field duplicates measures laboratory and field precision, the alert limits for field duplicates are two times the laboratory RPD .

TABLE 12 RELATIVE PERCENT DIFFERENCES
VOLATILE ORGANIC COMPOUNDS - SOIL
337 Montgomery Street, Ottawa, Ontario

Parameter	Units	RDL	BH3 SS5	BH10 SS3	RPD (%)	Alert Limit (%)
			5-Apr-19	5-Apr-19		
Volatiles						
Acetone	ug/g	0.50	<0.50	<0.50	nc	100
Benzene	ug/g	0.020	<0.020	<0.020	nc	100
Bromodichloromethane	ug/g	0.050	<0.050	<0.050	nc	100
Bromoform	ug/g	0.050	<0.050	<0.050	nc	100
Bromomethane	ug/g	0.050	<0.050	<0.050	nc	100
Carbon Tetrachloride	ug/g	0.050	<0.050	<0.050	nc	100
Chlorobenzene	ug/g	0.050	<0.050	<0.050	nc	100
Chloroform	ug/g	0.050	<0.050	<0.050	nc	100
Dibromochloromethane	ug/g	0.050	<0.050	<0.050	nc	100
1,2-Dichlorobenzene	ug/g	0.050	<0.050	<0.050	nc	100
1,3-Dichlorobenzene	ug/g	0.050	<0.050	<0.050	nc	100
1,4-Dichlorobenzene	ug/g	0.050	<0.050	<0.050	nc	100
Difluorodifluoromethane	ug/g	0.050	<0.050	<0.050	nc	100
1,1-Dichloroethane	ug/g	0.050	<0.050	<0.050	nc	100
1,2-Dichloroethane	ug/g	0.050	<0.050	<0.050	nc	100
1,1-Dichloroethylene	ug/g	0.050	<0.050	<0.050	nc	100
Cis-1,2-Dichloroethylene	ug/g	0.050	<0.050	<0.050	nc	100
Trans-1,2-Dichloroethylene	ug/g	0.050	<0.050	<0.050	nc	100
1,2-Dichloropropane	ug/g	0.050	<0.050	<0.050	nc	100
Cis-1,3-Dichloropropylene	ug/g	0.030	<0.030	<0.030	nc	100
Trans-1,3-Dichloropropylene	ug/g	0.030				
Ethylbenzene	ug/g	0.020	<0.020	<0.020	nc	100
Ethylene Dibromide	ug/g	0.050	<0.050	<0.050	nc	100
Hexane	ug/g	0.050	0.39	0.47	19	100
Methylene Chloride	ug/g	0.050	<0.050	<0.050	nc	100
Methyl Ethyl Ketone	ug/g	0.50	<0.50	<0.50	nc	100
Methyl Isobutyl Ketone	ug/g	0.50	<0.50	<0.50	nc	100
Methyl-t-Butyl Ether	ug/g	0.050	<0.050	<0.050	nc	100
Styrene	ug/g	0.050	<0.050	<0.050	nc	100
1,1,1,2-Tetrachloroethane	ug/g	0.050	<0.050	<0.050	nc	100
1,1,2,2-Tetrachloroethane	ug/g	0.050	<0.050	<0.050	nc	100
Tetrachloroethylene	ug/g	0.050	<0.050	<0.050	nc	100
Toluene	ug/g	0.020	0.024	0.026	nc	100
1,1,1-Trichloroethane	ug/g	0.050	<0.050	<0.050	nc	100
1,1,2-Trichloroethane	ug/g	0.050	<0.050	<0.050	nc	100
Trichloroethylene	ug/g	0.050	<0.050	<0.050	nc	100
Trichlorofluoromethane	ug/g	0.050	<0.050	<0.050	nc	100
Vinyl Chloride	ug/g	0.020	<0.020	<0.020	nc	100
Total Xylenes	ug/g	0.050	0.053	0.067	nc	100

NOTES:

Analysis by Maxxam Analytics

<RDL means not detected at reporting detection limit (RDL)

- means "not analysed"

nc means "not calculable" - one (or both) of the results are <5x RDL

Exceedances of alert limits are shown in **bold**

Alert Limit- since laboratory duplicate measures laboratory precision while field duplicates measures laboratory and field precision, the alert limits for field duplicates are two times the laboratory RPD .

TABLE 13 RELATIVE PERCENT DIFFERENCES
POLYCYCLIC AROMATIC HYDROCARBONS - SOIL
337 Montgomery Street, Ottawa, Ontario

Parameter	Units	RDL	BH1 SS1	BH10 SS2	RPD (%)	Alert Limit (%)
			5-Apr-19	5-Apr-19		
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	ug/g	0.0050	0.016	0.024	nc	80
Acenaphthylene	ug/g	0.0050	0.015	0.035	nc	80
Anthracene	ug/g	0.0050	0.031	0.063	68	80
Benzo(a)anthracene	ug/g	0.0050	0.098	0.27	**93**	80
Benzo(a)pyrene	ug/g	0.0050	0.095	0.29	**101**	80
Benzo(b/j)fluoranthene	ug/g	0.0050	0.14	0.44	**103**	80
Benzo(ghi)perylene	ug/g	0.0050	0.065	0.20	**102**	80
Benzo(k)fluoranthene	ug/g	0.0050	0.050	0.16	**105**	80
Chrysene	ug/g	0.0050	0.084	0.25	**99**	80
Dibenz(a,h)anthracene	ug/g	0.0050	0.018	0.053	nc	80
Fluoranthene	ug/g	0.0050	0.23	0.56	**84**	80
Fluorene	ug/g	0.0050	0.015	0.024	nc	80
Indeno(1,2,3-cd)pyrene	ug/g	0.0050	0.069	0.23	**108**	80
Methylnaphthalene, 2-(1-)	ug/g	0.0050	<0.0071	0.012	nc	80
Naphthalene	ug/g	0.0050	<0.0050	0.0062	nc	80
Phenanthrene	ug/g	0.0050	0.12	0.23	63	80
Pyrene	ug/g	0.0050	0.18	0.45	**86**	80

NOTES:

Analysis by Maxxam Analytics

All results on dry weight basis; <RDL means not detected at reporting detection limit (RDL)

- means "not analysed"

nc means "not calculable" - one (or both) of the results are <5x RDL

Exceedances of alert limits are shown in **bold**

Alert Limit- since laboratory duplicate measures laboratory precision while field duplicates measures laboratory and field precision, the alert limits for field duplicates are two times the laboratory RPD .

TABLE 14 RELATIVE PERCENT DIFFERENCES
PETROLEUM HYDROCARBONS - GROUNDWATER
337 Montgomery Street, Ottawa, Ontario

Parameter	Units	RDL	BH1	DUP-1	RPD (%)	Alert Limit (%)
			16-Apr-19	16-Apr-19		
Petroleum Hydrocarbons						
PHC F_1 (>C_6-C10)	ug/L	25	<25	<25	nc	60
PHC F_2 (>C_{10}-C_{16})	ug/L	100	<100	<100	nc	60
PHC F_3 (>C_{16}-C_{34})	ug/L	100	<200	<200	nc	60
PHC F_4 (>C_{34}-C_{50})	ug/L	100	<200	<200	nc	60
Volatiles						
Benzene	ug/L	0.20	<0.20	<0.20	nc	60
Ethylbenzene	ug/L	0.20	<0.20	<0.20	nc	60
Toluene	ug/L	0.20	<0.20	<0.20	nc	60
Total Xylenes	ug/L	0.20	<0.20	<0.20	nc	60

NOTES:

Analysis by Maxxam Analytics

<RDL means not detected at reporting detection limit (RDL)

- means "not analysed"

nc means "not calculable" - one (or both) of the results are <5x RDL

Exceedances of alert limits are shown in **bold**

Alert Limit- since laboratory duplicate measures laboratory precision while field duplicates measures laboratory and field precision, the alert limits for field duplicates are two times the laboratory RPD .

TABLE 15 RELATIVE PERCENT DIFFERENCES
METALS - GROUNDWATER
337 Montgomery Street, Ottawa, Ontario

Parameter	Units	RDL	BH1	DUP-1	RPD (%)	Alert Limit (%)
			16-Apr-2019	16-Apr-2019		
Inorganics						
Antimony	ug/L	0.50	<0.50	<0.50	nc	40
Arsenic	ug/L	1.0	<1.0	<1.0	nc	40
Barium	ug/L	2.0	98	95	3	40
Beryllium	ug/L	0.50	<0.50	<0.50	nc	40
Boron	ug/L	10	61	62	2	40
Cadmium	ug/L	0.10	<0.10	<0.10	nc	40
Chromium	ug/L	5.0	<5.0	<5.0	nc	40
Cobalt	ug/L	0.50	<0.50	<0.50	nc	40
Copper	ug/L	1.0	1.0	<1.0	nc	40
Lead	ug/L	0.50	<0.50	<0.50	nc	40
Molybdenum	ug/L	0.50	4.6	5.1	10	40
Nickel	ug/L	1.0	3.8	3.7	3	40
Selenium	ug/L	2.00	3.6	3.6	0	40
Silver	ug/L	0.10	<0.10	<0.10	nc	40
Sodium	ug/L	100	390000	400000	3	40
Thallium	ug/L	0.050	<0.050	<0.050	nc	40
Uranium	ug/L	0.10	7.6	7.5	1	40
Vanadium	ug/L	0.50	<0.50	<0.50	nc	40
Zinc	ug/L	5.0	<5.0	<5.0	nc	40

NOTES:

Analysis by Maxxam Analytics

<RDL means not detected at reporting detection limit (RDL)

- means "not analysed"

nc means "not calculable" - one (or both) of the results are <5x RDL

Exceedances of alert limits are shown in **bold**

Alert Limit- since laboratory duplicate measures laboratory precision while field duplicates measures laboratory and field precision, the alert limits for field duplicates are two times the laboratory RPD .

TABLE 16 RELATIVE PERCENT DIFFERENCES
VOLATILE ORGANIC COMPOUNDS - GROUNDWATER
337 Montgomery Street, Ottawa, Ontario

Parameter	Units	RDL	BH1	DUP-1	RPD (%)	Alert Limit (%)
			16-Apr-19	16-Apr-19		
Volatiles						
Acetone	ug/L	10	<10	<10	nc	60
Benzene	ug/L	0.20	<0.20	<0.20	nc	60
Bromodichloromethane	ug/L	0.50	<0.50	<0.50	nc	60
Bromoform	ug/L	1.0	<1.0	<1.0	nc	60
Bromomethane	ug/L	0.50	<0.50	<0.50	nc	60
Carbon Tetrachloride	ug/L	0.20	<0.20	<0.20	nc	60
Chlorobenzene	ug/L	0.20	<0.20	<0.20	nc	60
Chloroform	ug/L	0.20	<0.20	<0.20	nc	60
Dibromochloromethane	ug/L	0.50	<0.50	<0.50	nc	60
1,2-Dichlorobenzene	ug/L	0.50	<0.50	<0.50	nc	60
1,3-Dichlorobenzene	ug/L	0.50	<0.50	<0.50	nc	60
1,4-Dichlorobenzene	ug/L	0.50	<0.50	<0.50	nc	60
Dichlorodifluoromethane	ug/L	1.0	<1.0	<1.0	nc	60
1,1-Dichloroethane	ug/L	0.20	<0.20	<0.20	nc	60
1,2-Dichloroethane	ug/L	0.50	<0.50	<0.50	nc	60
1,1-Dichloroethylene	ug/L	0.20	<0.20	<0.20	nc	60
Cis-1,2-Dichloroethylene	ug/L	0.50	<0.50	<0.50	nc	60
Trans-1,2-Dichloroethylene	ug/L	0.50	<0.50	<0.50	nc	60
1,2-Dichloropropane	ug/L	0.20	<0.20	<0.20	nc	60
Cis-1,3-Dichloropropylene	ug/L	0.30	<0.30	<0.30	nc	60
Trans-1,3-Dichloropropylene	ug/L	0.40	<0.40	<0.40	nc	60
Ethylbenzene	ug/L	0.20	<0.20	<0.20	nc	60
Ethylene Dibromide	ug/L	0.20	<0.20	<0.20	nc	60
Hexane(n)	ug/L	1.0	<1.0	<1.0	nc	60
Methylene Chloride	ug/L	2.0	<2.0	<2.0	nc	60
Methyl Ethyl Ketone	ug/L	10	<10	<10	nc	60
Methyl Isobutyl Ketone	ug/L	5.0	<5.0	<5.0	nc	60
Methyl-t-Butyl Ether	ug/L	0.50	<0.50	<0.50	nc	60
Styrene	ug/L	0.50	<0.50	<0.50	nc	60
1,1,1,2-Tetrachloroethane	ug/L	0.50	<0.50	<0.50	nc	60
1,1,2,2-Tetrachloroethane	ug/L	0.20	<0.50	<0.50	nc	60
Tetrachloroethylene	ug/L	0.20	<0.20	<0.20	nc	60
Toluene	ug/L	0.20	<0.20	<0.20	nc	60
1,1,1-Trichloroethane	ug/L	0.20	<0.20	<0.20	nc	60
1,1,2-Trichloroethane	ug/L	0.50	<0.50	<0.50	nc	60
Trichloroethylene	ug/L	0.20	<0.20	<0.20	nc	60
Trichlorofluoromethane	ug/L	0.50	<0.50	<0.50	nc	60
Vinyl Chloride	ug/L	0.20	<0.20	<0.20	nc	60
Total Xylenes	ug/L	0.20	<0.20	<0.20	nc	60

NOTES:

Analysis by Maxxam Analytics

<RDL means not detected at reporting detection limit (RDL)

- means "not analysed"

nc means "not calculable" - one (or both) of the results are <5x RDL

Exceedances of alert limits are shown in **bold**

Alert Limit- since laboratory duplicate measures laboratory precision while field duplicates measures laboratory and field precision, the alert limits for field duplicates are two times the laboratory RPD .

Appendix E – Laboratory Certificates of Analysis

Maxxam
A Bureau Veritas Group Company

Your Project #: OTT-00241785-B
Site Location: MONTGOMERY
Your C.O.C. #: 710467-02-01

Attention: Mark Devlin

exp Services Inc
Ottawa Branch
100-2650 Queensview Drive
Ottawa, ON
CANADA K2B 8H6

Report Date: 2019/04/12
Report #: R5668423
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B990299
Received: 2019/04/05, 15:50

Sample Matrix: Soil
Samples Received: 9

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum (1)	3	N/A	2019/04/11	CAM SOP-00301	EPA 8270D m
Methylnaphthalene Sum (1)	1	N/A	2019/04/12	CAM SOP-00301	EPA 8270D m
1,3-Dichloropropene Sum (1)	4	N/A	2019/04/11		EPA 8260C m
Petroleum Hydrocarbons F2-F4 in Soil (1, 2)	4	2019/04/08	2019/04/09	CAM SOP-00316	CCME CWS m
Strong Acid Leachable Metals by ICPMS (1)	3	2019/04/09	2019/04/10	CAM SOP-00447	EPA 6020B m
Strong Acid Leachable Metals by ICPMS (1)	1	2019/04/11	2019/04/11	CAM SOP-00447	EPA 6020B m
Moisture (1)	7	N/A	2019/04/08	CAM SOP-00445	Carter 2nd ed 51.2 m
Moisture (1)	1	N/A	2019/04/11	CAM SOP-00445	Carter 2nd ed 51.2 m
PAH Compounds in Soil by GC/MS (SIM) (1)	3	2019/04/10	2019/04/10	CAM SOP-00318	EPA 8270D m
PAH Compounds in Soil by GC/MS (SIM) (1)	1	2019/04/11	2019/04/12	CAM SOP-00318	EPA 8270D m
pH CaCl2 EXTRACT (1)	4	2019/04/10	2019/04/10	CAM SOP-00413	EPA 9045 D m
Volatile Organic Compounds and F1 PHCs (1)	5	N/A	2019/04/10	CAM SOP-00230	EPA 8260C m

Remarks:

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

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

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

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Maxxam, results relate to the supplied samples tested.

Your Project #: OTT-00241785-B
Site Location: MONTGOMERY
Your C.O.C. #: 710467-02-01

Attention: Mark Devlin

exp Services Inc
Ottawa Branch
100-2650 Queensview Drive
Ottawa, ON
CANADA K2B 8H6

Report Date: 2019/04/12
Report #: R5668423
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B990299

Received: 2019/04/05, 15:50

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) This test was performed by Maxxam Analytics Mississauga

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

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alisha Williamson, Project Manager
Email: AWilliamson@maxxam.ca
Phone# (613) 274-0573

==========

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

Maxxam Job #: B990299
Report Date: 2019/04/12

exp Services Inc
Client Project #: OTT-00241785-B
Site Location: MONTGOMERY
Sampler Initials: MAD

O.REG 153 ICPMS METALS (SOIL)

Maxxam ID		JJQ530	JJQ532	JJQ534		JJQ539		
Sampling Date		2019/04/04 10:00	2019/04/04 13:00	2019/04/05 10:00				
COC Number		710467-02-01	710467-02-01	710467-02-01		710467-02-01		
	UNITS	**BH1-SS1**	**BH2-AUG1**	**BH3-AUG1B**	**QC Batch**	**BH10-SS2**	**RDL**	**QC Batch**
Metals								
Acid Extractable Antimony (Sb)	ug/g	0.92	0.31	0.39	6060690	0.64	0.20	6065343
Acid Extractable Arsenic (As)	ug/g	6.3	4.6	6.8	6060690	7.4	1.0	6065343
Acid Extractable Barium (Ba)	ug/g	93	72	120	6060690	110	0.50	6065343
Acid Extractable Beryllium (Be)	ug/g	0.72	0.39	0.80	6060690	0.70	0.20	6065343
Acid Extractable Boron (B)	ug/g	5.5	<5.0	9.2	6060690	<5.0	5.0	6065343
Acid Extractable Cadmium (Cd)	ug/g	0.35	0.38	0.38	6060690	0.46	0.10	6065343
Acid Extractable Chromium (Cr)	ug/g	22	15	26	6060690	22	1.0	6065343
Acid Extractable Cobalt (Co)	ug/g	12	6.1	11	6060690	12	0.10	6065343
Acid Extractable Copper (Cu)	ug/g	28	39	30	6060690	32	0.50	6065343
Acid Extractable Lead (Pb)	ug/g	34	52	42	6060690	60	1.0	6065343
Acid Extractable Molybdenum (Mo)	ug/g	2.9	1.1	2.1	6060690	2.9	0.50	6065343
Acid Extractable Nickel (Ni)	ug/g	35	18	39	6060690	36	0.50	6065343
Acid Extractable Selenium (Se)	ug/g	<0.50	<0.50	<0.50	6060690	<0.50	0.50	6065343
Acid Extractable Silver (Ag)	ug/g	<0.20	<0.20	<0.20	6060690	0.26	0.20	6065343
Acid Extractable Thallium (Tl)	ug/g	0.44	0.19	0.43	6060690	0.41	0.050	6065343
Acid Extractable Uranium (U)	ug/g	1.2	0.61	1.6	6060690	1.1	0.050	6065343
Acid Extractable Vanadium (V)	ug/g	40	22	35	6060690	36	5.0	6065343
Acid Extractable Zinc (Zn)	ug/g	69	81	99	6060690	91	5.0	6065343

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxam.ca

Maxxam Job #: B990299
Report Date: 2019/04/12

exp Services Inc
Client Project #: OTT-00241785-B
Site Location: MONTGOMERY
Sampler Initials: MAD

O.REG 153 PAHS (SOIL)

Maxxam ID		JJQ530		JJQ532		JJQ534		JJQ539		
Sampling Date		2019/04/04 10:00		2019/04/04 13:00		2019/04/05 10:00				
COC Number		710467-02-01		710467-02-01		710467-02-01		710467-02-01		
	UNITS	**BH1-SS1**	**RDL**	**BH2-AUG1**	**RDL**	**BH3-AUG1B**	**QC Batch**	**BH10-SS2**	**RDL**	**QC Batch**
Inorganics										
Moisture	%	16	1.0	13	1.0	22	6059726	17	1.0	6064740
Calculated Parameters										
Methylnaphthalene, 2-(1-)	ug/g	<0.0071	0.0071	<0.071	0.071	<0.0071	6058367	0.012	0.0071	6063447
Polyaromatic Hydrocarbons										
Acenaphthene	ug/g	0.016	0.0050	<0.050	0.050	<0.0050	6062873	0.024	0.0050	6065637
Acenaphthylene	ug/g	0.015	0.0050	0.057	0.050	<0.0050	6062873	0.035	0.0050	6065637
Anthracene	ug/g	0.031	0.0050	0.069	0.050	0.012	6062873	0.063	0.0050	6065637
Benzo(a)anthracene	ug/g	0.098	0.0050	0.36	0.050	0.073	6062873	0.27	0.0050	6065637
Benzo(a)pyrene	ug/g	0.095	0.0050	0.35	0.050	0.074	6062873	0.29	0.0050	6065637
Benzo(b/j)fluoranthene	ug/g	0.14	0.0050	0.49	0.050	0.11	6062873	0.44	0.0050	6065637
Benzo(g,h,i)perylene	ug/g	0.065	0.0050	0.21	0.050	0.061	6062873	0.20	0.0050	6065637
Benzo(k)fluoranthene	ug/g	0.050	0.0050	0.19	0.050	0.037	6062873	0.16	0.0050	6065637
Chrysene	ug/g	0.084	0.0050	0.34	0.050	0.073	6062873	0.25	0.0050	6065637
Dibenz(a,h)anthracene	ug/g	0.018	0.0050	0.067	0.050	0.015	6062873	0.053	0.0050	6065637
Fluoranthene	ug/g	0.23	0.0050	0.85	0.050	0.20	6062873	0.56	0.0050	6065637
Fluorene	ug/g	0.015	0.0050	<0.050	0.050	<0.0050	6062873	0.024	0.0050	6065637
Indeno(1,2,3-cd)pyrene	ug/g	0.069	0.0050	0.25	0.050	0.066	6062873	0.23	0.0050	6065637
1-Methylnaphthalene	ug/g	<0.0050	0.0050	<0.050	0.050	<0.0050	6062873	0.0055	0.0050	6065637
2-Methylnaphthalene	ug/g	<0.0050	0.0050	<0.050	0.050	<0.0050	6062873	0.0064	0.0050	6065637
Naphthalene	ug/g	<0.0050	0.0050	<0.050	0.050	<0.0050	6062873	0.0062	0.0050	6065637
Phenanthrene	ug/g	0.12	0.0050	0.36	0.050	0.066	6062873	0.23	0.0050	6065637
Pyrene	ug/g	0.18	0.0050	0.68	0.050	0.15	6062873	0.45	0.0050	6065637
Surrogate Recovery (%)										
D10-Anthracene	%	93		115		96	6062873	100		6065637
D14-Terphenyl (FS)	%	106		102		96	6062873	98		6065637
D8-Acenaphthylene	%	95		97		100	6062873	92		6065637

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxam.ca

Maxxam Job #: B990299
Report Date: 2019/04/12

exp Services Inc
Client Project #: OTT-00241785-B
Site Location: MONTGOMERY
Sampler Initials: MAD

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

Maxxam ID		JJQ531		JJQ533	JJQ535	JJQ536		
Sampling Date		2019/04/04 11:00		2019/04/04 15:00	2019/04/05 12:00	2019/04/05 13:00		
COC Number		710467-02-01		710467-02-01	710467-02-01	710467-02-01		
	UNITS	**BH1-SS6**	**RDL**	**BH2-SS6**	**BH3-SS5**	**BH10-SS3**	**RDL**	**QC Batch**
Inorganics								
Moisture	%	3.3	1.0	6.0	7.0	5.2	1.0	6059726
Calculated Parameters								
1,3-Dichloropropene (cis+trans)	ug/g	<0.050	0.050	<0.050	<0.050	<0.050	0.050	6058355
Volatile Organics								
Acetone (2-Propanone)	ug/g	<0.50	0.50	<0.50	<0.50	<0.50	0.50	6060206
Benzene	ug/g	<0.020	0.020	<0.020	<0.020	<0.020	0.020	6060206
Bromodichloromethane	ug/g	<0.050	0.050	<0.050	<0.050	<0.050	0.050	6060206
Bromoform	ug/g	<0.050	0.050	<0.050	<0.050	<0.050	0.050	6060206
Bromomethane	ug/g	<0.050	0.050	<0.050	<0.050	<0.050	0.050	6060206
Carbon Tetrachloride	ug/g	<0.050	0.050	<0.050	<0.050	<0.050	0.050	6060206
Chlorobenzene	ug/g	<0.050	0.050	<0.050	<0.050	<0.050	0.050	6060206
Chloroform	ug/g	<0.050	0.050	<0.050	<0.050	<0.050	0.050	6060206
Dibromochloromethane	ug/g	<0.050	0.050	<0.050	<0.050	<0.050	0.050	6060206
1,2-Dichlorobenzene	ug/g	<0.050	0.050	<0.050	<0.050	<0.050	0.050	6060206
1,3-Dichlorobenzene	ug/g	<0.050	0.050	<0.050	<0.050	<0.050	0.050	6060206
1,4-Dichlorobenzene	ug/g	<0.050	0.050	<0.050	<0.050	<0.050	0.050	6060206
Dichlorodifluoromethane (FREON 12)	ug/g	<0.050	0.050	<0.050	<0.050	<0.050	0.050	6060206
1,1-Dichloroethane	ug/g	<0.050	0.050	<0.050	<0.050	<0.050	0.050	6060206
1,2-Dichloroethane	ug/g	<0.050	0.050	<0.050	<0.050	<0.050	0.050	6060206
1,1-Dichloroethylene	ug/g	<0.050	0.050	<0.050	<0.050	<0.050	0.050	6060206
cis-1,2-Dichloroethylene	ug/g	<0.050	0.050	<0.050	<0.050	<0.050	0.050	6060206
trans-1,2-Dichloroethylene	ug/g	<0.050	0.050	<0.050	<0.050	<0.050	0.050	6060206
1,2-Dichloropropane	ug/g	<0.050	0.050	<0.050	<0.050	<0.050	0.050	6060206
cis-1,3-Dichloropropene	ug/g	<0.030	0.030	<0.030	<0.030	<0.030	0.030	6060206
trans-1,3-Dichloropropene	ug/g	<0.040	0.040	<0.040	<0.040	<0.040	0.040	6060206
Ethylbenzene	ug/g	<0.020	0.020	<0.020	<0.020	<0.020	0.020	6060206
Ethylene Dibromide	ug/g	<0.050	0.050	<0.050	<0.050	<0.050	0.050	6060206
Hexane	ug/g	4.0	0.050	0.16	0.39	0.47	0.050	6060206
Methylene Chloride(Dichloromethane)	ug/g	<0.050	0.050	<0.050	<0.050	<0.050	0.050	6060206
Methyl Ethyl Ketone (2-Butanone)	ug/g	<0.50	0.50	<0.50	<0.50	<0.50	0.50	6060206
Methyl Isobutyl Ketone	ug/g	<0.50	0.50	<0.50	<0.50	<0.50	0.50	6060206
Methyl t-butyl ether (MTBE)	ug/g	<0.050	0.050	<0.050	<0.050	<0.050	0.050	6060206
Styrene	ug/g	<0.050	0.050	<0.050	<0.050	<0.050	0.050	6060206

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B990299
Report Date: 2019/04/12

exp Services Inc
Client Project #: OTT-00241785-B
Site Location: MONTGOMERY
Sampler Initials: MAD

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

Maxxam ID		JJQ531		JJQ533	JJQ535	JJQ536		
Sampling Date		2019/04/04 11:00		2019/04/04 15:00	2019/04/05 12:00	2019/04/05 13:00		
COC Number		710467-02-01		710467-02-01	710467-02-01	710467-02-01		
	UNITS	**BH1-SS6**	**RDL**	**BH2-SS6**	**BH3-SS5**	**BH10-SS3**	**RDL**	**QC Batch**
1,1,1,2-Tetrachloroethane	ug/g	<0.050	0.050	<0.050	<0.050	<0.050	0.050	6060206
1,1,2,2-Tetrachloroethane	ug/g	<0.050	0.050	<0.050	<0.050	<0.050	0.050	6060206
Tetrachloroethylene	ug/g	<0.050	0.050	<0.050	<0.050	<0.050	0.050	6060206
Toluene	ug/g	0.025	0.020	<0.020	0.024	0.026	0.020	6060206
1,1,1-Trichloroethane	ug/g	<0.050	0.050	<0.050	<0.050	<0.050	0.050	6060206
1,1,2-Trichloroethane	ug/g	<0.050	0.050	<0.050	<0.050	<0.050	0.050	6060206
Trichloroethylene	ug/g	<0.050	0.050	<0.050	<0.050	<0.050	0.050	6060206
Trichlorofluoromethane (FREON 11)	ug/g	<0.050	0.050	<0.050	<0.050	<0.050	0.050	6060206
Vinyl Chloride	ug/g	<0.020	0.020	<0.020	<0.020	<0.020	0.020	6060206
p+m-Xylene	ug/g	0.43	0.020	0.024	0.053	0.067	0.020	6060206
o-Xylene	ug/g	0.13	0.020	<0.020	<0.020	<0.020	0.020	6060206
Total Xylenes	ug/g	0.56	0.020	0.024	0.053	0.067	0.020	6060206
F1 (C6-C10)	ug/g	220	50	18	17	24	10	6060206
F1 (C6-C10) - BTEX	ug/g	220	50	18	16	24	10	6060206
F2-F4 Hydrocarbons								
F2 (C10-C16 Hydrocarbons)	ug/g	170	10	120	29	28	10	6059788
F3 (C16-C34 Hydrocarbons)	ug/g	180	50	150	<50	<50	50	6059788
F4 (C34-C50 Hydrocarbons)	ug/g	<50	50	<50	<50	<50	50	6059788
Reached Baseline at C50	ug/g	Yes		Yes	Yes	Yes		6059788
Surrogate Recovery (%)								
o-Terphenyl	%	96		94	94	95		6059788
4-Bromofluorobenzene	%	98		97	96	96		6060206
D10-o-Xylene	%	109		120	105	104		6060206
D4-1,2-Dichloroethane	%	101		107	106	102		6060206
D8-Toluene	%	100		98	100	100		6060206

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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exp Services Inc
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Site Location: MONTGOMERY
Sampler Initials: MAD

RESULTS OF ANALYSES OF SOIL

Maxxam ID		JJQ530	JJQ531	JJQ532	JJQ533	
Sampling Date		2019/04/04 10:00	2019/04/04 11:00	2019/04/04 13:00	2019/04/04 15:00	
COC Number		710467-02-01	710467-02-01	710467-02-01	710467-02-01	
	UNITS	**BH1-SS1**	**BH1-SS6**	**BH2-AUG1**	**BH2-SS6**	**QC Batch**
Inorganics						
Available (CaCl2) pH	pH	7.55	7.99	7.68	7.77	6062631
QC Batch = Quality Control Batch						

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Report Date: 2019/04/12

exp Services Inc
Client Project #: OTT-00241785-B
Site Location: MONTGOMERY
Sampler Initials: MAD

VOLATILE ORGANICS BY GC/MS (SOIL)

Maxxam ID		JJQ538		
Sampling Date		2019/04/05		
COC Number		710467-02-01		
	UNITS	**TRIP BLANK**	**RDL**	**QC Batch**
Volatile Organics				
Acetone (2-Propanone)	ug/g	<0.50	0.50	6060206
Benzene	ug/g	<0.020	0.020	6060206
Bromodichloromethane	ug/g	<0.050	0.050	6060206
Bromoform	ug/g	<0.050	0.050	6060206
Bromomethane	ug/g	<0.050	0.050	6060206
Carbon Tetrachloride	ug/g	<0.050	0.050	6060206
Chlorobenzene	ug/g	<0.050	0.050	6060206
Chloroform	ug/g	<0.050	0.050	6060206
Dibromochloromethane	ug/g	<0.050	0.050	6060206
1,2-Dichlorobenzene	ug/g	<0.050	0.050	6060206
1,3-Dichlorobenzene	ug/g	<0.050	0.050	6060206
1,4-Dichlorobenzene	ug/g	<0.050	0.050	6060206
Dichlorodifluoromethane (FREON 12)	ug/g	<0.050	0.050	6060206
1,1-Dichloroethane	ug/g	<0.050	0.050	6060206
1,2-Dichloroethane	ug/g	<0.050	0.050	6060206
1,1-Dichloroethylene	ug/g	<0.050	0.050	6060206
cis-1,2-Dichloroethylene	ug/g	<0.050	0.050	6060206
trans-1,2-Dichloroethylene	ug/g	<0.050	0.050	6060206
1,2-Dichloropropane	ug/g	<0.050	0.050	6060206
cis-1,3-Dichloropropene	ug/g	<0.030	0.030	6060206
trans-1,3-Dichloropropene	ug/g	<0.040	0.040	6060206
Ethylbenzene	ug/g	<0.020	0.020	6060206
Ethylene Dibromide	ug/g	<0.050	0.050	6060206
Hexane	ug/g	<0.050	0.050	6060206
Methylene Chloride(Dichloromethane)	ug/g	<0.050	0.050	6060206
Methyl Ethyl Ketone (2-Butanone)	ug/g	<0.50	0.50	6060206
Methyl Isobutyl Ketone	ug/g	<0.50	0.50	6060206
Methyl t-butyl ether (MTBE)	ug/g	<0.050	0.050	6060206
Styrene	ug/g	<0.050	0.050	6060206
1,1,1,2-Tetrachloroethane	ug/g	<0.050	0.050	6060206
1,1,2,2-Tetrachloroethane	ug/g	<0.050	0.050	6060206
Tetrachloroethylene	ug/g	<0.050	0.050	6060206
Toluene	ug/g	<0.020	0.020	6060206
1,1,1-Trichloroethane	ug/g	<0.050	0.050	6060206

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: B990299
Report Date: 2019/04/12

exp Services Inc
Client Project #: OTT-00241785-B
Site Location: MONTGOMERY
Sampler Initials: MAD

VOLATILE ORGANICS BY GC/MS (SOIL)

Maxxam ID		JJQ538		
Sampling Date		2019/04/05		
COC Number		710467-02-01		
	UNITS	**TRIP BLANK**	**RDL**	**QC Batch**
1,1,2-Trichloroethane	ug/g	<0.050	0.050	6060206
Trichloroethylene	ug/g	<0.050	0.050	6060206
Trichlorofluoromethane (FREON 11)	ug/g	<0.050	0.050	6060206
Vinyl Chloride	ug/g	<0.020	0.020	6060206
p+m-Xylene	ug/g	<0.020	0.020	6060206
o-Xylene	ug/g	<0.020	0.020	6060206
Total Xylenes	ug/g	<0.020	0.020	6060206
F1 (C6-C10)	ug/g	<10	10	6060206
F1 (C6-C10) - BTEX	ug/g	<10	10	6060206
Surrogate Recovery (%)				
4-Bromofluorobenzene	%	94		6060206
D10-o-Xylene	%	103		6060206
D4-1,2-Dichloroethane	%	105		6060206
D8-Toluene	%	99		6060206

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B990299
Report Date: 2019/04/12

exp Services Inc
Client Project #: OTT-00241785-B
Site Location: MONTGOMERY
Sampler Initials: MAD

TEST SUMMARY

Maxxam ID: JJQ530
Sample ID: BH1-SS1
Matrix: Soil

Collected: 2019/04/04
Shipped:
Received: 2019/04/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6058367	N/A	2019/04/11	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	6060690	2019/04/09	2019/04/10	Daniel Teclu
Moisture	BAL	6059726	N/A	2019/04/08	Min Yang
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	6062873	2019/04/10	2019/04/10	Mitesh Raj
pH CaCl2 EXTRACT	AT	6062631	2019/04/10	2019/04/10	Surinder Rai

Maxxam ID: JJQ531
Sample ID: BH1-SS6
Matrix: Soil

Collected: 2019/04/04
Shipped:
Received: 2019/04/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	6058355	N/A	2019/04/11	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	6059788	2019/04/08	2019/04/09	(Kent) Maolin Li
Moisture	BAL	6059726	N/A	2019/04/08	Min Yang
pH CaCl2 EXTRACT	AT	6062631	2019/04/10	2019/04/10	Surinder Rai
Volatile Organic Compounds and F1 PHCs	GC/MSFD	6060206	N/A	2019/04/10	Xueming Jiang

Maxxam ID: JJQ532
Sample ID: BH2-AUG1
Matrix: Soil

Collected: 2019/04/04
Shipped:
Received: 2019/04/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6058367	N/A	2019/04/11	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	6060690	2019/04/09	2019/04/10	Daniel Teclu
Moisture	BAL	6059726	N/A	2019/04/08	Min Yang
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	6062873	2019/04/10	2019/04/10	Mitesh Raj
pH CaCl2 EXTRACT	AT	6062631	2019/04/10	2019/04/10	Surinder Rai

Maxxam ID: JJQ533
Sample ID: BH2-SS6
Matrix: Soil

Collected: 2019/04/04
Shipped:
Received: 2019/04/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	6058355	N/A	2019/04/11	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	6059788	2019/04/08	2019/04/09	(Kent) Maolin Li
Moisture	BAL	6059726	N/A	2019/04/08	Min Yang
pH CaCl2 EXTRACT	AT	6062631	2019/04/10	2019/04/10	Surinder Rai
Volatile Organic Compounds and F1 PHCs	GC/MSFD	6060206	N/A	2019/04/10	Xueming Jiang

Maxxam ID: JJQ534
Sample ID: BH3-AUG1B
Matrix: Soil

Collected: 2019/04/05
Shipped:
Received: 2019/04/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6058367	N/A	2019/04/11	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	6060690	2019/04/09	2019/04/10	Daniel Teclu

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Maxxam Job #: B990299
Report Date: 2019/04/12

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Client Project #: OTT-00241785-B
Site Location: MONTGOMERY
Sampler Initials: MAD

TEST SUMMARY

Maxxam ID: JJQ534
Sample ID: BH3-AUG1B
Matrix: Soil

Collected: 2019/04/05
Shipped:
Received: 2019/04/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	6059726	N/A	2019/04/08	Min Yang
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	6062873	2019/04/10	2019/04/10	Mitesh Raj

Maxxam ID: JJQ535
Sample ID: BH3-SS5
Matrix: Soil

Collected: 2019/04/05
Shipped:
Received: 2019/04/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	6058355	N/A	2019/04/11	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	6059788	2019/04/08	2019/04/09	(Kent) Maolin Li
Moisture	BAL	6059726	N/A	2019/04/08	Min Yang
Volatile Organic Compounds and F1 PHCs	GC/MSFD	6060206	N/A	2019/04/10	Xueming Jiang

Maxxam ID: JJQ536
Sample ID: BH10-SS3
Matrix: Soil

Collected: 2019/04/05
Shipped:
Received: 2019/04/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	6058355	N/A	2019/04/11	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	6059788	2019/04/08	2019/04/09	(Kent) Maolin Li
Moisture	BAL	6059726	N/A	2019/04/08	Min Yang
Volatile Organic Compounds and F1 PHCs	GC/MSFD	6060206	N/A	2019/04/10	Xueming Jiang

Maxxam ID: JJQ538
Sample ID: TRIP BLANK
Matrix: Soil

Collected: 2019/04/05
Shipped:
Received: 2019/04/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Volatile Organic Compounds and F1 PHCs	GC/MSFD	6060206	N/A	2019/04/10	Xueming Jiang

Maxxam ID: JJQ539
Sample ID: BH10-SS2
Matrix: Soil

Collected:
Shipped:
Received: 2019/04/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6063447	N/A	2019/04/12	Automated Statchk
Strong Acid Leachable Metals by ICPMS	ICP/MS	6065343	2019/04/11	2019/04/11	Daniel Teclu
Moisture	BAL	6064740	N/A	2019/04/11	Min Yang
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	6065637	2019/04/11	2019/04/12	Mitesh Raj

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Sampler Initials: MAD

GENERAL COMMENTS

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

Package 1	6.3°C

Sample JJQ531 [BH1-SS6] : VOCF1 Analysis: Due to high concentrations of hydrocarbon compounds, sample required dilution. Detection limits were adjusted accordingly. In order to meet required regulatory criteria, results for selected compounds (obtained by a separate analysis using an appropriate low dilution) are included in the report.

Sample JJQ532 [BH2-AUG1] : PAH Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Results relate only to the items tested.

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Report Date: 2019/04/12

QUALITY ASSURANCE REPORT

exp Services Inc
Client Project #: OTT-00241785-B
Site Location: MONTGOMERY
Sampler Initials: MAD

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6059788	o-Terphenyl	2019/04/09	108	60 - 130	95	60 - 130	95	%		
6060206	4-Bromofluorobenzene	2019/04/09	98	60 - 140	99	60 - 140	92	%		
6060206	D10-o-Xylene	2019/04/09	112	60 - 130	88	60 - 130	93	%		
6060206	D4-1,2-Dichloroethane	2019/04/09	112	60 - 140	107	60 - 140	109	%		
6060206	D8-Toluene	2019/04/09	104	60 - 140	101	60 - 140	98	%		
6062873	D10-Anthracene	2019/04/10	87	50 - 130	90	50 - 130	87	%		
6062873	D14-Terphenyl (FS)	2019/04/10	106	50 - 130	103	50 - 130	87	%		
6062873	D8-Acenaphthylene	2019/04/10	86	50 - 130	89	50 - 130	82	%		
6065637	D10-Anthracene	2019/04/11	88	50 - 130	93	50 - 130	89	%		
6065637	D14-Terphenyl (FS)	2019/04/11	74	50 - 130	77	50 - 130	81	%		
6065637	D8-Acenaphthylene	2019/04/11	85	50 - 130	88	50 - 130	88	%		
6059726	Moisture	2019/04/08							0.68	20
6059788	F2 (C10-C16 Hydrocarbons)	2019/04/09	106	50 - 130	94	80 - 120	<10	ug/g	NC	30
6059788	F3 (C16-C34 Hydrocarbons)	2019/04/09	110	50 - 130	97	80 - 120	<50	ug/g	NC	30
6059788	F4 (C34-C50 Hydrocarbons)	2019/04/09	109	50 - 130	97	80 - 120	<50	ug/g	NC	30
6060206	1,1,1,2-Tetrachloroethane	2019/04/10	106	60 - 140	101	60 - 130	<0.050	ug/g	NC	50
6060206	1,1,1-Trichloroethane	2019/04/10	100	60 - 140	101	60 - 130	<0.050	ug/g	NC	50
6060206	1,1,2,2-Tetrachloroethane	2019/04/10	111	60 - 140	102	60 - 130	<0.050	ug/g	NC	50
6060206	1,1,2-Trichloroethane	2019/04/10	111	60 - 140	102	60 - 130	<0.050	ug/g	NC	50
6060206	1,1-Dichloroethane	2019/04/10	106	60 - 140	103	60 - 130	<0.050	ug/g	NC	50
6060206	1,1-Dichloroethylene	2019/04/10	105	60 - 140	106	60 - 130	<0.050	ug/g	NC	50
6060206	1,2-Dichlorobenzene	2019/04/10	106	60 - 140	98	60 - 130	<0.050	ug/g	NC	50
6060206	1,2-Dichloroethane	2019/04/10	111	60 - 140	106	60 - 130	<0.050	ug/g	NC	50
6060206	1,2-Dichloropropane	2019/04/10	97	60 - 140	94	60 - 130	<0.050	ug/g	NC	50
6060206	1,3-Dichlorobenzene	2019/04/10	105	60 - 140	98	60 - 130	<0.050	ug/g	NC	50
6060206	1,4-Dichlorobenzene	2019/04/10	107	60 - 140	98	60 - 130	<0.050	ug/g	NC	50
6060206	Acetone (2-Propanone)	2019/04/10	105	60 - 140	99	60 - 140	<0.50	ug/g	NC	50
6060206	Benzene	2019/04/10	101	60 - 140	99	60 - 130	<0.020	ug/g	NC	50
6060206	Bromodichloromethane	2019/04/10	104	60 - 140	101	60 - 130	<0.050	ug/g	NC	50
6060206	Bromoform	2019/04/10	101	60 - 140	94	60 - 130	<0.050	ug/g	NC	50
6060206	Bromomethane	2019/04/10	112	60 - 140	110	60 - 140	<0.050	ug/g	NC	50
6060206	Carbon Tetrachloride	2019/04/10	101	60 - 140	102	60 - 130	<0.050	ug/g	NC	50

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Maxxam Job #: B990299
Report Date: 2019/04/12

QUALITY ASSURANCE REPORT(CONT'D)

exp Services Inc
Client Project #: OTT-00241785-B
Site Location: MONTGOMERY
Sampler Initials: MAD

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6060206	Chlorobenzene	2019/04/10	102	60 - 140	96	60 - 130	<0.050	ug/g	NC	50
6060206	Chloroform	2019/04/10	105	60 - 140	103	60 - 130	<0.050	ug/g	NC	50
6060206	cis-1,2-Dichloroethylene	2019/04/10	105	60 - 140	103	60 - 130	<0.050	ug/g	NC	50
6060206	cis-1,3-Dichloropropene	2019/04/10	78	60 - 140	74	60 - 130	<0.030	ug/g	NC	50
6060206	Dibromochloromethane	2019/04/10	105	60 - 140	98	60 - 130	<0.050	ug/g	NC	50
6060206	Dichlorodifluoromethane (FREON 12)	2019/04/10	145 (1)	60 - 140	149 (1)	60 - 140	<0.050	ug/g	NC	50
6060206	Ethylbenzene	2019/04/10	96	60 - 140	91	60 - 130	<0.020	ug/g	NC	50
6060206	Ethylene Dibromide	2019/04/10	108	60 - 140	99	60 - 130	<0.050	ug/g	NC	50
6060206	F1 (C6-C10) - BTEX	2019/04/10					<10	ug/g	NC	30
6060206	F1 (C6-C10)	2019/04/10	111	60 - 140	100	80 - 120	<10	ug/g	NC	30
6060206	Hexane	2019/04/10	96	60 - 140	97	60 - 130	<0.050	ug/g	NC	50
6060206	Methyl Ethyl Ketone (2-Butanone)	2019/04/10	108	60 - 140	100	60 - 140	<0.50	ug/g	NC	50
6060206	Methyl Isobutyl Ketone	2019/04/10	98	60 - 140	91	60 - 130	<0.50	ug/g	NC	50
6060206	Methyl t-butyl ether (MTBE)	2019/04/10	99	60 - 140	96	60 - 130	<0.050	ug/g	NC	50
6060206	Methylene Chloride(Dichloromethane)	2019/04/10	113	60 - 140	110	60 - 130	<0.050	ug/g	NC	50
6060206	o-Xylene	2019/04/10	94	60 - 140	90	60 - 130	<0.020	ug/g	NC	50
6060206	p+m-Xylene	2019/04/10	89	60 - 140	84	60 - 130	<0.020	ug/g	NC	50
6060206	Styrene	2019/04/10	93	60 - 140	87	60 - 130	<0.050	ug/g	NC	50
6060206	Tetrachloroethylene	2019/04/10	105	60 - 140	102	60 - 130	<0.050	ug/g	NC	50
6060206	Toluene	2019/04/10	105	60 - 140	100	60 - 130	<0.020	ug/g	NC	50
6060206	Total Xylenes	2019/04/10					<0.020	ug/g	NC	50
6060206	trans-1,2-Dichloroethylene	2019/04/10	106	60 - 140	105	60 - 130	<0.050	ug/g	NC	50
6060206	trans-1,3-Dichloropropene	2019/04/10	83	60 - 140	75	60 - 130	<0.040	ug/g	NC	50
6060206	Trichloroethylene	2019/04/10	103	60 - 140	102	60 - 130	<0.050	ug/g	NC	50
6060206	Trichlorofluoromethane (FREON 11)	2019/04/10	116	60 - 140	118	60 - 130	<0.050	ug/g	NC	50
6060206	Vinyl Chloride	2019/04/10	119	60 - 140	119	60 - 130	<0.020	ug/g	NC	50
6060690	Acid Extractable Antimony (Sb)	2019/04/10	97	75 - 125	99	80 - 120	<0.20	ug/g	NC	30
6060690	Acid Extractable Arsenic (As)	2019/04/10	106	75 - 125	103	80 - 120	<1.0	ug/g	0.84	30
6060690	Acid Extractable Barium (Ba)	2019/04/10	NC	75 - 125	97	80 - 120	<0.50	ug/g	7.4	30
6060690	Acid Extractable Beryllium (Be)	2019/04/10	104	75 - 125	96	80 - 120	<0.20	ug/g	NC	30
6060690	Acid Extractable Boron (B)	2019/04/10	99	75 - 125	95	80 - 120	<5.0	ug/g	NC	30
6060690	Acid Extractable Cadmium (Cd)	2019/04/10	105	75 - 125	97	80 - 120	<0.10	ug/g	NC	30

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6060690	Acid Extractable Chromium (Cr)	2019/04/10	NC	75 - 125	96	80 - 120	<1.0	ug/g	2.8	30
6060690	Acid Extractable Cobalt (Co)	2019/04/10	105	75 - 125	99	80 - 120	<0.10	ug/g	5.4	30
6060690	Acid Extractable Copper (Cu)	2019/04/10	NC	75 - 125	100	80 - 120	<0.50	ug/g	2.3	30
6060690	Acid Extractable Lead (Pb)	2019/04/10	110	75 - 125	103	80 - 120	<1.0	ug/g	5.3	30
6060690	Acid Extractable Molybdenum (Mo)	2019/04/10	106	75 - 125	99	80 - 120	<0.50	ug/g	NC	30
6060690	Acid Extractable Nickel (Ni)	2019/04/10	116	75 - 125	101	80 - 120	<0.50	ug/g	0.54	30
6060690	Acid Extractable Selenium (Se)	2019/04/10	106	75 - 125	98	80 - 120	<0.50	ug/g	NC	30
6060690	Acid Extractable Silver (Ag)	2019/04/10	105	75 - 125	99	80 - 120	<0.20	ug/g	NC	30
6060690	Acid Extractable Thallium (Tl)	2019/04/10	108	75 - 125	102	80 - 120	<0.050	ug/g	3.8	30
6060690	Acid Extractable Uranium (U)	2019/04/10	109	75 - 125	102	80 - 120	<0.050	ug/g	8.3	30
6060690	Acid Extractable Vanadium (V)	2019/04/10	NC	75 - 125	98	80 - 120	<5.0	ug/g	4.2	30
6060690	Acid Extractable Zinc (Zn)	2019/04/10	NC	75 - 125	102	80 - 120	<5.0	ug/g	1.7	30
6062631	Available (CaCl2) pH	2019/04/10			100	97 - 103			0.81	N/A
6062873	1-Methylnaphthalene	2019/04/10	98	50 - 130	100	50 - 130	<0.0050	ug/g	NC	40
6062873	2-Methylnaphthalene	2019/04/10	87	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
6062873	Acenaphthene	2019/04/10	83	50 - 130	85	50 - 130	<0.0050	ug/g	NC	40
6062873	Acenaphthylene	2019/04/10	83	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40
6062873	Anthracene	2019/04/10	79	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40
6062873	Benzo(a)anthracene	2019/04/10	85	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40
6062873	Benzo(a)pyrene	2019/04/10	81	50 - 130	83	50 - 130	<0.0050	ug/g	NC	40
6062873	Benzo(b/j)fluoranthene	2019/04/10	83	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40
6062873	Benzo(g,h,i)perylene	2019/04/10	80	50 - 130	81	50 - 130	<0.0050	ug/g	NC	40
6062873	Benzo(k)fluoranthene	2019/04/10	76	50 - 130	77	50 - 130	<0.0050	ug/g	NC	40
6062873	Chrysene	2019/04/10	82	50 - 130	85	50 - 130	<0.0050	ug/g	NC	40
6062873	Dibenz(a,h)anthracene	2019/04/10	78	50 - 130	80	50 - 130	<0.0050	ug/g	NC	40
6062873	Fluoranthene	2019/04/10	99	50 - 130	99	50 - 130	<0.0050	ug/g	NC	40
6062873	Fluorene	2019/04/10	83	50 - 130	85	50 - 130	<0.0050	ug/g	NC	40
6062873	Indeno(1,2,3-cd)pyrene	2019/04/10	78	50 - 130	83	50 - 130	<0.0050	ug/g	NC	40
6062873	Naphthalene	2019/04/10	79	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40
6062873	Phenanthrene	2019/04/10	80	50 - 130	83	50 - 130	<0.0050	ug/g	NC	40
6062873	Pyrene	2019/04/10	101	50 - 130	94	50 - 130	<0.0050	ug/g	NC	40
6064740	Moisture	2019/04/11							2.3	20

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6065343	Acid Extractable Antimony (Sb)	2019/04/11	91	75 - 125	98	80 - 120	<0.20	ug/g	17	30
6065343	Acid Extractable Arsenic (As)	2019/04/11	97	75 - 125	103	80 - 120	<1.0	ug/g	6.0	30
6065343	Acid Extractable Barium (Ba)	2019/04/11	NC	75 - 125	101	80 - 120	<0.50	ug/g	3.0	30
6065343	Acid Extractable Beryllium (Be)	2019/04/11	97	75 - 125	97	80 - 120	<0.20	ug/g	9.1	30
6065343	Acid Extractable Boron (B)	2019/04/11	95	75 - 125	97	80 - 120	<5.0	ug/g	10	30
6065343	Acid Extractable Cadmium (Cd)	2019/04/11	96	75 - 125	98	80 - 120	<0.10	ug/g	3.4	30
6065343	Acid Extractable Chromium (Cr)	2019/04/11	95	75 - 125	101	80 - 120	<1.0	ug/g	10	30
6065343	Acid Extractable Cobalt (Co)	2019/04/11	92	75 - 125	99	80 - 120	<0.10	ug/g	6.3	30
6065343	Acid Extractable Copper (Cu)	2019/04/11	99	75 - 125	102	80 - 120	<0.50	ug/g	3.4	30
6065343	Acid Extractable Lead (Pb)	2019/04/11	NC	75 - 125	99	80 - 120	<1.0	ug/g	11	30
6065343	Acid Extractable Molybdenum (Mo)	2019/04/11	98	75 - 125	98	80 - 120	<0.50	ug/g	1.7	30
6065343	Acid Extractable Nickel (Ni)	2019/04/11	91	75 - 125	99	80 - 120	<0.50	ug/g	3.9	30
6065343	Acid Extractable Selenium (Se)	2019/04/11	100	75 - 125	104	80 - 120	<0.50	ug/g	NC	30
6065343	Acid Extractable Silver (Ag)	2019/04/11	98	75 - 125	99	80 - 120	<0.20	ug/g	NC	30
6065343	Acid Extractable Thallium (Tl)	2019/04/11	90	75 - 125	97	80 - 120	<0.050	ug/g	4.8	30
6065343	Acid Extractable Uranium (U)	2019/04/11	97	75 - 125	100	80 - 120	<0.050	ug/g	0.70	30
6065343	Acid Extractable Vanadium (V)	2019/04/11	NC	75 - 125	100	80 - 120	<5.0	ug/g	11	30
6065343	Acid Extractable Zinc (Zn)	2019/04/11	NC	75 - 125	101	80 - 120	<5.0	ug/g	14	30
6065637	1-Methylnaphthalene	2019/04/11	91	50 - 130	102	50 - 130	<0.0050	ug/g	NC	40
6065637	2-Methylnaphthalene	2019/04/11	81	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
6065637	Acenaphthene	2019/04/11	89	50 - 130	89	50 - 130	<0.0050	ug/g	NC	40
6065637	Acenaphthylene	2019/04/11	88	50 - 130	89	50 - 130	<0.0050	ug/g	NC	40
6065637	Anthracene	2019/04/11	84	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40
6065637	Benzo(a)anthracene	2019/04/11	88	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40
6065637	Benzo(a)pyrene	2019/04/11	73	50 - 130	78	50 - 130	<0.0050	ug/g	NC	40
6065637	Benzo(b/j)fluoranthene	2019/04/11	74	50 - 130	78	50 - 130	<0.0050	ug/g	NC	40
6065637	Benzo(g,h,i)perylene	2019/04/11	97	50 - 130	106	50 - 130	<0.0050	ug/g	NC	40
6065637	Benzo(k)fluoranthene	2019/04/11	70	50 - 130	74	50 - 130	<0.0050	ug/g	NC	40
6065637	Chrysene	2019/04/11	90	50 - 130	94	50 - 130	<0.0050	ug/g	NC	40
6065637	Dibenz(a,h)anthracene	2019/04/11	95	50 - 130	83	50 - 130	<0.0050	ug/g	NC	40
6065637	Fluoranthene	2019/04/11	84	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40
6065637	Fluorene	2019/04/11	97	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40

Maxxam Job #: B990299
Report Date: 2019/04/12

QUALITY ASSURANCE REPORT(CONT'D)

exp Services Inc
Client Project #: OTT-00241785-B
Site Location: MONTGOMERY
Sampler Initials: MAD

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6065637	Indeno(1,2,3-cd)pyrene	2019/04/11	103	50 - 130	96	50 - 130	<0.0050	ug/g	NC	40
6065637	Naphthalene	2019/04/11	80	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40
6065637	Phenanthrene	2019/04/11	86	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40
6065637	Pyrene	2019/04/11	89	50 - 130	77	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 <= 2x 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.

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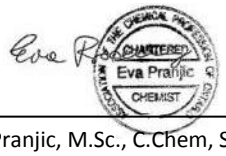
Maxxam Job #: B990299
Report Date: 2019/04/12

exp Services Inc
Client Project #: OTT-00241785-B
Site Location: MONTGOMERY
Sampler Initials: MAD

VALIDATION SIGNATURE PAGE

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



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

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

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MMEDIATE

Maxxam Analytics International Corporation o/a Maxxam Analytics
A Member of the ALS Group
6740 Campobello Road, Mississauga, Ontario Canada L5N 2L8 Tel:(905) 817-5700 Toll-free:800-563-6266 Fax:(905) 817-5777 www.maxxam.ca

CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#17497 exp Services Inc	Company Name:		Quotation #:	B46066	Maxxam Job #:	Bottle Order #:
Attention:	Accounts Payable	Attention:	Mark Devlin / Mark McCalla	P.O. #:			710467
Address:	100-2650 Queensview Drive Ottawa ON K2B 8H6	Address:		Project:	Montgomery OTT-00241785-B	COC #:	Project Manager:
Tel:	(613) 688-1899 Fax: (613) 225-7337	Tel:	Fax:	Project Name:		C#710467-02-01	Alisha Williamson
Email:	accounting.ottawa@exp.com; Karen.Burke@exp.com;	Email:	mark.devlin@exp.com / Mark McCalla	Site #:			
				Sampled By:	MAD		

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

Regulation 153 (2011)	Other Regulations	Special Instructions
☐ Table 1 ☒ Res/Park ☐ Medium/Fine	☐ CCME ☐ Sanitary Sewer Bylaw	
☐ Table 2 ☐ Ind/Comm ☒ Coarse	☐ Reg 558 ☐ Storm Sewer Bylaw	
☒ Table 3 ☐ Agri/Other ☐ For RSC	☐ MISA Municipality _____	
☐ Table ___	☐ PWQO	
	☐ Other _____	

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

Field Filtered (please circle): Metals / Hg / Cr VI

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	O.Reg 153 VOCs by HS & F1-F4 (Soil)	O.Reg 153 PAHs (Soil)	O.Reg 153 Metals (ICP/MS)	PHC F2	(Hold)	VOC					# of Bottles	Comments
1		BH1 - SS1	April 4 2019	10:00 am	Soil		X	X	X							2	
2		BH1 - SS6	April 4 2019	11:00 am	Soil	X			X							3	
3		BH2 - Aug1	April 4 2019	1:00 pm	Soil		X	X	X							2	
4		BH2 - SS6	April 4 2019	3:00 pm	Soil	X			X							3	
5		BH3 - Aug1B	April 5 2019	10:00	Soil		X	X								2	
6		BH3 - SS5	April 5 2019	12:00	Soil	X										3	
7		BH10 - SS3	April 5 2019	1:00	Soil	X										3	
8		BH1 - SS5	April 4 2019	10:30 am	Soil					X						3	Please hold
9		Trip Blank	April 5 2019	~~xxxx~~	Soil						X					1	
10																	

05-Apr-19 15:50
Alisha Williamson
B990299
URE ENV-755

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

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

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

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Mark Devlin	19/04/05	3:47pm	Sarge Kegor	19/04/05	15:50	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
	8.3.8	Present	X	
		Intact	X	

RECEIVED IN OTTAWA
On ice

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

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

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

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

White: Maxxa Yellow: Client

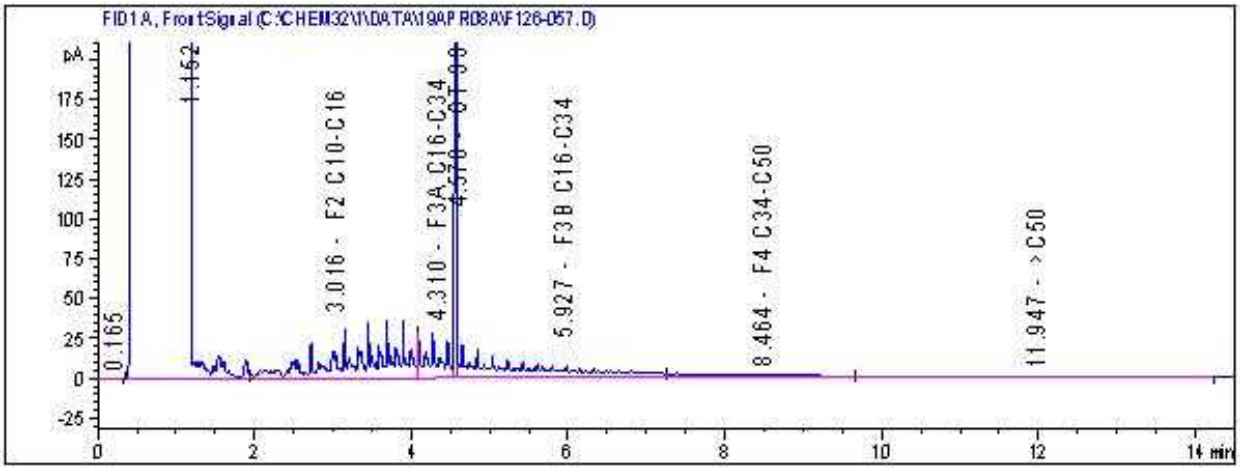
7/2/1

Maxxam Analytics International Corporation o/a Maxxam Analytics

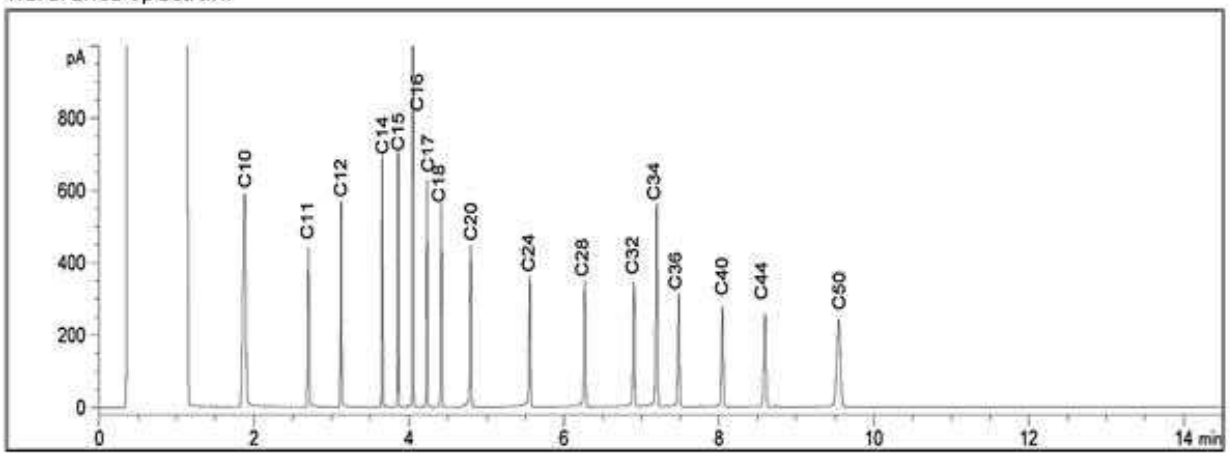
Maxxam Job #: B990299
Report Date: 2019/04/12
Maxxam Sample: JJQ531

exp Services Inc
Client Project #: OTT-00241785-B
Project name: MONTGOMERY
Client ID: BH1-SS6

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



Reference Spectrum



TYPICAL PRODUCT CARBON NUMBER RANGES

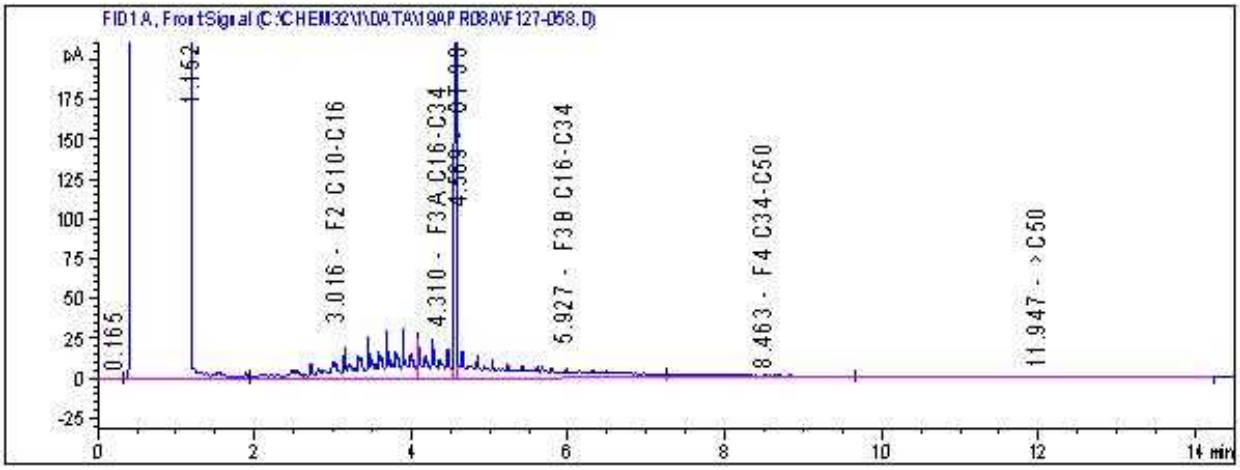
Gasoline: **C6 - C12**	Diesel: **C10 - C24**	Jet Fuels: **C6 - C16**
Varsol: **C8 - C12**	Fuel Oils: **C6 - C32**	Creosote: **C10 - C26**
Kerosene: **C8 - C16**	Motor Oils: **C16 - C50**	Asphalt: **C18 - C50+**

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

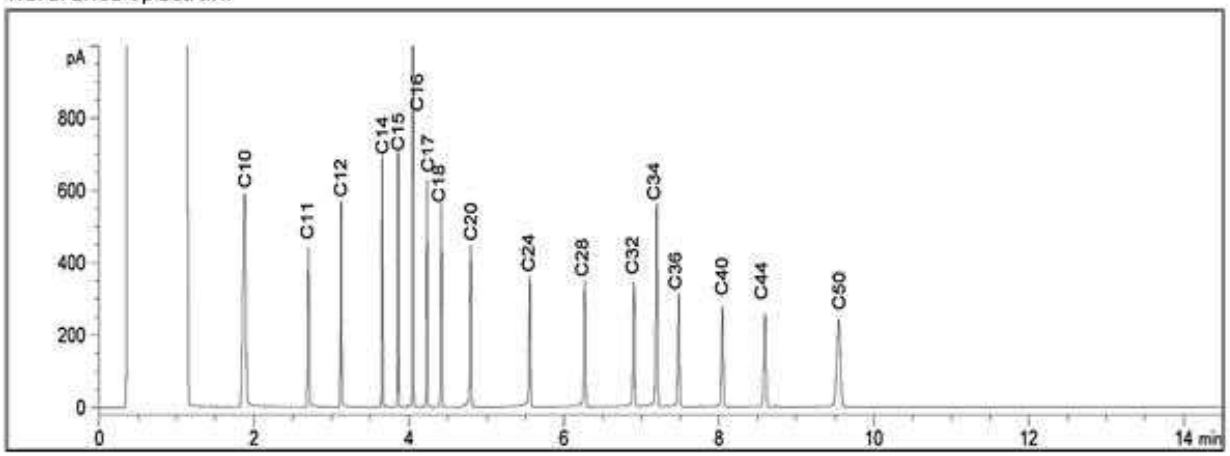
Maxxam Job #: B990299
Report Date: 2019/04/12
Maxxam Sample: JJQ533

exp Services Inc
Client Project #: OTT-00241785-B
Project name: MONTGOMERY
Client ID: BH2-SS6

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



Reference Spectrum



TYPICAL PRODUCT CARBON NUMBER RANGES

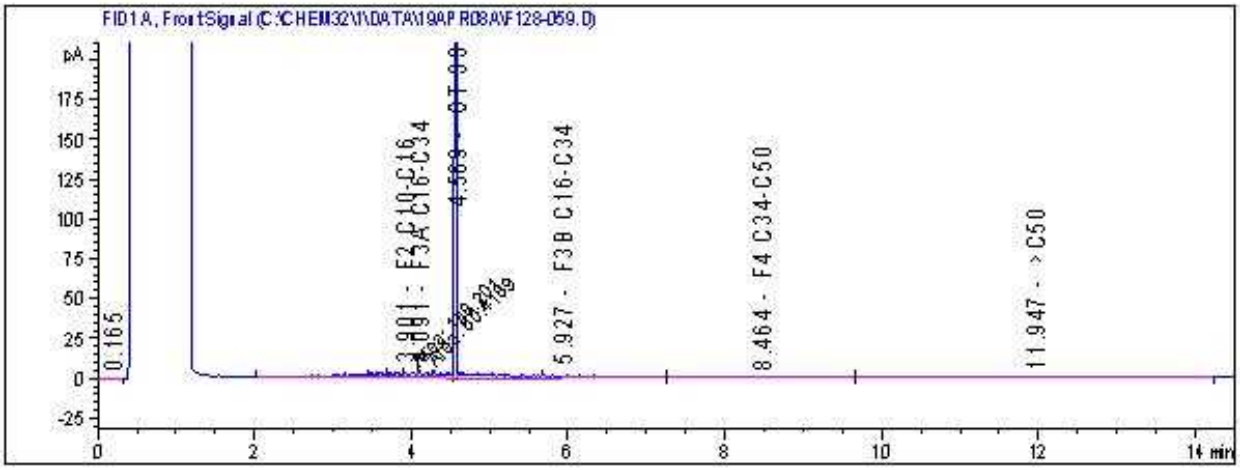
Gasoline: **C6 - C12**	Diesel: **C10 - C24**	Jet Fuels: **C6 - C16**
Varsol: **C8 - C12**	Fuel Oils: **C6 - C32**	Creosote: **C10 - C26**
Kerosene: **C8 - C16**	Motor Oils: **C16 - C50**	Asphalt: **C18 - C50+**

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

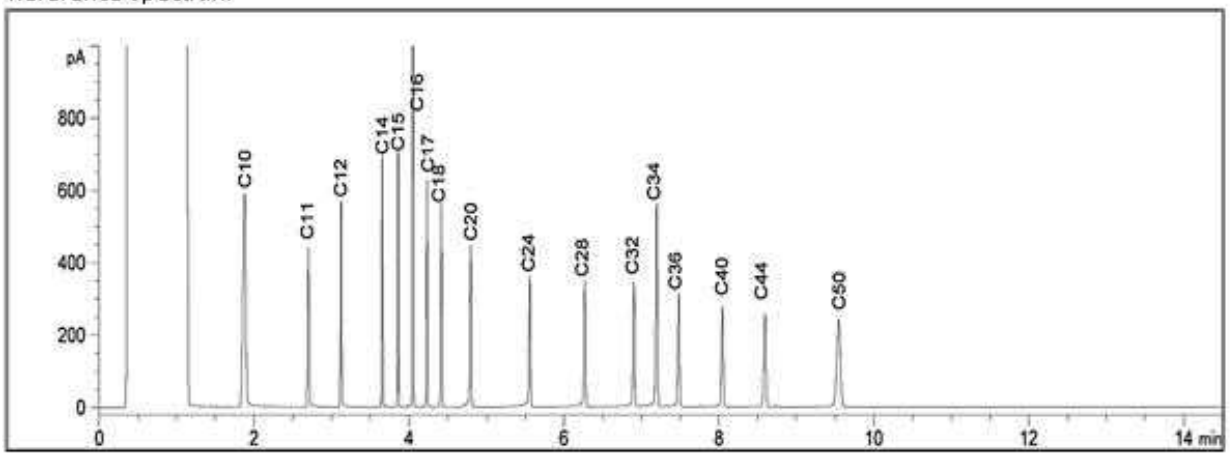
Maxxam Job #: B990299
Report Date: 2019/04/12
Maxxam Sample: JJQ535

exp Services Inc
Client Project #: OTT-00241785-B
Project name: MONTGOMERY
Client ID: BH3-SS5

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



Reference Spectrum



TYPICAL PRODUCT CARBON NUMBER RANGES

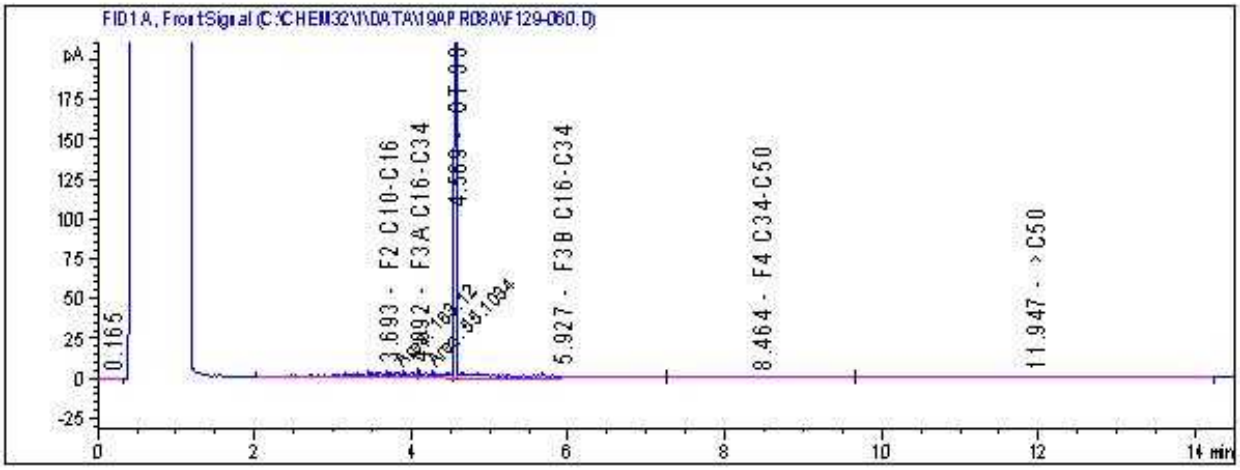
Gasoline: **C6 - C12**	Diesel: **C10 - C24**	Jet Fuels: **C6 - C16**
Varsol: **C8 - C12**	Fuel Oils: **C6 - C32**	Creosote: **C10 - C26**
Kerosene: **C8 - C16**	Motor Oils: **C16 - C50**	Asphalt: **C18 - C50+**

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

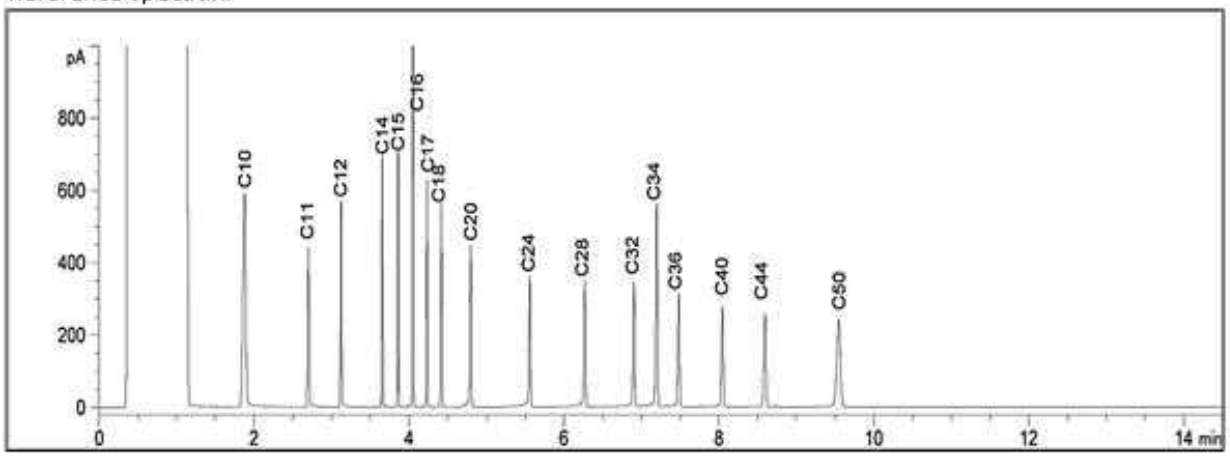
Maxxam Job #: B990299
Report Date: 2019/04/12
Maxxam Sample: JJQ536

exp Services Inc
Client Project #: OTT-00241785-B
Project name: MONTGOMERY
Client ID: BH10-SS3

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



Reference Spectrum



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline: **C6 - C12**	Diesel: **C10 - C24**	Jet Fuels: **C6 - C16**
Varsol: **C8 - C12**	Fuel Oils: **C6 - C32**	Creosote: **C10 - C26**
Kerosene: **C8 - C16**	Motor Oils: **C16 - C50**	Asphalt: **C18 - C50+**

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

Maxxam
A Bureau Veritas Group Company

Your Project #: OTT-00241785-BO
Your C.O.C. #: 117554

Attention: Mark McCalla

exp Services Inc
Ottawa Branch
100-2650 Queensview Drive
Ottawa, ON
CANADA K2B 8H6

Report Date: 2019/04/22
Report #: R5679913
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B9A0751
Received: 2019/04/17, 10:45

Sample Matrix: Soil
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Methylnaphthalene Sum (1)	1	N/A	2019/04/22	CAM SOP-00301	EPA 8270D m
Petroleum Hydro. CCME F1 & BTEX in Soil (2)	1	N/A	2019/04/17	OTT SOP-00002	CCME CWS
Petroleum Hydrocarbons F2-F4 in Soil (3)	1	2019/04/17	2019/04/17	OTT SOP-00001	CCME CWS
Moisture	1	N/A	2019/04/18	CAM SOP-00445	McKeague 2nd ed 1978
Moisture (1)	1	N/A	2019/04/18	CAM SOP-00445	Carter 2nd ed 51.2 m
PAH Compounds in Soil by GC/MS (SIM) (1)	1	2019/04/18	2019/04/19	CAM SOP-00318	EPA 8270D m

Remarks:

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

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

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

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Maxxam, results relate to the supplied samples tested.

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

Your Project #: OTT-00241785-BO
Your C.O.C. #: 117554

Attention: Mark McCalla

exp Services Inc
Ottawa Branch
100-2650 Queensview Drive
Ottawa, ON
CANADA K2B 8H6

Report Date: 2019/04/22
Report #: R5679913
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B9A0751
Received: 2019/04/17, 10:45
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.
Alisha Williamson, Project Manager
Email: AWilliamson@maxxam.ca
Phone# (613) 274-0573
==========
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B9A0751
Report Date: 2019/04/22

exp Services Inc
Client Project #: OTT-00241785-BO
Sampler Initials: MAD

O.REG 153 PAHS (SOIL)

Maxxam ID		JLW130		
Sampling Date		2019/04/04 13:00		
COC Number		117554		
	UNITS	**BH 2 SS3**	**RDL**	**QC Batch**
Inorganics				
Moisture	%	12	1.0	6077209
Calculated Parameters				
Methylnaphthalene, 2-(1-)	ug/g	<0.071	0.071	6074477
Polyaromatic Hydrocarbons				
Acenaphthene	ug/g	<0.050	0.050	6078546
Acenaphthylene	ug/g	<0.050	0.050	6078546
Anthracene	ug/g	<0.050	0.050	6078546
Benzo(a)anthracene	ug/g	<0.050	0.050	6078546
Benzo(a)pyrene	ug/g	<0.050	0.050	6078546
Benzo(b/j)fluoranthene	ug/g	<0.050	0.050	6078546
Benzo(g,h,i)perylene	ug/g	<0.050	0.050	6078546
Benzo(k)fluoranthene	ug/g	<0.050	0.050	6078546
Chrysene	ug/g	<0.050	0.050	6078546
Dibenz(a,h)anthracene	ug/g	<0.050	0.050	6078546
Fluoranthene	ug/g	0.056	0.050	6078546
Fluorene	ug/g	<0.050	0.050	6078546
Indeno(1,2,3-cd)pyrene	ug/g	<0.050	0.050	6078546
1-Methylnaphthalene	ug/g	<0.050	0.050	6078546
2-Methylnaphthalene	ug/g	<0.050	0.050	6078546
Naphthalene	ug/g	<0.050	0.050	6078546
Phenanthrene	ug/g	0.051	0.050	6078546
Pyrene	ug/g	<0.050	0.050	6078546
Surrogate Recovery (%)				
D10-Anthracene	%	107		6078546
D14-Terphenyl (FS)	%	88		6078546
D8-Acenaphthylene	%	99		6078546

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B9A0751
Report Date: 2019/04/22

exp Services Inc
Client Project #: OTT-00241785-BO
Sampler Initials: MAD

O.REG 153 PETROLEUM HYDROCARBONS (SOIL)

Maxxam ID		JLW129			JLW129		
Sampling Date		2019/04/02 13:00			2019/04/02 13:00		
COC Number		117554			117554		
	UNITS	**BH 1 SS7**	**RDL**	**QC Batch**	**BH 1 SS7 Lab-Dup**	**RDL**	**QC Batch**
Inorganics							
Moisture	%	7.7	0.2	6075110			
BTEX & F1 Hydrocarbons							
Benzene	ug/g	<0.02	0.02	6075586			
Toluene	ug/g	<0.02	0.02	6075586			
Ethylbenzene	ug/g	<0.02	0.02	6075586			
o-Xylene	ug/g	<0.02	0.02	6075586			
p+m-Xylene	ug/g	<0.04	0.04	6075586			
Total Xylenes	ug/g	<0.04	0.04	6075586			
F1 (C6-C10)	ug/g	12	10	6075586			
F1 (C6-C10) - BTEX	ug/g	12	10	6075586			
F2-F4 Hydrocarbons							
F2 (C10-C16 Hydrocarbons)	ug/g	51	10	6073563	48	10	6073563
F3 (C16-C34 Hydrocarbons)	ug/g	80	50	6073563	83	50	6073563
F4 (C34-C50 Hydrocarbons)	ug/g	<50	50	6073563	<50	50	6073563
Reached Baseline at C50	ug/g	Yes		6073563	Yes		6073563
Surrogate Recovery (%)							
1,4-Difluorobenzene	%	100		6075586			
4-Bromofluorobenzene	%	107		6075586			
D10-Ethylbenzene	%	109		6075586			
D4-1,2-Dichloroethane	%	97		6075586			
o-Terphenyl	%	83		6073563	86		6073563

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

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Maxxam Job #: B9A0751
Report Date: 2019/04/22

exp Services Inc
Client Project #: OTT-00241785-BO
Sampler Initials: MAD

TEST SUMMARY

Maxxam ID: JLW129
Sample ID: BH 1 SS7
Matrix: Soil

Collected: 2019/04/02
Shipped:
Received: 2019/04/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	6075586	N/A	2019/04/17	Fatemeh Habibagahi
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	6073563	2019/04/17	2019/04/17	Mariana Vascan
Moisture	BAL	6075110	N/A	2019/04/18	Mariana Vascan

Maxxam ID: JLW129 Dup
Sample ID: BH 1 SS7
Matrix: Soil

Collected: 2019/04/02
Shipped:
Received: 2019/04/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	6073563	2019/04/17	2019/04/17	Mariana Vascan

Maxxam ID: JLW130
Sample ID: BH 2 SS3
Matrix: Soil

Collected: 2019/04/04
Shipped:
Received: 2019/04/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6074477	N/A	2019/04/22	Automated Statchk
Moisture	BAL	6077209	N/A	2019/04/18	Gurpreet Kaur
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	6078546	2019/04/18	2019/04/19	Mitesh Raj

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Maxxam Job #: B9A0751
Report Date: 2019/04/22

exp Services Inc
Client Project #: OTT-00241785-BO
Sampler Initials: MAD

GENERAL COMMENTS

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

Package 1	12.0°C

Sample JLW130 [BH 2 SS3] : PAH analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Results relate only to the items tested.

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Maxxam Job #: B9A0751
Report Date: 2019/04/22

QUALITY ASSURANCE REPORT

exp Services Inc
Client Project #: OTT-00241785-BO
Sampler Initials: MAD

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6073563	o-Terphenyl	2019/04/17	91	30 - 130	91	30 - 130	86	%		
6075586	1,4-Difluorobenzene	2019/04/17	102	60 - 140	102	60 - 140	101	%		
6075586	4-Bromofluorobenzene	2019/04/17	100	60 - 140	101	60 - 140	101	%		
6075586	D10-Ethylbenzene	2019/04/17	111	30 - 130	105	30 - 130	88	%		
6075586	D4-1,2-Dichloroethane	2019/04/17	93	60 - 140	95	60 - 140	96	%		
6078546	D10-Anthracene	2019/04/18	103	50 - 130	103	50 - 130	102	%		
6078546	D14-Terphenyl (FS)	2019/04/18	89	50 - 130	91	50 - 130	92	%		
6078546	D8-Acenaphthylene	2019/04/18	99	50 - 130	99	50 - 130	99	%		
6073563	F2 (C10-C16 Hydrocarbons)	2019/04/17	96	50 - 130	100	80 - 120	<10	ug/g	6.1	50
6073563	F3 (C16-C34 Hydrocarbons)	2019/04/17	96	50 - 130	100	80 - 120	<50	ug/g	4.2	50
6073563	F4 (C34-C50 Hydrocarbons)	2019/04/17	96	50 - 130	100	80 - 120	<50	ug/g	NC	50
6075110	Moisture	2019/04/18							29	50
6075586	Benzene	2019/04/17	88	60 - 140	92	60 - 140	<0.02	ug/g	NC	50
6075586	Ethylbenzene	2019/04/17	88	60 - 140	91	60 - 140	<0.02	ug/g	NC	50
6075586	F1 (C6-C10) - BTEX	2019/04/17					<10	ug/g	101 (1)	50
6075586	F1 (C6-C10)	2019/04/17	93	60 - 140	94	80 - 120	<10	ug/g	74 (1)	50
6075586	o-Xylene	2019/04/17	86	60 - 140	92	60 - 140	<0.02	ug/g	NC	50
6075586	p+m-Xylene	2019/04/17	80	60 - 140	86	60 - 140	<0.04	ug/g	NC	50
6075586	Toluene	2019/04/17	84	60 - 140	90	60 - 140	<0.02	ug/g	NC	50
6075586	Total Xylenes	2019/04/17					<0.04	ug/g	NC	50
6077209	Moisture	2019/04/18							0	20
6078546	1-Methylnaphthalene	2019/04/18	108	50 - 130	111	50 - 130	<0.0050	ug/g	NC	40
6078546	2-Methylnaphthalene	2019/04/18	96	50 - 130	99	50 - 130	<0.0050	ug/g	NC	40
6078546	Acenaphthene	2019/04/18	92	50 - 130	95	50 - 130	<0.0050	ug/g	NC	40
6078546	Acenaphthylene	2019/04/18	100	50 - 130	99	50 - 130	<0.0050	ug/g	NC	40
6078546	Anthracene	2019/04/18	96	50 - 130	97	50 - 130	<0.0050	ug/g	NC	40
6078546	Benzo(a)anthracene	2019/04/18	109	50 - 130	108	50 - 130	<0.0050	ug/g	NC	40
6078546	Benzo(a)pyrene	2019/04/18	93	50 - 130	96	50 - 130	<0.0050	ug/g	NC	40
6078546	Benzo(b/j)fluoranthene	2019/04/18	92	50 - 130	94	50 - 130	<0.0050	ug/g	NC	40
6078546	Benzo(g,h,i)perylene	2019/04/18	97	50 - 130	98	50 - 130	<0.0050	ug/g	NC	40
6078546	Benzo(k)fluoranthene	2019/04/18	76	50 - 130	92	50 - 130	<0.0050	ug/g	NC	40
6078546	Chrysene	2019/04/18	99	50 - 130	100	50 - 130	<0.0050	ug/g	NC	40

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6078546	Dibenz(a,h)anthracene	2019/04/18	94	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40
6078546	Fluoranthene	2019/04/18	95	50 - 130	97	50 - 130	<0.0050	ug/g	NC	40
6078546	Fluorene	2019/04/18	91	50 - 130	94	50 - 130	<0.0050	ug/g	NC	40
6078546	Indeno(1,2,3-cd)pyrene	2019/04/18	100	50 - 130	101	50 - 130	<0.0050	ug/g	NC	40
6078546	Naphthalene	2019/04/18	84	50 - 130	89	50 - 130	<0.0050	ug/g	NC	40
6078546	Phenanthrene	2019/04/18	92	50 - 130	94	50 - 130	<0.0050	ug/g	NC	40
6078546	Pyrene	2019/04/18	96	50 - 130	97	50 - 130	<0.0050	ug/g	NC	40

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

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

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

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

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

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

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

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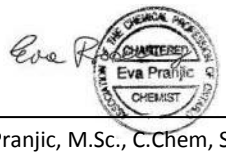
Maxxam Job #: B9A0751
Report Date: 2019/04/22

exp Services Inc
Client Project #: OTT-00241785-BO
Sampler Initials: MAD

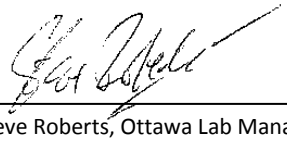
VALIDATION SIGNATURE PAGE

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



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

Liliana Gaburici, VOC Lab



Steve Roberts, Ottawa Lab Manager

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

Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxam.ca

Maxxam
A Bureau Veritas Group Company

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Phone: 905-817-5700 Fax: 905-817-5779 Toll Free: 800-563-6266
CAM FCD-01191/3

CHAIN OF CUSTODY RECORD 117554 Page ____ of ____

Invoice Information	Report Information (if differs from invoice)	Project Information (where applicable)	Turnaround Time (TAT) Required
Company Name: EXP Services Inc	Company Name:	Quotation #: Stream 3	☐ Regular TAT (5-7 days) Most analyses
Contact Name: MARK MCCALLA	Contact Name:	P.O. #/ AFE#:	PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS
Address: 2650 Queensview Drive Ottawa	Address:	Project #: OTT-00241785-B0	Rush TAT (Surcharges will be applied)
Phone: 613 688-1899 Fax:	Phone: Fax:	Site Location:	☐ 1 Day ☒ 2 Days ☐ 3-4 Days
Email: mark.mccalla@exp.com	Email:	Site #:	Date Required:
		Sampled By: MAD	Rush Confirmation #:

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

Regulation 153
☐ Table 1 ☒ Res/Park ☐ Med/ Fine
☐ Table 2 ☐ Ind/Comm ☒ Coarse
☒ Table 3 ☐ Agri/ Other
☐ Table ____
FOR RSC (PLEASE CIRCLE) Y / N

Other Regulations
☐ CCME ☐ Sanitary Sewer Bylaw
☐ MISA ☐ Storm Sewer Bylaw
☐ PWQO Region ____
☐ Other (Specify) ____
☐ REG 558 (MIN. 3 DAY TAT REQUIRED)

Include Criteria on Certificate of Analysis: Y / N

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

Analysis Requested

LABORATORY USE ONLY
CUSTODY SEAL: Present (Y) N / Intact (Y) N
COOLER TEMPERATURES: 13.0, 13
COOLING MEDIA PRESENT: (Y) / N

	SAMPLE IDENTIFICATION	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	MATRIX	# OF CONTAINERS SUBMITTED	FIELD FILTERED (CIRCLE) Metals / Hg / CrVI	BTEX/ PHC F1	PHCs F2 - F4	VOCs	REG 153 METALS & INORGANICS	REG 153 (CPMS METALS	REG 153 METALS (Hg, Cr VI, ICPMS Metals, HWS - B)	PAH							HOLD- DO NOT ANALYZE	COMMENTS
1	BH1 SS7	2019/04/02	1	S			X	X													
2	BH2 SS3	2019/04/02	1	S									X								
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					

17-Apr-19 10:45
Alisha Williamson
B9A0751

RECEIVED IN OTTAWA
on ice

RELINQUISHED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	MAXXAM JOB #
Mark McCalla	2019/04/17	10:45	Serge Leger	2019/04/17	10:45	

Unless otherwise agreed to in writing, work submitted on this Chain of Custody is subject to Maxxam's standard Terms and Conditions. Signing of this Chain of Custody document is acknowledgment and acceptance of our terms which are available for viewing at www.maxxam.ca/terms. Sample container, preservation, hold time and packages information can be viewed at http://maxxam.ca/wp-content/uploads/Ontario-COC.pdf.

COC-1004 (03/17)

White: Maxxam ~ Yellow: Client

RUSH!

Maxxam
A Bureau Veritas Group Company

Sent to: Maxxam Mississauga
6740 Campobello Rd
Mississauga, ON, L5N 2L8
Tel: (905) 817-5700

MAXXAM INTERLAB CHAIN OF CUSTODY RECORD

Page 01 of 01

COC # B9A0751-NONT-01-01

REPORT INFORMATION	
Company:	Maxxam
Address:	32 Colonnade Unit 1000, Nepean, Ontario, K2E 7J6
Contact Name:	Alisha Williamson
Email:	AWilliamson@maxxam.ca, scontractor@maxxam.ca
Phone:	
Maxxam Project #:	B9A0751
Client Invoice To:	exp Services Inc (17498)
Client Report To:	exp Services Inc (17498)

Incl. on Report? Yes / No

#	SAMPLE ID	MATRIX	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	SAMPLER INITIALS	# CONT.	ANALYSIS REQUESTED: O.Reg 153 PAHs (Soil)	ADDITIONAL SAMPLE INFORMATION
1	JLW130-BH 2 SS3	SOIL	2019/04/02	13:00	MAD	1	X	(P: 01)
2								
3								
4								
5								
6								
7								
8								
9								
10								

Job Barcode Label

B9A0751

SITE LOCATION:

SITE #:

PROJECT #:
OTT-00241785-BO

PO/AFE, TASK ORDER/SERVICE ORDER, LINE ITEM:

REGULATORY CRITERIA

SPECIAL INSTRUCTIONS
Please inform Maxxam immediately if you are not accredited for the requested test(s).
Please return a copy of this form with the report.

REQUIRED EDDs
National Excel (N001)
OEC Excel (O036)

TURNAROUND TIME
[X] Rush Required
2019/04/22
Date Required
Please inform us if rush charges will be incurred.

COOLER ID:	YES	NO	Temp: (°C)	1	2	3
Custody Seal Present	✓					
Custody Seal Intact	✓					
Cooling Media Present	✓					
				4	4	5

COOLER ID:	YES	NO	Temp: (°C)	1	2	3
Custody Seal Present						
Custody Seal Intact						
Cooling Media Present						

COOLER ID:	YES	NO	Temp: (°C)	1	2	3
Custody Seal Present						
Custody Seal Intact						
Cooling Media Present						

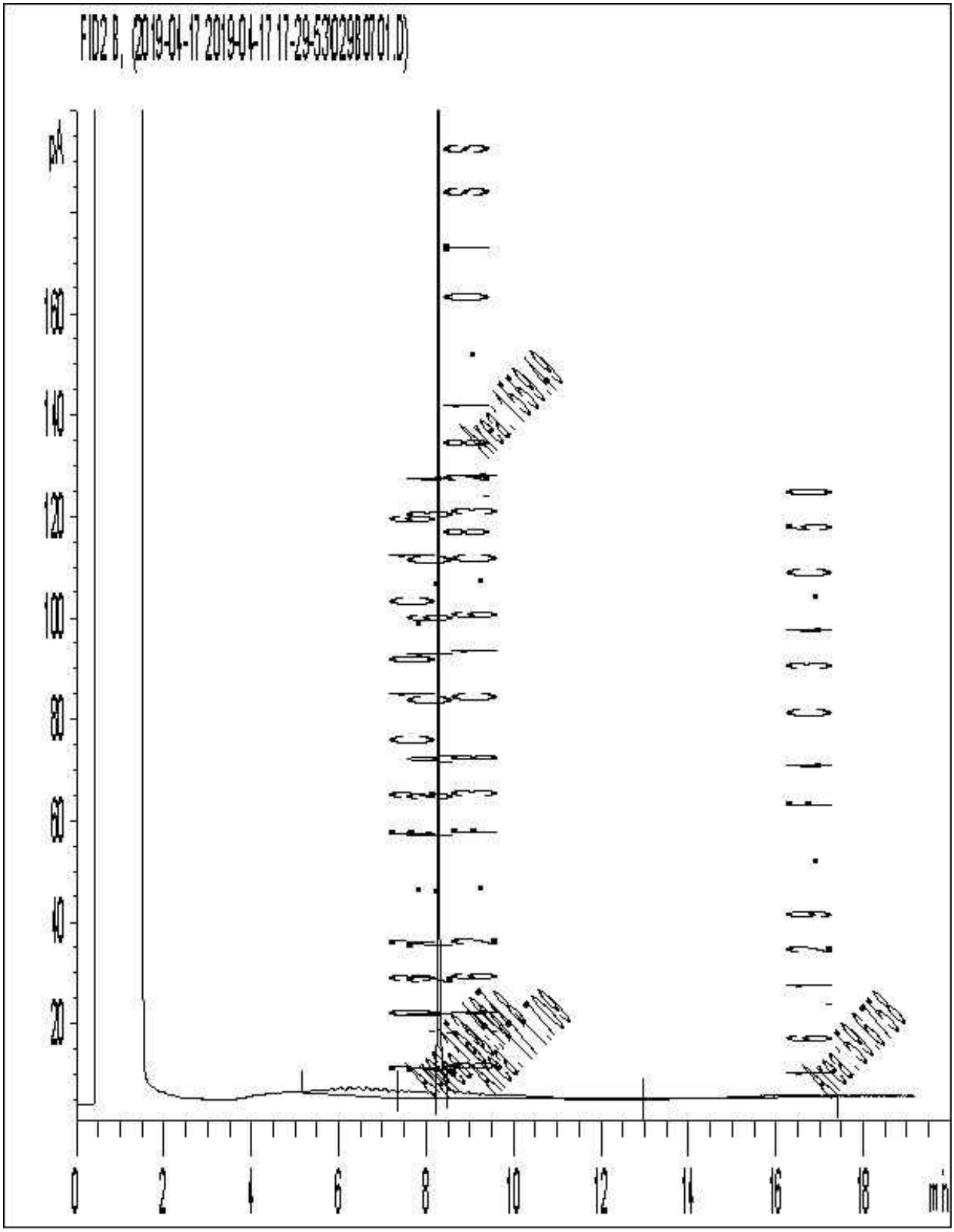
RECEIVING LAB USE ONLY
Maxxam Job #
B9A0751

RELINQUISHED BY: (SIGN & PRINT)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (SIGN & PRINT)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	Samples Labelled By:	Labels Verified By:
1.	2019/04/17	11:30	1.	2019/04/18	08:00		
2.			2.				

Maxxam Job #: B9A0751
Report Date: 2019/04/22
Maxxam Sample: JLW129

exp Services Inc
Client Project #: OTT-00241785-BO
Client ID: BH 1 SS7

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram

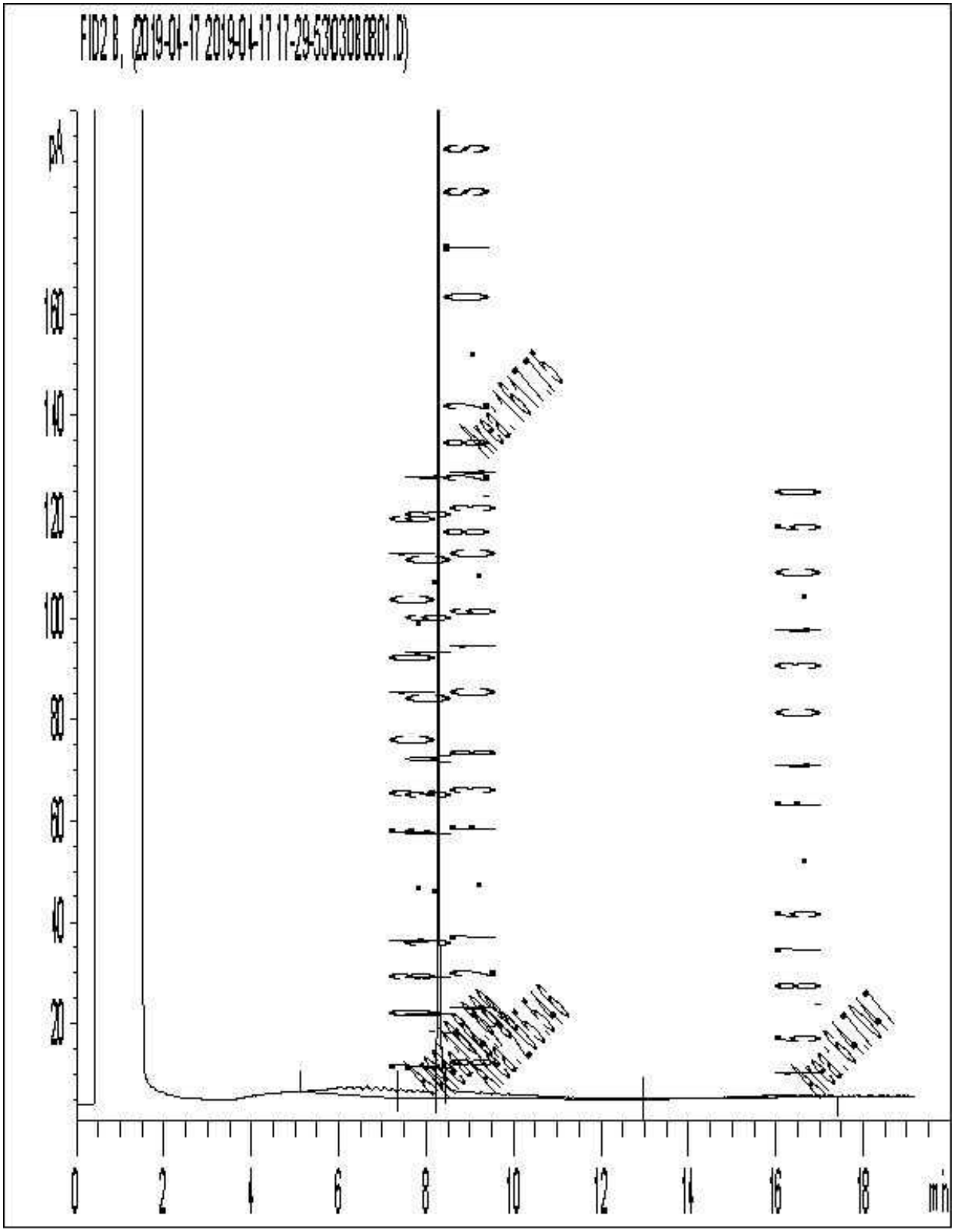


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B9A0751
Report Date: 2019/04/22
Maxxam Sample: JLW129 Lab-Dup

exp Services Inc
Client Project #: OTT-00241785-BO
Client ID: BH 1 SS7

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



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

Maxxam
A Bureau Veritas Group Company

Your Project #: OTT-00241785-B
Site Location: MONTGOMERY
Your C.O.C. #: 712975-01-01

Attention: Mark McCalla

exp Services Inc
100-2650 Queensview Drive
Ottawa, ON
CANADA K2B 8H6

Report Date: 2019/04/25
Report #: R5683556
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B9A0656
Received: 2019/04/16, 17:58

Sample Matrix: Water
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
1,3-Dichloropropene Sum	5	N/A	2019/04/24	OTT SOP-00002	EPA 8260C m
Petroleum Hydrocarbons F2-F4 in Water (2)	1	2019/04/17	2019/04/17	OTT SOP-00001	CCME Hydrocarbons
Petroleum Hydrocarbons F2-F4 in Water (2)	3	2019/04/17	2019/04/18	OTT SOP-00001	CCME Hydrocarbons
Dissolved Metals by ICPMS (1)	4	N/A	2019/04/22	CAM SOP-00447	EPA 6020B m
Volatile Organic Compounds and F1 PHCs	4	N/A	2019/04/23	OTT SOP-00002	EPA 8260C m
Volatile Organic Compounds in Water	1	N/A	2019/04/23	OTT SOP-00002	EPA 8260C m

Remarks:

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

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

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

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Maxxam, results relate to the supplied samples tested.

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

Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxam.ca

Your Project #: OTT-00241785-B
Site Location: MONTGOMERY
Your C.O.C. #: 712975-01-01

Attention: Mark McCalla

exp Services Inc
100-2650 Queensview Drive
Ottawa, ON
CANADA K2B 8H6

Report Date: 2019/04/25
Report #: R5683556
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B9A0656
Received: 2019/04/16, 17:58

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Alisha Williamson, Project Manager
Email: AWilliamson@maxxam.ca
Phone# (613) 274-0573

==========

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

Maxxam Job #: B9A0656
Report Date: 2019/04/25

exp Services Inc
Client Project #: OTT-00241785-B
Site Location: MONTGOMERY
Sampler Initials: MAD

O.REG 153 DISSOLVED ICPMS METALS (WATER)

Maxxam ID		JLV697	JLV698	JLV699	JLV700		
Sampling Date		2019/04/16 12:00	2019/04/16 12:00	2019/04/16 12:00	2019/04/16 12:00		
COC Number		712975-01-01	712975-01-01	712975-01-01	712975-01-01		
	UNITS	**MW19-1**	**MW19-2**	**MW19-3**	**DUP-1**	**RDL**	**QC Batch**
Metals							
Dissolved Antimony (Sb)	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	6077360
Dissolved Arsenic (As)	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	6077360
Dissolved Barium (Ba)	ug/L	98	53	120	95	2.0	6077360
Dissolved Beryllium (Be)	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	6077360
Dissolved Boron (B)	ug/L	61	49	43	62	10	6077360
Dissolved Cadmium (Cd)	ug/L	<0.10	<0.10	<0.10	<0.10	0.10	6077360
Dissolved Chromium (Cr)	ug/L	<5.0	<5.0	<5.0	<5.0	5.0	6077360
Dissolved Cobalt (Co)	ug/L	<0.50	0.67	<0.50	<0.50	0.50	6077360
Dissolved Copper (Cu)	ug/L	1.0	1.9	1.5	<1.0	1.0	6077360
Dissolved Lead (Pb)	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	6077360
Dissolved Molybdenum (Mo)	ug/L	4.6	3.8	5.0	5.1	0.50	6077360
Dissolved Nickel (Ni)	ug/L	3.8	5.2	4.5	3.7	1.0	6077360
Dissolved Selenium (Se)	ug/L	3.6	5.4	2.3	3.6	2.0	6077360
Dissolved Silver (Ag)	ug/L	<0.10	<0.10	<0.10	<0.10	0.10	6077360
Dissolved Sodium (Na)	ug/L	390000	520000	190000	400000	100	6077360
Dissolved Thallium (Tl)	ug/L	<0.050	<0.050	<0.050	<0.050	0.050	6077360
Dissolved Uranium (U)	ug/L	7.6	15	7.2	7.5	0.10	6077360
Dissolved Vanadium (V)	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	6077360
Dissolved Zinc (Zn)	ug/L	<5.0	<5.0	<5.0	<5.0	5.0	6077360

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxam.ca

Maxxam Job #: B9A0656
Report Date: 2019/04/25

exp Services Inc
Client Project #: OTT-00241785-B
Site Location: MONTGOMERY
Sampler Initials: MAD

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

Maxxam ID		JLV697			JLV697			JLV698		
Sampling Date		2019/04/16 12:00			2019/04/16 12:00			2019/04/16 12:00		
COC Number		712975-01-01			712975-01-01			712975-01-01		
	UNITS	**MW19-1**	**RDL**	**QC Batch**	**MW19-1 Lab-Dup**	**RDL**	**QC Batch**	**MW19-2**	**RDL**	**QC Batch**
Calculated Parameters										
1,3-Dichloropropene (cis+trans)	ug/L	<0.50	0.50	6074610				<0.50	0.50	6074610
Volatile Organics										
Acetone (2-Propanone)	ug/L	<10	10	6082362	<10	10	6082362	<10	10	6082362
Benzene	ug/L	<0.20	0.20	6082362	<0.20	0.20	6082362	<0.20	0.20	6082362
Bromodichloromethane	ug/L	<0.50	0.50	6082362	<0.50	0.50	6082362	<0.50	0.50	6082362
Bromoform	ug/L	<1.0	1.0	6082362	<1.0	1.0	6082362	<1.0	1.0	6082362
Bromomethane	ug/L	<0.50	0.50	6082362	<0.50	0.50	6082362	<0.50	0.50	6082362
Carbon Tetrachloride	ug/L	<0.20	0.20	6082362	<0.20	0.20	6082362	<0.20	0.20	6082362
Chlorobenzene	ug/L	<0.20	0.20	6082362	<0.20	0.20	6082362	<0.20	0.20	6082362
Chloroform	ug/L	<0.20	0.20	6082362	<0.20	0.20	6082362	0.68	0.20	6082362
Dibromochloromethane	ug/L	<0.50	0.50	6082362	<0.50	0.50	6082362	<0.50	0.50	6082362
1,2-Dichlorobenzene	ug/L	<0.50	0.50	6082362	<0.50	0.50	6082362	<0.50	0.50	6082362
1,3-Dichlorobenzene	ug/L	<0.50	0.50	6082362	<0.50	0.50	6082362	<0.50	0.50	6082362
1,4-Dichlorobenzene	ug/L	<0.50	0.50	6082362	<0.50	0.50	6082362	<0.50	0.50	6082362
Dichlorodifluoromethane (FREON 12)	ug/L	<1.0	1.0	6082362	<1.0	1.0	6082362	<1.0	1.0	6082362
1,1-Dichloroethane	ug/L	<0.20	0.20	6082362	<0.20	0.20	6082362	<0.20	0.20	6082362
1,2-Dichloroethane	ug/L	<0.50	0.50	6082362	<0.50	0.50	6082362	<0.50	0.50	6082362
1,1-Dichloroethylene	ug/L	<0.20	0.20	6082362	<0.20	0.20	6082362	<0.20	0.20	6082362
cis-1,2-Dichloroethylene	ug/L	<0.50	0.50	6082362	<0.50	0.50	6082362	<0.50	0.50	6082362
trans-1,2-Dichloroethylene	ug/L	<0.50	0.50	6082362	<0.50	0.50	6082362	<0.50	0.50	6082362
1,2-Dichloropropane	ug/L	<0.20	0.20	6082362	<0.20	0.20	6082362	<0.20	0.20	6082362
cis-1,3-Dichloropropene	ug/L	<0.30	0.30	6082362	<0.30	0.30	6082362	<0.30	0.30	6082362
trans-1,3-Dichloropropene	ug/L	<0.40	0.40	6082362	<0.40	0.40	6082362	<0.40	0.40	6082362
Ethylbenzene	ug/L	<0.20	0.20	6082362	<0.20	0.20	6082362	<0.20	0.20	6082362
Ethylene Dibromide	ug/L	<0.20	0.20	6082362	<0.20	0.20	6082362	<0.20	0.20	6082362
Hexane	ug/L	<1.0	1.0	6082362	<1.0	1.0	6082362	<1.0	1.0	6082362
Methylene Chloride(Dichloromethane)	ug/L	<2.0	2.0	6082362	<2.0	2.0	6082362	<2.0	2.0	6082362
Methyl Ethyl Ketone (2-Butanone)	ug/L	<10	10	6082362	<10	10	6082362	<10	10	6082362
Methyl Isobutyl Ketone	ug/L	<5.0	5.0	6082362	<5.0	5.0	6082362	<5.0	5.0	6082362
Methyl t-butyl ether (MTBE)	ug/L	<0.50	0.50	6082362	<0.50	0.50	6082362	<0.50	0.50	6082362
Styrene	ug/L	<0.50	0.50	6082362	<0.50	0.50	6082362	<0.50	0.50	6082362
1,1,1,2-Tetrachloroethane	ug/L	<0.50	0.50	6082362	<0.50	0.50	6082362	<0.50	0.50	6082362
1,1,2,2-Tetrachloroethane	ug/L	<0.50	0.50	6082362	<0.50	0.50	6082362	<0.50	0.50	6082362

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

Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxam.ca

Maxxam Job #: B9A0656
Report Date: 2019/04/25

exp Services Inc
Client Project #: OTT-00241785-B
Site Location: MONTGOMERY
Sampler Initials: MAD

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

Maxxam ID		JLV697			JLV697			JLV698		
Sampling Date		2019/04/16 12:00			2019/04/16 12:00			2019/04/16 12:00		
COC Number		712975-01-01			712975-01-01			712975-01-01		
	UNITS	**MW19-1**	**RDL**	**QC Batch**	**MW19-1 Lab-Dup**	**RDL**	**QC Batch**	**MW19-2**	**RDL**	**QC Batch**
Tetrachloroethylene	ug/L	<0.20	0.20	6082362	<0.20	0.20	6082362	<0.20	0.20	6082362
Toluene	ug/L	<0.20	0.20	6082362	<0.20	0.20	6082362	<0.20	0.20	6082362
1,1,1-Trichloroethane	ug/L	<0.20	0.20	6082362	<0.20	0.20	6082362	<0.20	0.20	6082362
1,1,2-Trichloroethane	ug/L	<0.50	0.50	6082362	<0.50	0.50	6082362	<0.50	0.50	6082362
Trichloroethylene	ug/L	<0.20	0.20	6082362	<0.20	0.20	6082362	<0.20	0.20	6082362
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	0.50	6082362	<0.50	0.50	6082362	<0.50	0.50	6082362
Vinyl Chloride	ug/L	<0.20	0.20	6082362	<0.20	0.20	6082362	<0.20	0.20	6082362
p+m-Xylene	ug/L	<0.20	0.20	6082362	<0.20	0.20	6082362	<0.20	0.20	6082362
o-Xylene	ug/L	<0.20	0.20	6082362	<0.20	0.20	6082362	<0.20	0.20	6082362
Total Xylenes	ug/L	<0.20	0.20	6082362	<0.20	0.20	6082362	<0.20	0.20	6082362
F1 (C6-C10)	ug/L	<25	25	6082362	<25	25	6082362	<25	25	6082362
F1 (C6-C10) - BTEX	ug/L	<25	25	6082362	<25	25	6082362	<25	25	6082362
F2-F4 Hydrocarbons										
F2 (C10-C16 Hydrocarbons)	ug/L	<100	100	6072615				<100	100	6072615
F3 (C16-C34 Hydrocarbons)	ug/L	<200	200	6072615				<200	200	6072615
F4 (C34-C50 Hydrocarbons)	ug/L	<200	200	6072615				<200	200	6072615
Reached Baseline at C50	ug/L	Yes		6072615				Yes		6072615
Surrogate Recovery (%)										
o-Terphenyl	%	107		6072615				106		6072615
4-Bromofluorobenzene	%	101		6082362	100		6082362	99		6082362
D4-1,2-Dichloroethane	%	111		6082362	109		6082362	103		6082362
D8-Toluene	%	98		6082362	98		6082362	98		6082362

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

Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxam.ca

Maxxam Job #: B9A0656
Report Date: 2019/04/25

exp Services Inc
Client Project #: OTT-00241785-B
Site Location: MONTGOMERY
Sampler Initials: MAD

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

Maxxam ID		JLV699	JLV700		
Sampling Date		2019/04/16 12:00	2019/04/16 12:00		
COC Number		712975-01-01	712975-01-01		
	UNITS	**MW19-3**	**DUP-1**	**RDL**	**QC Batch**
Calculated Parameters					
1,3-Dichloropropene (cis+trans)	ug/L	<0.50	<0.50	0.50	6074610
Volatile Organics					
Acetone (2-Propanone)	ug/L	<10	<10	10	6082362
Benzene	ug/L	<0.20	<0.20	0.20	6082362
Bromodichloromethane	ug/L	<0.50	<0.50	0.50	6082362
Bromoform	ug/L	<1.0	<1.0	1.0	6082362
Bromomethane	ug/L	<0.50	<0.50	0.50	6082362
Carbon Tetrachloride	ug/L	<0.20	<0.20	0.20	6082362
Chlorobenzene	ug/L	<0.20	<0.20	0.20	6082362
Chloroform	ug/L	0.35	<0.20	0.20	6082362
Dibromochloromethane	ug/L	<0.50	<0.50	0.50	6082362
1,2-Dichlorobenzene	ug/L	<0.50	<0.50	0.50	6082362
1,3-Dichlorobenzene	ug/L	<0.50	<0.50	0.50	6082362
1,4-Dichlorobenzene	ug/L	<0.50	<0.50	0.50	6082362
Dichlorodifluoromethane (FREON 12)	ug/L	<1.0	<1.0	1.0	6082362
1,1-Dichloroethane	ug/L	<0.20	<0.20	0.20	6082362
1,2-Dichloroethane	ug/L	<0.50	<0.50	0.50	6082362
1,1-Dichloroethylene	ug/L	<0.20	<0.20	0.20	6082362
cis-1,2-Dichloroethylene	ug/L	<0.50	<0.50	0.50	6082362
trans-1,2-Dichloroethylene	ug/L	<0.50	<0.50	0.50	6082362
1,2-Dichloropropane	ug/L	<0.20	<0.20	0.20	6082362
cis-1,3-Dichloropropene	ug/L	<0.30	<0.30	0.30	6082362
trans-1,3-Dichloropropene	ug/L	<0.40	<0.40	0.40	6082362
Ethylbenzene	ug/L	<0.20	<0.20	0.20	6082362
Ethylene Dibromide	ug/L	<0.20	<0.20	0.20	6082362
Hexane	ug/L	<1.0	<1.0	1.0	6082362
Methylene Chloride(Dichloromethane)	ug/L	<2.0	<2.0	2.0	6082362
Methyl Ethyl Ketone (2-Butanone)	ug/L	<10	<10	10	6082362
Methyl Isobutyl Ketone	ug/L	<5.0	<5.0	5.0	6082362
Methyl t-butyl ether (MTBE)	ug/L	<0.50	<0.50	0.50	6082362
Styrene	ug/L	<0.50	<0.50	0.50	6082362
1,1,1,2-Tetrachloroethane	ug/L	<0.50	<0.50	0.50	6082362
1,1,2,2-Tetrachloroethane	ug/L	<0.50	<0.50	0.50	6082362

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Analytics International Corporation o/a Maxxam Analytics 32 Colonnade Rd, Unit #1000, Nepean, ON K2E 7J6 Phone: 613 274-0573 Fax: 613 274-0574 Website: www.maxxam.ca

Maxxam Job #: B9A0656
Report Date: 2019/04/25

exp Services Inc
Client Project #: OTT-00241785-B
Site Location: MONTGOMERY
Sampler Initials: MAD

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

Maxxam ID		JLV699	JLV700		
Sampling Date		2019/04/16 12:00	2019/04/16 12:00		
COC Number		712975-01-01	712975-01-01		
	UNITS	**MW19-3**	**DUP-1**	**RDL**	**QC Batch**
Tetrachloroethylene	ug/L	<0.20	<0.20	0.20	6082362
Toluene	ug/L	<0.20	<0.20	0.20	6082362
1,1,1-Trichloroethane	ug/L	<0.20	<0.20	0.20	6082362
1,1,2-Trichloroethane	ug/L	<0.50	<0.50	0.50	6082362
Trichloroethylene	ug/L	<0.20	<0.20	0.20	6082362
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	<0.50	0.50	6082362
Vinyl Chloride	ug/L	<0.20	<0.20	0.20	6082362
p+m-Xylene	ug/L	<0.20	<0.20	0.20	6082362
o-Xylene	ug/L	<0.20	<0.20	0.20	6082362
Total Xylenes	ug/L	<0.20	<0.20	0.20	6082362
F1 (C6-C10)	ug/L	<25	<25	25	6082362
F1 (C6-C10) - BTEX	ug/L	<25	<25	25	6082362
F2-F4 Hydrocarbons					
F2 (C10-C16 Hydrocarbons)	ug/L	<100	<100	100	6072615
F3 (C16-C34 Hydrocarbons)	ug/L	<200	<200	200	6072615
F4 (C34-C50 Hydrocarbons)	ug/L	<200	<200	200	6072615
Reached Baseline at C50	ug/L	Yes	Yes		6072615
Surrogate Recovery (%)					
o-Terphenyl	%	104	105		6072615
4-Bromofluorobenzene	%	95	100		6082362
D4-1,2-Dichloroethane	%	100	111		6082362
D8-Toluene	%	99	98		6082362

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B9A0656
Report Date: 2019/04/25

exp Services Inc
Client Project #: OTT-00241785-B
Site Location: MONTGOMERY
Sampler Initials: MAD

O.REG 153 VOCS (WATER)

Maxxam ID		JLV701		
Sampling Date		2019/04/16 12:00		
COC Number		712975-01-01		
	UNITS	**TRIP BLANK**	**RDL**	**QC Batch**
Calculated Parameters				
1,3-Dichloropropene (cis+trans)	ug/L	<0.50	0.50	6074610
Volatile Organics				
Acetone (2-Propanone)	ug/L	<10	10	6083182
Benzene	ug/L	<0.20	0.20	6083182
Bromodichloromethane	ug/L	<0.50	0.50	6083182
Bromoform	ug/L	<1.0	1.0	6083182
Bromomethane	ug/L	<0.50	0.50	6083182
Carbon Tetrachloride	ug/L	<0.20	0.20	6083182
Chlorobenzene	ug/L	<0.20	0.20	6083182
Chloroform	ug/L	<0.20	0.20	6083182
Dibromochloromethane	ug/L	<0.50	0.50	6083182
1,2-Dichlorobenzene	ug/L	<0.50	0.50	6083182
1,3-Dichlorobenzene	ug/L	<0.50	0.50	6083182
1,4-Dichlorobenzene	ug/L	<0.50	0.50	6083182
Dichlorodifluoromethane (FREON 12)	ug/L	<1.0	1.0	6083182
1,1-Dichloroethane	ug/L	<0.20	0.20	6083182
1,2-Dichloroethane	ug/L	<0.50	0.50	6083182
1,1-Dichloroethylene	ug/L	<0.20	0.20	6083182
cis-1,2-Dichloroethylene	ug/L	<0.50	0.50	6083182
trans-1,2-Dichloroethylene	ug/L	<0.50	0.50	6083182
1,2-Dichloropropane	ug/L	<0.20	0.20	6083182
cis-1,3-Dichloropropene	ug/L	<0.30	0.30	6083182
trans-1,3-Dichloropropene	ug/L	<0.40	0.40	6083182
Ethylbenzene	ug/L	<0.20	0.20	6083182
Ethylene Dibromide	ug/L	<0.20	0.20	6083182
Hexane	ug/L	<1.0	1.0	6083182
Methylene Chloride(Dichloromethane)	ug/L	<2.0	2.0	6083182
Methyl Ethyl Ketone (2-Butanone)	ug/L	<10	10	6083182
Methyl Isobutyl Ketone	ug/L	<5.0	5.0	6083182
Methyl t-butyl ether (MTBE)	ug/L	<0.50	0.50	6083182
Styrene	ug/L	<0.50	0.50	6083182
1,1,1,2-Tetrachloroethane	ug/L	<0.50	0.50	6083182
1,1,2,2-Tetrachloroethane	ug/L	<0.50	0.50	6083182

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B9A0656
Report Date: 2019/04/25

exp Services Inc
Client Project #: OTT-00241785-B
Site Location: MONTGOMERY
Sampler Initials: MAD

O.REG 153 VOCS (WATER)

Maxxam ID		JLV701		
Sampling Date		2019/04/16 12:00		
COC Number		712975-01-01		
	UNITS	**TRIP BLANK**	**RDL**	**QC Batch**
Tetrachloroethylene	ug/L	<0.20	0.20	6083182
Toluene	ug/L	<0.20	0.20	6083182
1,1,1-Trichloroethane	ug/L	<0.20	0.20	6083182
1,1,2-Trichloroethane	ug/L	<0.50	0.50	6083182
Trichloroethylene	ug/L	<0.20	0.20	6083182
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	0.50	6083182
Vinyl Chloride	ug/L	<0.20	0.20	6083182
p+m-Xylene	ug/L	<0.20	0.20	6083182
o-Xylene	ug/L	<0.20	0.20	6083182
Total Xylenes	ug/L	<0.20	0.20	6083182
Surrogate Recovery (%)				
4-Bromofluorobenzene	%	97		6083182
D4-1,2-Dichloroethane	%	102		6083182
D8-Toluene	%	97		6083182

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B9A0656
Report Date: 2019/04/25

exp Services Inc
Client Project #: OTT-00241785-B
Site Location: MONTGOMERY
Sampler Initials: MAD

TEST SUMMARY

Maxxam ID: JLV697
Sample ID: MW19-1
Matrix: Water

Collected: 2019/04/16
Shipped:
Received: 2019/04/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	6074610	N/A	2019/04/24	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	6072615	2019/04/17	2019/04/17	Mariana Vascan
Dissolved Metals by ICPMS	ICP/MS	6077360	N/A	2019/04/22	Thao Nguyen
Volatile Organic Compounds and F1 PHCs	GC/MSFD	6082362	N/A	2019/04/23	Liliana Gaburici

Maxxam ID: JLV697 Dup
Sample ID: MW19-1
Matrix: Water

Collected: 2019/04/16
Shipped:
Received: 2019/04/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Volatile Organic Compounds and F1 PHCs	GC/MSFD	6082362	N/A	2019/04/23	Liliana Gaburici

Maxxam ID: JLV698
Sample ID: MW19-2
Matrix: Water

Collected: 2019/04/16
Shipped:
Received: 2019/04/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	6074610	N/A	2019/04/24	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	6072615	2019/04/17	2019/04/18	Mariana Vascan
Dissolved Metals by ICPMS	ICP/MS	6077360	N/A	2019/04/22	Thao Nguyen
Volatile Organic Compounds and F1 PHCs	GC/MSFD	6082362	N/A	2019/04/23	Liliana Gaburici

Maxxam ID: JLV699
Sample ID: MW19-3
Matrix: Water

Collected: 2019/04/16
Shipped:
Received: 2019/04/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	6074610	N/A	2019/04/24	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	6072615	2019/04/17	2019/04/18	Mariana Vascan
Dissolved Metals by ICPMS	ICP/MS	6077360	N/A	2019/04/22	Thao Nguyen
Volatile Organic Compounds and F1 PHCs	GC/MSFD	6082362	N/A	2019/04/23	Liliana Gaburici

Maxxam ID: JLV700
Sample ID: DUP-1
Matrix: Water

Collected: 2019/04/16
Shipped:
Received: 2019/04/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	6074610	N/A	2019/04/24	Automated Statchk
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	6072615	2019/04/17	2019/04/18	Mariana Vascan
Dissolved Metals by ICPMS	ICP/MS	6077360	N/A	2019/04/22	Thao Nguyen
Volatile Organic Compounds and F1 PHCs	GC/MSFD	6082362	N/A	2019/04/23	Liliana Gaburici

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Maxxam Job #: B9A0656
Report Date: 2019/04/25

exp Services Inc
Client Project #: OTT-00241785-B
Site Location: MONTGOMERY
Sampler Initials: MAD

TEST SUMMARY

Maxxam ID: JLV701
Sample ID: TRIP BLANK
Matrix: Water

Collected: 2019/04/16
Shipped:
Received: 2019/04/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	6074610	N/A	2019/04/24	Automated Statchk
Volatile Organic Compounds in Water	GC/MS	6083182	N/A	2019/04/23	Liliana Gaburici

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Report Date: 2019/04/25

exp Services Inc
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GENERAL COMMENTS

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

Package 1	7.0°C

Results relate only to the items tested.

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Report Date: 2019/04/25

QUALITY ASSURANCE REPORT

exp Services Inc
Client Project #: OTT-00241785-B
Site Location: MONTGOMERY
Sampler Initials: MAD

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6072615	o-Terphenyl	2019/04/17	104	30 - 130	106	30 - 130	108	%		
6082362	4-Bromofluorobenzene	2019/04/23	106	70 - 130	104	70 - 130	96	%		
6082362	D4-1,2-Dichloroethane	2019/04/23	126	70 - 130	120	70 - 130	94	%		
6082362	D8-Toluene	2019/04/23	97	70 - 130	97	70 - 130	102	%		
6083182	4-Bromofluorobenzene	2019/04/23			104	70 - 130	97	%		
6083182	D4-1,2-Dichloroethane	2019/04/23			122	70 - 130	111	%		
6083182	D8-Toluene	2019/04/23			99	70 - 130	96	%		
6072615	F2 (C10-C16 Hydrocarbons)	2019/04/17	97	50 - 130	96	80 - 120	<100	ug/L	8.6	50
6072615	F3 (C16-C34 Hydrocarbons)	2019/04/17	97	50 - 130	96	80 - 120	<200	ug/L	NC	50
6072615	F4 (C34-C50 Hydrocarbons)	2019/04/17	97	50 - 130	96	80 - 120	<200	ug/L	NC	50
6077360	Dissolved Antimony (Sb)	2019/04/22	104	80 - 120	101	80 - 120	<0.50	ug/L	NC	20
6077360	Dissolved Arsenic (As)	2019/04/22	100	80 - 120	99	80 - 120	<1.0	ug/L	NC	20
6077360	Dissolved Barium (Ba)	2019/04/22	101	80 - 120	99	80 - 120	<2.0	ug/L	1.7	20
6077360	Dissolved Beryllium (Be)	2019/04/22	100	80 - 120	98	80 - 120	<0.50	ug/L	NC	20
6077360	Dissolved Boron (B)	2019/04/22	100	80 - 120	100	80 - 120	<10	ug/L	3.0	20
6077360	Dissolved Cadmium (Cd)	2019/04/22	100	80 - 120	99	80 - 120	<0.10	ug/L	NC	20
6077360	Dissolved Chromium (Cr)	2019/04/22	100	80 - 120	98	80 - 120	<5.0	ug/L	NC	20
6077360	Dissolved Cobalt (Co)	2019/04/22	99	80 - 120	98	80 - 120	<0.50	ug/L	NC	20
6077360	Dissolved Copper (Cu)	2019/04/22	98	80 - 120	99	80 - 120	<1.0	ug/L	7.4	20
6077360	Dissolved Lead (Pb)	2019/04/22	97	80 - 120	96	80 - 120	<0.50	ug/L	2.8	20
6077360	Dissolved Molybdenum (Mo)	2019/04/22	104	80 - 120	102	80 - 120	<0.50	ug/L	15	20
6077360	Dissolved Nickel (Ni)	2019/04/22	99	80 - 120	98	80 - 120	<1.0	ug/L	NC	20
6077360	Dissolved Selenium (Se)	2019/04/22	101	80 - 120	100	80 - 120	<2.0	ug/L	NC	20
6077360	Dissolved Silver (Ag)	2019/04/22	99	80 - 120	100	80 - 120	<0.10	ug/L	NC	20
6077360	Dissolved Sodium (Na)	2019/04/22	96	80 - 120	94	80 - 120	<100	ug/L	1.9	20
6077360	Dissolved Thallium (Tl)	2019/04/22	96	80 - 120	95	80 - 120	<0.050	ug/L	NC	20
6077360	Dissolved Uranium (U)	2019/04/22	97	80 - 120	96	80 - 120	<0.10	ug/L	3.9	20
6077360	Dissolved Vanadium (V)	2019/04/22	101	80 - 120	99	80 - 120	<0.50	ug/L	NC	20
6077360	Dissolved Zinc (Zn)	2019/04/22	101	80 - 120	97	80 - 120	<5.0	ug/L	NC	20
6082362	1,1,1,2-Tetrachloroethane	2019/04/23	118	70 - 130	112	70 - 130	<0.50	ug/L	NC	30
6082362	1,1,1-Trichloroethane	2019/04/23	99	70 - 130	94	70 - 130	<0.20	ug/L	NC	30
6082362	1,1,2,2-Tetrachloroethane	2019/04/23	108	70 - 130	111	70 - 130	<0.50	ug/L	NC	30

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Report Date: 2019/04/25

QUALITY ASSURANCE REPORT(CONT'D)

exp Services Inc
Client Project #: OTT-00241785-B
Site Location: MONTGOMERY
Sampler Initials: MAD

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6082362	1,1,2-Trichloroethane	2019/04/23	118	70 - 130	107	70 - 130	<0.50	ug/L	NC	30
6082362	1,1-Dichloroethane	2019/04/23	93	70 - 130	87	70 - 130	<0.20	ug/L	NC	30
6082362	1,1-Dichloroethylene	2019/04/23	93	70 - 130	86	70 - 130	<0.20	ug/L	NC	30
6082362	1,2-Dichlorobenzene	2019/04/23	95	70 - 130	91	70 - 130	<0.50	ug/L	NC	30
6082362	1,2-Dichloroethane	2019/04/23	112	70 - 130	102	70 - 130	<0.50	ug/L	NC	30
6082362	1,2-Dichloropropane	2019/04/23	95	70 - 130	89	70 - 130	<0.20	ug/L	NC	30
6082362	1,3-Dichlorobenzene	2019/04/23	88	70 - 130	85	70 - 130	<0.50	ug/L	NC	30
6082362	1,4-Dichlorobenzene	2019/04/23	93	70 - 130	90	70 - 130	<0.50	ug/L	NC	30
6082362	Acetone (2-Propanone)	2019/04/23	111	60 - 140	111	60 - 140	<10	ug/L	NC	30
6082362	Benzene	2019/04/23	98	70 - 130	91	70 - 130	<0.20	ug/L	NC	30
6082362	Bromodichloromethane	2019/04/23	107	70 - 130	98	70 - 130	<0.50	ug/L	NC	30
6082362	Bromoform	2019/04/23	108	70 - 130	123	70 - 130	<1.0	ug/L	NC	30
6082362	Bromomethane	2019/04/23	117	60 - 140	108	60 - 140	<0.50	ug/L	NC	30
6082362	Carbon Tetrachloride	2019/04/23	98	70 - 130	93	70 - 130	<0.20	ug/L	NC	30
6082362	Chlorobenzene	2019/04/23	98	70 - 130	94	70 - 130	<0.20	ug/L	NC	30
6082362	Chloroform	2019/04/23	95	70 - 130	94	70 - 130	<0.20	ug/L	NC	30
6082362	cis-1,2-Dichloroethylene	2019/04/23	91	70 - 130	85	70 - 130	<0.50	ug/L	NC	30
6082362	cis-1,3-Dichloropropene	2019/04/23	81	70 - 130	99	70 - 130	<0.30	ug/L	NC	30
6082362	Dibromochloromethane	2019/04/23	128	70 - 130	120	70 - 130	<0.50	ug/L	NC	30
6082362	Dichlorodifluoromethane (FREON 12)	2019/04/23	112	60 - 140	103	60 - 140	<1.0	ug/L	NC	30
6082362	Ethylbenzene	2019/04/23	84	70 - 130	79	70 - 130	<0.20	ug/L	NC	30
6082362	Ethylene Dibromide	2019/04/23	124	70 - 130	113	70 - 130	<0.20	ug/L	NC	30
6082362	F1 (C6-C10) - BTEX	2019/04/23					<25	ug/L	NC	30
6082362	F1 (C6-C10)	2019/04/23	101	60 - 140	93	60 - 140	<25	ug/L	NC	30
6082362	Hexane	2019/04/23	92	70 - 130	88	70 - 130	<1.0	ug/L	NC	30
6082362	Methyl Ethyl Ketone (2-Butanone)	2019/04/23	95	60 - 140	113	60 - 140	<10	ug/L	NC	30
6082362	Methyl Isobutyl Ketone	2019/04/23	118	70 - 130	114	70 - 130	<5.0	ug/L	NC	30
6082362	Methyl t-butyl ether (MTBE)	2019/04/23	96	70 - 130	91	70 - 130	<0.50	ug/L	NC	30
6082362	Methylene Chloride(Dichloromethane)	2019/04/23	107	70 - 130	99	70 - 130	<2.0	ug/L	NC	30
6082362	o-Xylene	2019/04/23	92	70 - 130	89	70 - 130	<0.20	ug/L	NC	30
6082362	p+m-Xylene	2019/04/23	90	70 - 130	85	70 - 130	<0.20	ug/L	NC	30
6082362	Styrene	2019/04/23	96	70 - 130	92	70 - 130	<0.50	ug/L	NC	30

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QUALITY ASSURANCE REPORT(CONT'D)

exp Services Inc
Client Project #: OTT-00241785-B
Site Location: MONTGOMERY
Sampler Initials: MAD

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6082362	Tetrachloroethylene	2019/04/23	88	70 - 130	84	70 - 130	<0.20	ug/L	NC	30
6082362	Toluene	2019/04/23	91	70 - 130	86	70 - 130	<0.20	ug/L	NC	30
6082362	Total Xylenes	2019/04/23					<0.20	ug/L	NC	30
6082362	trans-1,2-Dichloroethylene	2019/04/23	92	70 - 130	86	70 - 130	<0.50	ug/L	NC	30
6082362	trans-1,3-Dichloropropene	2019/04/23	101	70 - 130	87	70 - 130	<0.40	ug/L	NC	30
6082362	Trichloroethylene	2019/04/23	98	70 - 130	94	70 - 130	<0.20	ug/L	NC	30
6082362	Trichlorofluoromethane (FREON 11)	2019/04/23	93	70 - 130	87	70 - 130	<0.50	ug/L	NC	30
6082362	Vinyl Chloride	2019/04/23	126	70 - 130	115	70 - 130	<0.20	ug/L	NC	30
6083182	1,1,1,2-Tetrachloroethane	2019/04/23			120	70 - 130	<0.50	ug/L	8.1	30
6083182	1,1,1-Trichloroethane	2019/04/23			100	70 - 130	<0.20	ug/L	3.2	30
6083182	1,1,2,2-Tetrachloroethane	2019/04/23			108	70 - 130	<0.50	ug/L	3.5	30
6083182	1,1,2-Trichloroethane	2019/04/23			118	70 - 130	<0.50	ug/L	14	30
6083182	1,1-Dichloroethane	2019/04/23			93	70 - 130	<0.20	ug/L	7.6	30
6083182	1,1-Dichloroethylene	2019/04/23			90	70 - 130	<0.20	ug/L	3.2	30
6083182	1,2-Dichlorobenzene	2019/04/23			98	70 - 130	<0.50	ug/L	4.6	30
6083182	1,2-Dichloroethane	2019/04/23			110	70 - 130	<0.50	ug/L	14	30
6083182	1,2-Dichloropropane	2019/04/23			95	70 - 130	<0.20	ug/L	11	30
6083182	1,3-Dichlorobenzene	2019/04/23			90	70 - 130	<0.50	ug/L	1.2	30
6083182	1,4-Dichlorobenzene	2019/04/23			96	70 - 130	<0.50	ug/L	2.4	30
6083182	Acetone (2-Propanone)	2019/04/23			113	60 - 140	<10	ug/L	17	30
6083182	Benzene	2019/04/23			97	70 - 130	<0.20	ug/L	7.4	30
6083182	Bromodichloromethane	2019/04/23			105	70 - 130	<0.50	ug/L	10	30
6083182	Bromoform	2019/04/23			111	70 - 130	<1.0	ug/L	5.1	30
6083182	Bromomethane	2019/04/23			84	60 - 140	<0.50	ug/L	6.8	30
6083182	Carbon Tetrachloride	2019/04/23			97	70 - 130	<0.20	ug/L	2.0	30
6083182	Chlorobenzene	2019/04/23			99	70 - 130	<0.20	ug/L	5.0	30
6083182	Chloroform	2019/04/23			103	70 - 130	<0.20	ug/L	16	30
6083182	cis-1,2-Dichloroethylene	2019/04/23			91	70 - 130	<0.50	ug/L	9.1	30
6083182	cis-1,3-Dichloropropene	2019/04/23			90	70 - 130	<0.30	ug/L	11	30
6083182	Dibromochloromethane	2019/04/23			84	70 - 130	<0.50	ug/L	30	30
6083182	Dichlorodifluoromethane (FREON 12)	2019/04/23			108	60 - 140	<1.0	ug/L	13	30
6083182	Ethylbenzene	2019/04/23			84	70 - 130	<0.20	ug/L	3.1	30

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6083182	Ethylene Dibromide	2019/04/23			100	70 - 130	<0.20	ug/L	7.7	30
6083182	Hexane	2019/04/23			94	70 - 130	<1.0	ug/L	4.8	30
6083182	Methyl Ethyl Ketone (2-Butanone)	2019/04/23			102	60 - 140	<10	ug/L	7.9	30
6083182	Methyl Isobutyl Ketone	2019/04/23			109	70 - 130	<5.0	ug/L	2.2	30
6083182	Methyl t-butyl ether (MTBE)	2019/04/23			93	70 - 130	<0.50	ug/L	9.0	30
6083182	Methylene Chloride(Dichloromethane)	2019/04/23			105	70 - 130	<2.0	ug/L	7.8	30
6083182	o-Xylene	2019/04/23			93	70 - 130	<0.20	ug/L	2.5	30
6083182	p+m-Xylene	2019/04/23			88	70 - 130	<0.20	ug/L	0.10	30
6083182	Styrene	2019/04/23			98	70 - 130	<0.50	ug/L	5.1	30
6083182	Tetrachloroethylene	2019/04/23			88	70 - 130	<0.20	ug/L	1.4	30
6083182	Toluene	2019/04/23			92	70 - 130	<0.20	ug/L	4.6	30
6083182	Total Xylenes	2019/04/23					<0.20	ug/L		
6083182	trans-1,2-Dichloroethylene	2019/04/23			92	70 - 130	<0.50	ug/L	3.9	30
6083182	trans-1,3-Dichloropropene	2019/04/23			102	70 - 130	<0.40	ug/L	13	30
6083182	Trichloroethylene	2019/04/23			96	70 - 130	<0.20	ug/L	2.7	30
6083182	Trichlorofluoromethane (FREON 11)	2019/04/23			92	70 - 130	<0.50	ug/L	0.99	30
6083182	Vinyl Chloride	2019/04/23			124	70 - 130	<0.20	ug/L	42 (1)	30

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

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

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

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

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

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

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

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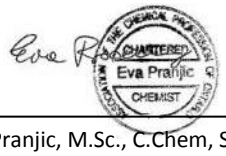
Maxxam Job #: B9A0656
Report Date: 2019/04/25

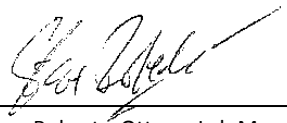
exp Services Inc
Client Project #: OTT-00241785-B
Site Location: MONTGOMERY
Sampler Initials: MAD

VALIDATION SIGNATURE PAGE

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



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



Steve Roberts, Ottawa Lab Manager

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

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

CHAIN OF CUSTODY RECORD

Page 1 of 1

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#17497 exp Services Inc	Company Name:		Quotation #:	B91716	Maxxam Job #:	Bottle Order #:
Attention:	Accounts Payable	Attention:	Mark McCalla / Mark Devlin	P.O. #:			712975
Address:	100-2650 Queensview Drive Ottawa ON K2B 8H6	Address:		Project:	OTT-00241785-B	COC #:	Project Manager:
Tel:	(613) 688-1899 Fax: (613) 225-7337	Tel:	(613) 225-9940 Ext: 243 Fax:	Project Name:	Montgomery	C#712975-01-01	Alisha Williamson
Email:	accounting.ottawa@exp.com; Karen.Burke@exp.com;	Email:	mark.mccalla@exp.com;mark.mccalla@exp.com	Site #:			
				Sampled By:	MAD		

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

Regulation 153 (2011)
- ☐ Table 1 ☒ Res/Park ☐ Medium/Fine
- ☒ Table 2 ☐ Ind/Comm ☒ Coarse
- ☒ Table 3 ☐ Agri/Other ☒ For RSC
- ☐ Table ___

Other Regulations
- ☐ CCME ☐ Sanitary Sewer Bylaw
- ☐ Reg 558. ☐ Storm Sewer Bylaw
- ☐ MISA Municipality ___
- ☐ PWQO
- ☐ Other ___

Special Instructions

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

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

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

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

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

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	O.Reg 153 VOCs by HS & F1-F4	O.Reg 153 PAHs	O.Reg 153 Dissolved ICPMS Metals (Water)	VOC						# of Bottles	Comments
1		MW19-1	April 16 2019	12:00	GW	Y	X		X							6	
2		MW19-2	↓	↓	↓	Y	X		X							↓	
3		MW19-3				Y	X		X								
4		Dup 1				Y	X		X								
5		Trip Blank			DI					X						2	
6																	
7																	
8																	
9																	
10																	

16-Apr-19 17:58
Alisha Williamson
B9A0656

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Laboratory Use Only				
Mark Devlin	19/04/16	5:50pm	Serge Léger	19/04/16	17:58		Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
Mark Devlin								7.4.10	Present	☒	
									Intact	☒	

RECEIVED IN OTTAWA

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

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

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

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

White: Maxxa Yellow: Client

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CHAIN OF CUSTODY RECORD

Page 1 of 1

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Address:	100-2650 Queensview Drive Ottawa ON K2B 8H6	Address:		Project:	OTT-00241785-B	COC #:	Project Manager:
Tel:	(613) 688-1899 Fax: (613) 225-7337	Tel:	(613) 225-9940 Ext: 243 Fax:	Project Name:	Montgomery	C#712975-01-01	Alisha Williamson
Email:	accounting.ottawa@exp.com; Karen.Burke@exp.com;	Email:	mark.mccalla@exp.com;mark.mccalla@exp.com	Site #:			
				Sampled By:	MAD		

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

Regulation 153 (2011)	Other Regulations	Special Instructions
☐ Table 1 ☒ Res/Park ☐ Medium/Fine ☒ Table 2 ☐ Ind/Comm ☒ Coarse ☒ Table 3 ☐ Agri/Other ☒ For RSC ☐ Table ___	☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558 ☐ Storm Sewer Bylaw ☐ MISA Municipality ___ ☐ PWQO ☐ Other ___	

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

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

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

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

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): (Metals / Hg / Cr VI)	O.Reg 153 VOCs by HS & F1-F4	O.Reg 153 PAHs	O.Reg 153 Dissolved ICPMS Metals (Water)	VOC						# of Bottles	Comments
1		MW19-1	April 16 2019	12:00	GW	Y	X		X							6	
2		MW19-2	↓	↓	↓	Y	X		X							↓	
3		MW19-3				Y	X		X								
4		Dup 1				Y	X		X								
5		Trip Blank			DI					X						2	
6																	
7																	
8																	
9																	
10																	

16-Apr-19 17:58
Alisha Williamson
B9A0656

RECEIVED IN OTTAWA

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Laboratory Use Only				
Mark Devlin	19/04/16	5:30pm	Serge Leger	19/04/16	17:58		Time Sensitive	Temperature (°C) on Recei	Custody Seal Present	Yes	No
								7.4.10	Intact	X	

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

4/4/5

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

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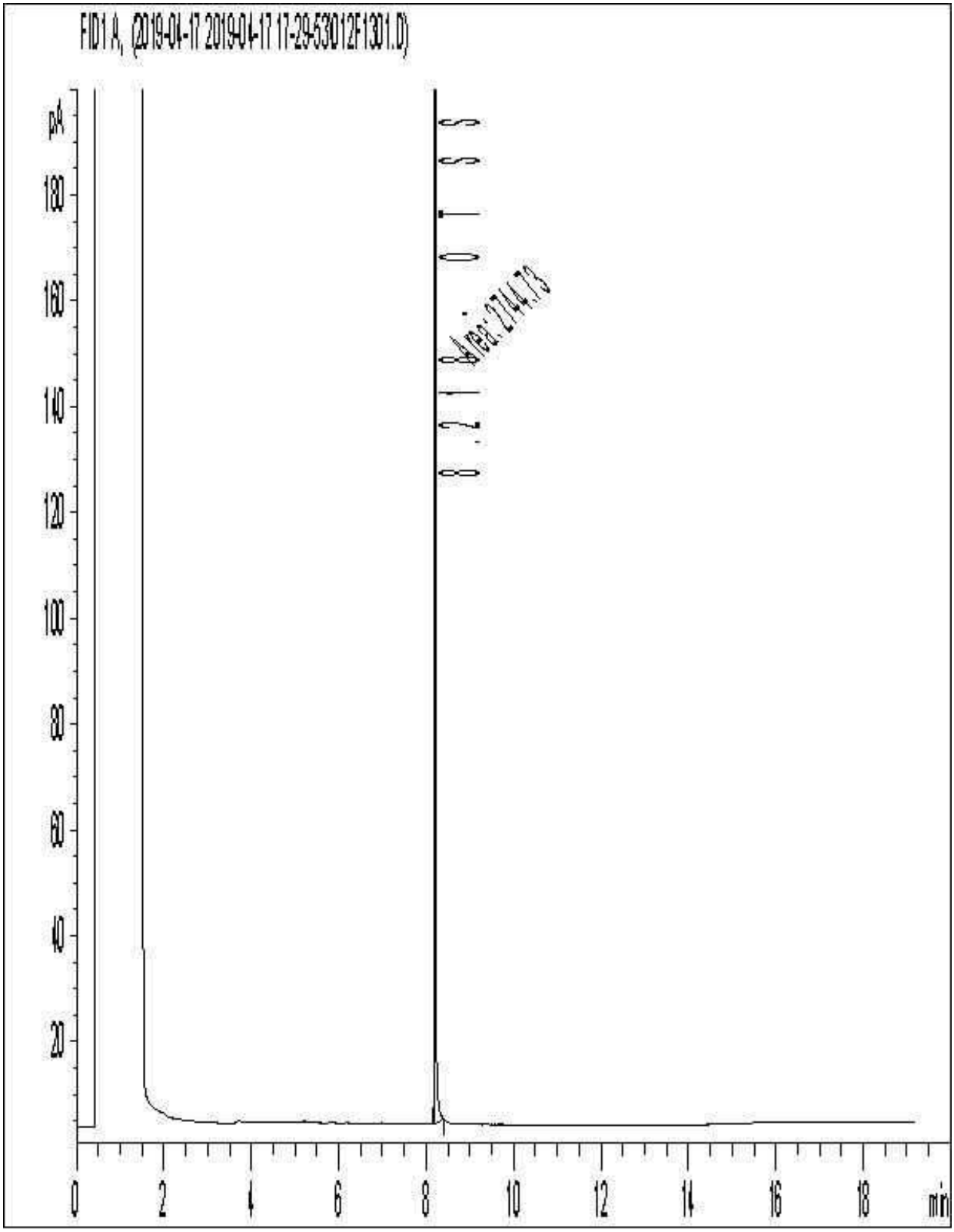
Maxxam Job #: B9A0656
Report Date: 2019/04/25
Maxxam Sample: JLV697

exp Services Inc
Client Project #: OTT-00241785-B
Project name: MONTGOMERY
Client ID: MW19-1

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

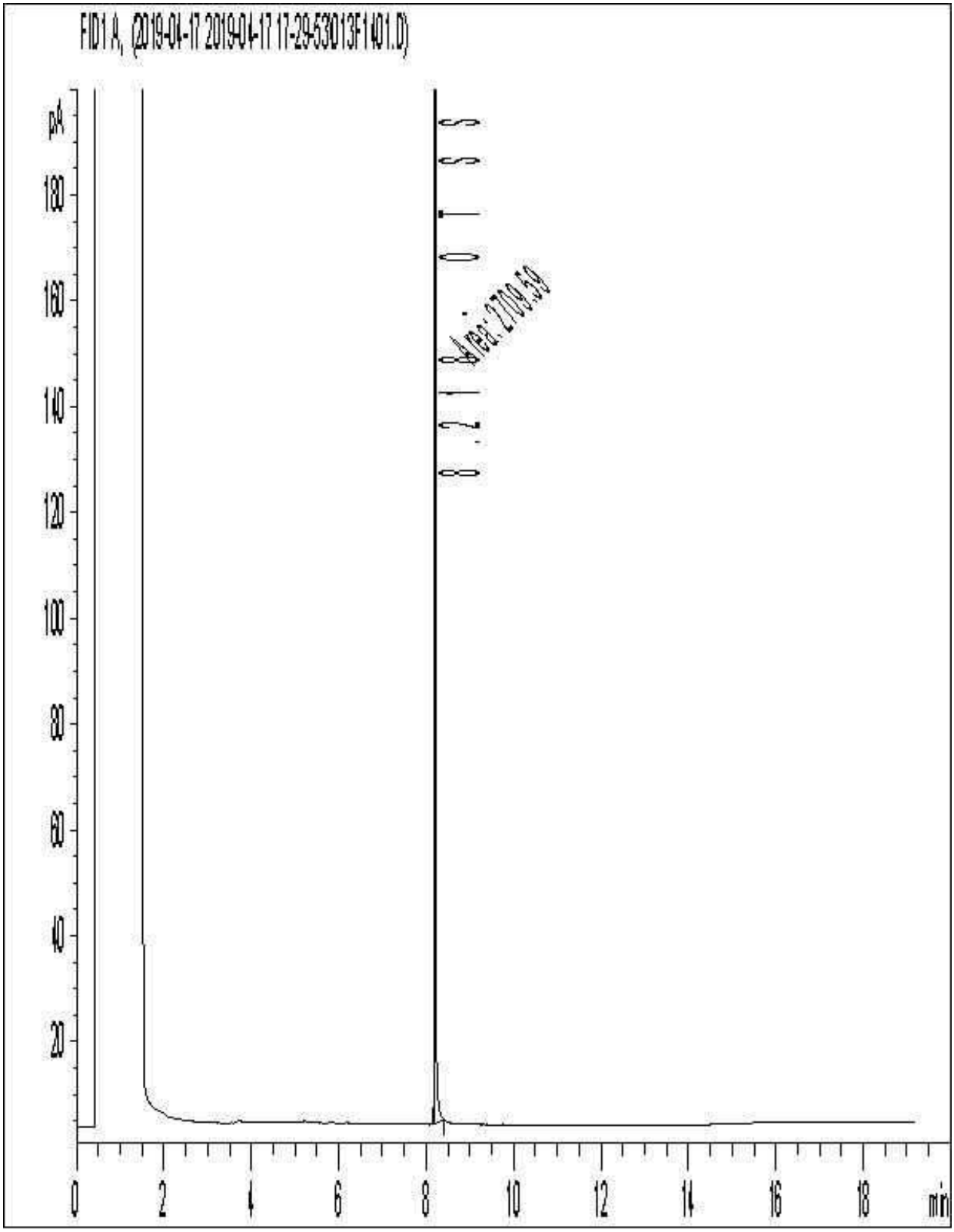


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B9A0656
Report Date: 2019/04/25
Maxxam Sample: JLV698

exp Services Inc
Client Project #: OTT-00241785-B
Project name: MONTGOMERY
Client ID: MW19-2

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

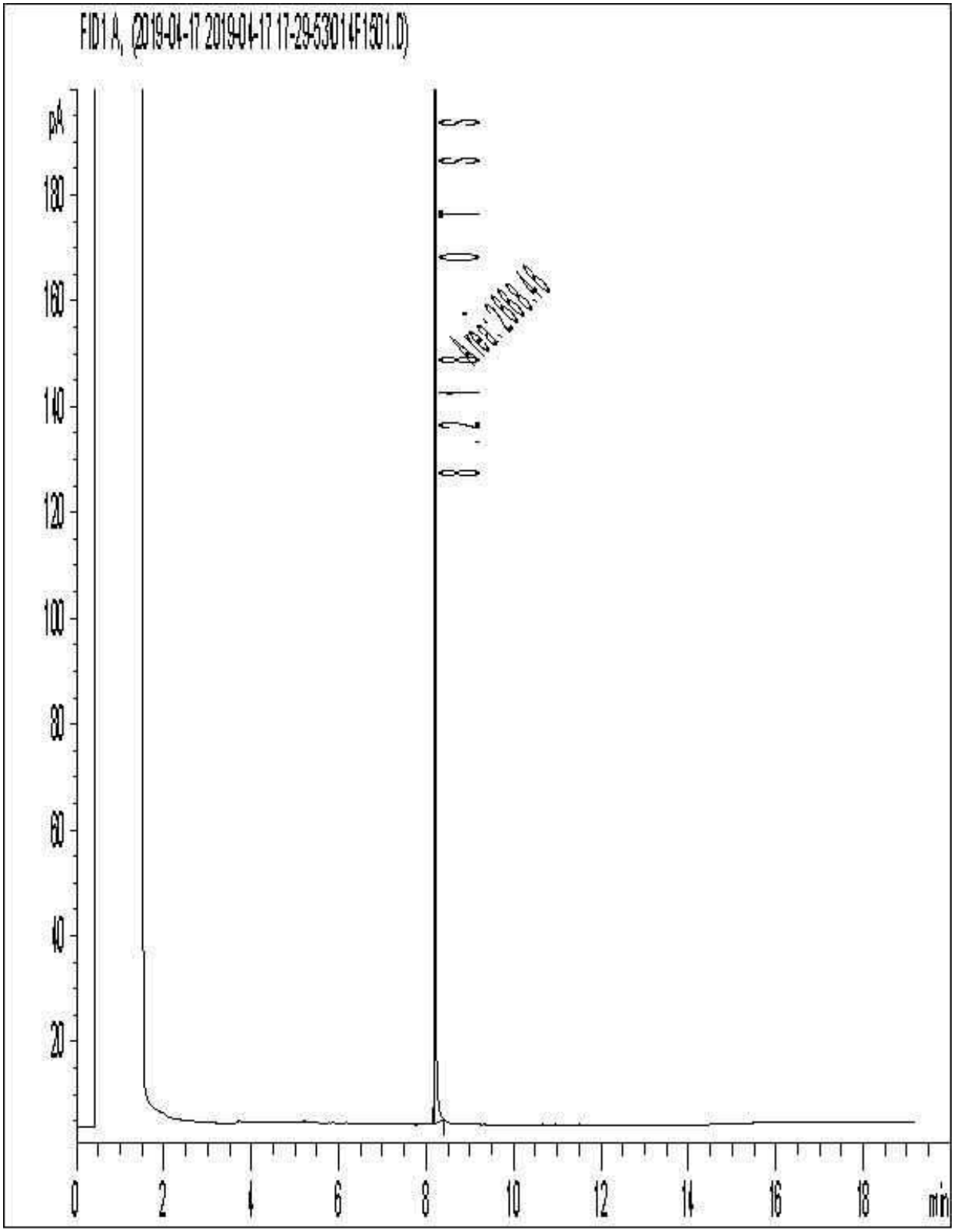


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B9A0656
Report Date: 2019/04/25
Maxxam Sample: JLV699

exp Services Inc
Client Project #: OTT-00241785-B
Project name: MONTGOMERY
Client ID: MW19-3

Petroleum Hydrocarbons F2-F4 in Water Chromatogram

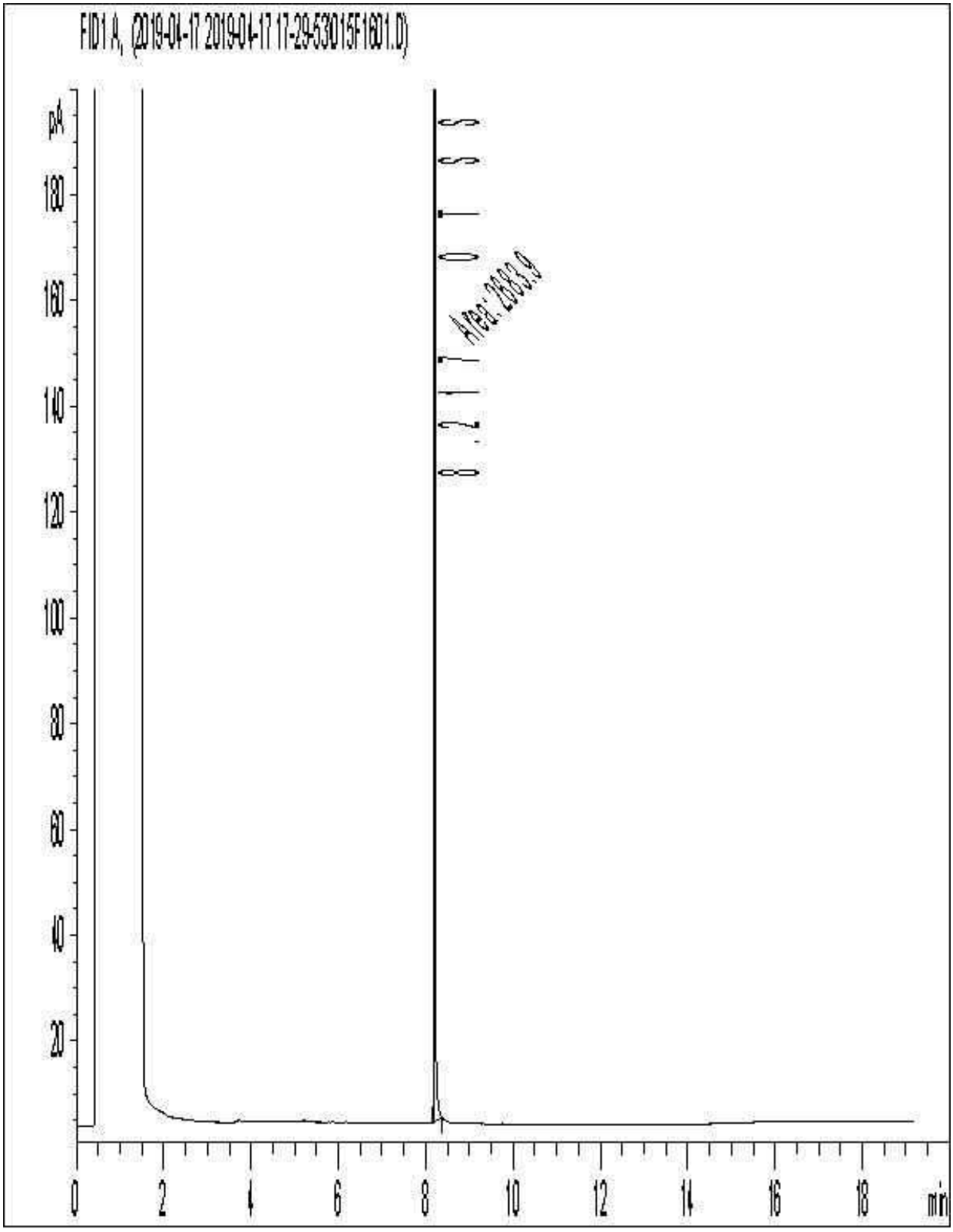


Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam Job #: B9A0656
Report Date: 2019/04/25
Maxxam Sample: JLV700

exp Services Inc
Client Project #: OTT-00241785-B
Project name: MONTGOMERY
Client ID: DUP-1

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



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

5032770, 370070

This Plan must be read in conjunction with Survey Report - Part 2, Dated: 12/21/2015

SURVEYOR'S REAL PROPERTY REPORT

PART 1 Plan of

LOTS 23, 25, 27 AND PART OF LOT 70
REGISTERED PLAN 49
CITY OF OTTAWA

FARLEY, SMITH & DENIS SURVEYING LTD. 2015

Scale 1: 150

0 1.5 3 6 9 12 15 metres

Metric Note
Distances and coordinates on this plan are in metres and can be converted to feet by dividing by 0.3048.

Bearing Note
Bearings are astronomic and are referred to the Northeasterly limit of Montgomery Street having a bearing of N 55°50'10"W as shown on Plan 5R-6896.

For bearing comparisons, a rotation of 0°39'20" counter-clockwise has been applied to bearings on Plan 5R-4782.

Elevation Notes
1. Elevations shown are geodetic and are referred to Geodetic Datum CGVD-1928 :1978.
2. Elevations derived from Vertical Benchmark G-7 (City Index 309) having a published elevation of 58.444m.
3. It is the responsibility of the user of this information to verify that the job benchmark has not been altered or disturbed and that it's relative elevation and description agrees with the information shown on this drawing.

Utility Notes
1. This drawing cannot be accepted as acknowledging all of the utilities and it will be the responsibility of the user to contact the respective utility authorities for confirmation.
2. Only visible surface utilities were located.
3. Underground utility data derived from City of Ottawa utility sheet reference: D-16-29 and D-16-30, and as-built drawings VA266 and 8699.
4. Sanitary and storm sewer grades and inverts were derived from field measurements.
5. A field location of underground plant by the pertinent utility authority is mandatory before any work involving breaking ground, probing, excavating etc.

Notes & Legend

Symbol	Denotes	
—□—	Denotes	Survey Monument Planted
—■—	"	Survey Monument Found
SIB	"	Standard Iron Bar
SSIB	"	Short Standard Iron Bar
IB	"	Iron Bar
IBØ	"	Round Iron Bar
CC	"	Cut Cross
(Wit)	"	Witness
Meas	"	Measured
(P1)	"	Plan 5R-6896
(P2)	"	Plan 5R-4782
(P3)	"	Plan 5R-3513
(P4)	"	Plan By (857) August 26, 1980
(P5)	"	Plan By (1287) July 3, 1986 (366-86)
(D1)	"	Inst. NS119443
(D2)	"	Inst. VA22924
○ MH–ST	"	Maintenance Hole (Storm)
○ MH–S	"	Maintenance Hole (Sanitary)
VC	"	Valve Chamber (Watermain)
—— ST ——	"	Underground Storm Sewer
—— S ——	"	Underground Sanitary Sewer
—— W ——	"	Underground Water
—— P ——	"	Underground Power
—— OHW ——	"	Overhead Wires
—B——B——B—	"	Underground Bell
– TV –	"	Underground Fibre Optic
—— G ——	"	Underground Gas
○ UP	"	Utility Pole
○ AN	"	Anchor
□ CB	"	Catch Basin
FH	"	Fire Hydrant
WV	"	Water Valve
Inv.	"	Invert
T/G	"	Top of Grate
GM	"	Gas Meter
	"	Gate
Ø	"	Diameter
CLF	"	Chain Link Fence
BF	"	Board Fence
CRW	"	Concrete Retaining Wall
SRW	"	Stone Retaining Wall
EOA	"	Edge of Asphalt
C/L	"	Centreline
+ 65.00	"	Location of Elevations
+ *65.00*	"	Top of Concrete Curb/Retaining Wall Elevation
———	"	Property Line
·	"	Deciduous Tree

THIS REPORT WAS PREPARED FOR:
__Michel Baroud______________ ("The Client"), the Client's solicitors, mortgagees, and other related parties. The undersigned accepts no responsibility for use by other parties. See Part 2 of this Report.

Surveyor's Certificate
I certify that :
1. This survey and plan are correct and in accordance with the Surveys Act, the Surveyors Act and the Regulations made under them.
2. The survey was completed on the 21st day of December, 2015.

_________ Date

_______________ Daniel Robinson
Ontario Land Surveyor

ASSOCIATION OF ONTARIO LAND SURVEYORS
PLAN SUBMISSION FORM
1960519

THIS PLAN IS NOT VALID UNLESS IT IS AN EMBOSSED ORIGINAL COPY ISSUED BY THE SURVEYOR
In accordance with Regulation 1026, Section 29 (3).

FARLEY, SMITH & DENIS SURVEYING LTD.

ONTARIO LAND SURVEYORS
CANADA LAND SURVEYORS

190 COLONNADE ROAD, OTTAWA, ONTARIO K2E 7J5
TEL. (613) 727-8226 FAX. (613) 727-1826

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