



## **Phase Two Environmental Site Assessment**

**327 & 291 Reynolds Street, 348 Allan  
Street, Oakville, Ontario**

**Client**

**The Town of Oakville**  
1225 Trafalgar Road  
Oakville, ON L6H 0H3

Attn: Ms. Nazia Tirmazi

**Project Number**

BRM-00235695-B0

**Prepared By**

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**Date Submitted**

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## Executive Summary

**Exp Services Inc. (exp)** was retained by The Town of Oakville to complete a Phase Two Environmental Site Assessment (ESA) of the properties located at 327 & 291 Reynolds Street, 348 Allan Street in Oakville, Ontario, recognized as the Former Oakville Hospital Lands, hereinafter referred to as the 'Site'. Authorization to proceed with the Phase Two ESA was provided by Ms. Nazia Tirmazi of the Town of Oakville.

The Site is located on the east side of Reynolds Street and south side of Allan Street measuring approximately 5.7 hectares (14 acres). At the time of the Site visit, the Site was occupied by multiple buildings including the former Oakville Trafalgar Memorial Hospital, the Helen Lawson building, a multi-level parking garage and a vacant former school building.

The need for a Phase Two ESA on the property was identified in the Phase One ESA completed for the Site by **exp** in September 2016. The Phase One ESA identified the following potentially contaminating activities (PCAs) and Areas of Potential Environmental Concern (APECs):

Area of Potential Environmental Concern (APEC) <sup>(1)</sup>	Location of APEC on Phase One Property	Potentially Contaminating Activity (PCA) <sup>(2)</sup>	Location of PCA (on-Site or off-Site)	Contaminants of Potential Concern <sup>(3)</sup>	Media Potentially Impacted (Groundwater, soil and/or sediment)
<b>APEC 1:</b> Presence of two (2) underground storage tanks on west side of building addressed as 327 Reynolds St.	Northwest corner of Site	28: Gasoline and Associated Products Storage in Fixed Tanks	On-Site	PHCs, BTEX	Soil and Groundwater
<b>APEC 2:</b> Two (2) former fuel oil USTs on west side of building addressed as 327 Reynolds St.	Northwest corner of Site	28: Gasoline and Associated Products Storage in Fixed Tanks	On-Site	PHCs, BTEX	Soil and Groundwater
<b>APEC 3:</b> Potential poor fill quality in area of former fuel oil USTs	Northwest corner of Site	30: Importation of Fill Material of Unknown Quality	On-Site	Metals	Soil
<b>APEC 4:</b> Presence of collection pit storage tank west of the building addressed as 327 Reynolds St.	West side of Site	8: Chemical Manufacturing, Processing and Bulk Storage	On-Site	PHCs, BTEX, Metals	Soil and Groundwater

<b>Area of Potential Environmental Concern (APEC)<sup>(1)</sup></b>	<b>Location of APEC on Phase One Property</b>	<b>Potentially Contaminating Activity (PCA)<sup>(2)</sup></b>	<b>Location of PCA (on-Site or off-Site)</b>	<b>Contaminants of Potential Concern<sup>(3)</sup></b>	<b>Media Potentially Impacted (Groundwater, soil and/or sediment)</b>
<b>APEC 5:</b> Former PCB storage site listing for 327 Reynolds St.	Northeast corner of Site	Not listed: PCB storage Site	On-Site	PCBs	Soil
<b>APEC 6:</b> Presence of underground storage tank / collection tank on east side of building addressed as 327 Reynolds St.	Mid-portion of Site	28: Gasoline and Associated Products Storage in Fixed Tanks	On-Site	PHCs, BTEX	Soil and Groundwater
<b>APEC 7:</b> Presence of diesel AST in the mechanical room.	West portion of Site	28: Gasoline and Associated Products Storage in Fixed Tanks	On-Site	PHCs, BTEX	Soil and Groundwater
<b>APEC 8:</b> Registered waste generator of various waste streams including halogenated solvents	Northwest portion of Site	58: Waste Disposal and Waste Management, including thermal treatment, landfilling, and transfer of waste, other than use of biosoils as soil conditioners	On-Site	PHCs, BTEX VOCs Metals and As, Se, Sb, Hg, EC, SAR	Soil and Groundwater
<b>APEC 9:</b> Potential presence of fuel tank at former high school (presence of fill pipe, east side-291 Reynolds St)	Southwest portion of Site (east side of building)	28: Gasoline and Associated Products Storage in Fixed Tanks	On-Site	PHCs, BTEX	Soil and Groundwater
<b>APEC 10:</b> Potential presence of fuel tank at former high school (presence of fill pipe, west side-291 Reynolds St)	Southwest portion of Site (west side of building)	28: Gasoline and Associated Products Storage in Fixed Tanks	On-Site	PHCs, BTEX	Soil and Groundwater

Area of Potential Environmental Concern (APEC) <sup>(1)</sup>	Location of APEC on Phase One Property	Potentially Contaminating Activity (PCA) <sup>(2)</sup>	Location of PCA (on-Site or off-Site)	Contaminants of Potential Concern <sup>(3)</sup>	Media Potentially Impacted (Groundwater, soil and/or sediment)
<b>APEC 11:</b> Registered waste generator of various waste streams including halogenated solvents (Oakville High School, 291 Reynolds St)	Southwest portion of Site	58: Waste Disposal and Waste Management, including thermal treatment, landfilling, and transfer of waste, other than use of biosoils as soil conditioners	On-Site	PHCs, BTEX VOCs Metals and As, Se, Sb, Hg, EC SAR	Soil and Groundwater
<b>APEC 12:</b> Potential presence of fill material in area of former building footprint (Oakville High School, 291 Reynolds St)	Southwest portion of Site	30: Importation of Fill Material of Unknown Quality	On-Site	Metals PAHs	Soil
<b>APEC 13:</b> Former shop class area associated with former Oakville High School	Southwest corner of Site	Not listed: Former shop class area	On-Site	PHCs, BTEX	Soil
<b>APEC 14:</b> Application of de-icing salts on asphalt covered surfaces on Site	Entire Site (only asphalt covered surfaces)	Not listed: Application of de-icing salts	On-Site	EC, SAR (Soil) Na, Cl (Groundwater)	Soil and Groundwater
<b>APEC 15:</b> Potential presence of fill material	Entire Site (only asphalt covered surfaces)	30: Importation of Fill Material of Unknown Quality	On-Site	Metals PAHs	Soil
<b>APEC 16:</b> Presence of brine UST on west side of former Hospital building	West portion of Site	8: Chemical Manufacturing, Processing and Bulk Storage	On-Site	EC, SAR (Soil) Na, Cl (Groundwater)	Soil and Groundwater
<b>APEC 17:</b> Presence of smoke stack / chimney on Site building	Landscaped areas of the Site	Not listed – presence of smoke stack / chimney	On-Site	PAHs Metals	Soil

Area of Potential Environmental Concern (APEC) <sup>(1)</sup>	Location of APEC on Phase One Property	Potentially Contaminating Activity (PCA) <sup>(2)</sup>	Location of PCA (on-Site or off-Site)	Contaminants of Potential Concern <sup>(3)</sup>	Media Potentially Impacted (Groundwater, soil and/or sediment)
<b>APEC 18:</b> Spill incident from off-Site UST (west of Site- 358 Reynolds)	Off-Site (west)	Not listed: Spill incident	Off-Site	PHCs, BTEX VOCs	Groundwater

This Phase Two ESA was conducted in accordance with the Phase Two ESA standard as defined by O.Reg. 153, as amended, and in accordance with generally accepted professional practices.

For assessment purposes, **exp** selected the Ontario Ministry of the Environment and Climate Change (MOECC) Table 2 Site Condition Standards (SCS) of "Soil, Groundwater and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act," for Residential Property Use in a potable groundwater situation with coarse-textured soil in accordance with Ontario Regulation 153/04 (made under the Environmental Protection Act), July 2011.

Based on the results of the subsurface investigation conducted at the Site, the following findings are presented:

- 1) A Phase Two ESA was completed by WSP in 2016 which identified PAH impacts in soil and PHC impacts in groundwater. **Exp** was retained by the Town of Oakville to complete a Phase Two ESA to delineate the extent of known impacts and address any remaining APECs. The scope of work included the advancement of a total of twenty-four (24) boreholes, eighteen (18) of which were instrumented as groundwater monitoring wells, and eight (8) test pits.
- 2) The general stratigraphy at the Site, as observed in the boreholes, consisted of silty sand / sandy silt overlying silty clay. Fill material was encountered in several locations across the Site.
- 3) The groundwater depths ranged between approximately 0.96 m bgs (in the basement) to 4.22 m bgs within the overburden monitoring wells and 2.73 m bgs to 10 m bgs in bedrock monitoring wells. Based on the relative groundwater elevations, the inferred local groundwater flow direction is generally to the southwest (true south). However, **exp** notes that the direction of localized groundwater flow may be influenced by the presence of underground utilities.
- 4) To assess the quality of soil and groundwater quality at the Site, select soil samples were submitted for Metals, Electrical Conductivity (EC), Sodium Adsorption Ratio (SAR), Polycyclic Aromatic Hydrocarbons (PAHs), Petroleum Hydrocarbons (PHCs) including Benzene, Toluene, Ethylbenzene and Xylenes (BTEX) and Volatile Organic Compounds (VOCs) and select groundwater samples were submitted for laboratory analysis of metals, sodium, chloride, PAHs, PHCs and VOCs including BTEX.
- 5) A review of the analytical results for the soil and groundwater samples submitted indicated the following:

- a. The concentrations of PAHs in a number of the analyzed soil samples collected from within the footprint of the former school (south portion of the Site) were above the applicable Table 2 SCS. These concentrations are likely associated with poor fill material.
- b. The detected values of EC and SAR in the soil sample analyzed from borehole BH16-220-SS4 were above the applicable Table 2 SCS.
- c. Several groundwater samples were submitted for the analysis of PHCs in groundwater. The concentrations of PHC F3 and F4 from monitoring well BH/MW16-210 (south of the former hospital building) were above the applicable Table 2 SCS.
- d. Based on the analytical results from the Phase Two ESA completed by WSP in 2016 and the current program completed by **exp**, the extent of PAH impacted soil as well as the extent of EC/SAR impacts in soil has been delineated. Horizontal and vertical delineation of PHC impacts in groundwater on the west and south side of the hospital building has been achieved, with the exception of beneath the footprint of the building (due to cost and site access restrictions, additional work may be required upon demolition of the hospital building).
- e. Sodium and chloride exceedances are present in groundwater across the Site. Vertical delineation of Sodium and Chloride groundwater impacts at monitoring wells BH16-14/14A/14B has not been achieved. Additional work may be required if a Record of Site Condition is to be filed for the Site.
- f. A cobalt exceedance was noted in the groundwater sample collected from monitoring well BH16-14. The source of the cobalt exceedance is not known at this time.

Based on the results of the Phase Two ESA, a remediation program with a risk assessment is required prior to filing a Record of Site Condition. Details regarding possible remedial options / risk assessment measures are provided under a separate cover.

*This executive summary is a brief synopsis of the report and should not be read in lieu of reading the report in its entirety. Limitation of liability, scope of report and third party reliance are outlined in Section 9 of this report.*

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# 1. Introduction

**Exp** Services Inc. (**exp**) was retained by The Town of Oakville to complete a Phase Two Environmental Site Assessment (ESA) of the properties located at 327 & 291 Reynolds Street, 348 Allan Street in Oakville, Ontario, recognized as the Former Oakville Hospital Lands, hereinafter referred to as the 'Site'. Authorization to proceed with the Phase Two ESA was provided by Ms. Nazia Tirmazi of the Town of Oakville.

The objective of the investigation was to support the potential filing of a Record of Site Condition (RSC) in accordance with Ontario Regulation 153/04, as amended by Ontario Regulations 511/09 and 179/11 (O.Reg.153, as amended).

At the time of the investigation, the Site was owned by The Town of Oakville. The property identification number (PIN) for the Site is 248080073. Refer to Appendix G for a copy of the Site survey.

The owner contact information is provided below:

Company Name	The Town of Oakville
Company Address	1225 Trafalgar Road Oakville, ON L6H 0H3

This Phase Two ESA was conducted in accordance with the Phase Two ESA standard as defined by O.Reg. 153, 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 9 of this report.

## 1.1 Site Description

The Site is located on the east side of Reynolds Street and south side of Allan Street measuring approximately 5.7 hectares (14 acres). At the time of the Site visit, the Site was occupied by multiple buildings including the former Oakville Trafalgar Memorial Hospital, the Helen Lawson building, a multi-level parking garage and a vacant former school building. Based on information obtained from the Phase One ESA Site visit and a review of the historical records, the Site was first developed on the eastern portion for institutional use in the late 1900s. The western portion of the Site was developed in the 1940s for institutional use.

The approximate Universal Transverse Mercator (UTM) coordinates for the Site centroid is Zone 17, 607360E 4812027N. The UTM coordinates were based on measurements from Google Earth with an estimated accuracy of 5 metres (m).

A copy of the Site survey is provided in Appendix H.

## 1.2 Property Ownership

At the time of the investigation, the Site was owned by The Town of Oakville.

### 1.3 Current and Proposed Future Uses

The Site is currently zoned specifically as 'I' for Institutional and was most recently utilized as a hospital and school. Based on information provided by the client, the proposed land use is residential on the north portion of the Site and community and parkland on the south portion of the Site.

### 1.4 Applicable Site Condition Standards

The assessment criteria, Site Condition Standards (SCS), applicable to a given site in Ontario are established under subsection 168.4(1) of the Environmental Protection Act. Tabulated generic criteria are provided in "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act" ("the SGWS Standards"), MOE, May 2011. These criteria, which came into force on July 1, 2011, are based on site sensitivity (sensitive or non-sensitive), groundwater use (potable or non-potable), property use (residential, parkland, institutional, commercial, industrial, community and agricultural/other), soil type (coarse or medium to fine textured) and restoration depth (full or stratified restoration). In addition, site specific criteria may be established on the basis of the findings of a Risk Assessment carried out in accordance with Part IX and Schedule C of O. Reg. 153/04, as amended.

The SGWS Standards specify SCS for soil, groundwater and sediment that are tabulated as follows:

- Table 1 – Full Depth Background Site Condition Standards;
- Table 2 – Full Depth Generic Site Condition Standards in a Potable Ground Water Condition;
- Table 3 – Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition.;
- Table 4 – Stratified Site Condition Standards in a Potable Ground Water Condition;
- Table 5 – Stratified Site Condition Standards in a Non-Potable Ground Water Condition;
- Table 6 – Generic Site Condition Standards for Shallow Soils in a Potable Ground Water Condition;
- Table 7 – Generic Site Condition Standards for Shallow Soils in a Non-Potable Ground Water Condition
- Table 8 – Generic Site Condition Standards for Use within 30 m of a Water Body in a Potable Groundwater Condition;
- Table 9 – Generic Site Condition Standards for Use within 30 m of a Water Body in a Non-Potable Groundwater Condition.

For assessment purposes, **exp** selected the MOECC Table 2 SCS for Residential Property Use in a potable groundwater situation with coarse-textured soil.

The selection of this category was based on the following factors:

- the Site is not considered a sensitive site;
- the Site is located in an area designated in a municipal official plan as a well-head protection area or other designation identified by the municipality for the protection of groundwater;
- the intended land use of the Site is residential and community parkland;

- the predominant soil type on the Site is considered to be coarse-textured (refer to the 75 micron sieve analysis in the Certificates of Analysis - Appendix D); and
- there is no intention to carry out a stratified restoration at the Site.

## 2. Background Information

### 2.1 Physical Setting

The surrounding properties within the Phase One ESA study area predominantly consist of residential properties and a number of professional and institutional buildings south and east of the Site with one commercial property situated southwest of the Site. Based on available soil and geology mapping, the Site is located in the physiographic region characterized by Shale Plain. The surficial geology of the Site and surrounding areas are expected to consist of lacustrine and outwash sand. South of the Site surrounding Sixteen Mile Creek is comprised of bedrock (shale and dolomite). Bedrock in the general area forms part of a group belonging to the Georgian Bay Formation, Blue Mountain Formation, Billings Formation, Collingwood Member and Eastview Member consisting of shale, limestone, dolostone and siltstone. A review of the previous environmental reports indicates that the depth to bedrock was encountered between 3.7 to 6.7 m below ground surface (bgs). Sixteen Mile Creek is located approximately 225 m west of the Site. Based on the information provided on the topographic map, regional groundwater is expected to flow to the south / southwest.

### 2.2 Previous Investigations

The need for a Phase Two ESA on the Site was identified in the Phase One ESA completed for the Site by **exp** in September 2016. The Phase One ESA identified eighteen (18) Potentially Contaminating Activities (PCAs) within the Phase One ESA Study Area (Figure 2) and corresponding Areas of Potential Environmental Concern (APECs) as shown on Figure 3 and presented in Table 2.2 (Appendix A):

Based on the findings and conclusions of the Phase One ESA, a Phase Two ESA was recommended to investigate the APECs.

The following previous assessments were completed for the Site:

WSP Canada Inc., *"Phase Two Environmental Site Assessment, 327 & 291 Reynolds Street & 348 Allan Street, Oakville, Ontario"*, April 29, 2016 (revised September 20, 2016).

- In March and April 2016, twenty (20) boreholes were advanced to a maximum depth of 6.7 metres below ground surface (m bgs). An additional borehole was advanced on June 10, 2016 on the north central portion of the property to address an underground storage tank. Nine (9) of the twenty-one (21) boreholes were instrumented as monitoring wells.
- The general stratigraphy of the Site consists of asphalt overlying granular base, underlain by fill material (sand) and native sand / silty sand. A layer of silt to clayey silt / silty clay was observed below. Shale bedrock was encountered between 3.7 and 6.7 m bgs.
- The depth to groundwater in March 2016 ranged from 2.60 to 3.53 m bgs. Monitoring wells BH16-5 and BH16-20 were dry at this time. Based on the groundwater elevations, the groundwater flow direction appears to be southeasterly. Long term monitoring would be required to confirm flow direction.

- Soil samples were submitted for metals and inorganics including electrical conductivity (EC) and sodium adsorption ratio (SAR), petroleum hydrocarbons (PHCs), volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs) and polychlorinated biphenyls (PCBs). The analytical results indicated exceedances for EC/SAR in the surface samples ranging from 0.3 to 3.1 m bgs and PAH exceedances at one borehole location (BH16-13).
- Groundwater samples were submitted for the analysis of metals and inorganics, PHCs, VOCs, PAHs and PCBs. The analytical results indicated exceedances for the PAH parameter benzo(a)pyrene at BH16-15, cobalt at two (2) monitoring well locations (BH16-14 and BH16-15), and exceedances for sodium and chloride at four (4) locations (BH16-5, BH16-9, BH16-14 and BH16-15).
- Based on the findings of the Phase Two ESA, soil and groundwater at the Site does not currently meet the MOECC Table 2 Residential/Parkland/Institutional SCS.

WSP Canada Inc., "Delineation Investigation Letter, 327 & 291 Reynolds Street & 348 Allan Street, Oakville, Ontario", September 16, 2016.

- The letter report details additional scope of work which includes: additional Phase Two delineation, potential additional PAH soil submissions, re-sampling monitoring wells for cobalt and benzo(a)pyrene (B(a)P) and additional analysis from a bedrock well for PHCs, cobalt and B(a)P.
- In June 2016, an additional investigation was conducted which included the advancement of thirteen (13) boreholes, one (1) shallow monitoring well (BH16-202), at 2.4 m bgs, four (4) deep monitoring wells in bedrock to depths between 10 and 12 m bgs (BH-165A, BH16-9A, BH16-14A and BH16-15A).
- For the delineation program, nine (9) soil samples (plus one field duplicate) were submitted for EC and SAR analysis. The analytical results indicated that soil samples submitted for analysis were below the applicable Table 2 SCS with exception of the soil sample submitted from BH16-103 which exhibited an exceedance of EC and SAR.
- In addition, nine (9) soil samples were submitted for PAH analysis. Based on the analytical results, the extent of the PAH impacts were defined to the north, south and west. The eastern extent is still unknown.
- The groundwater sample submitted for VOCs analysis met the applicable Table 2 SCS.
- During the groundwater sampling of the deep monitoring well installed at BH16-5A, visible free product and petroleum hydrocarbon odours were noted. A groundwater sample was collected from the monitoring well and analyzed for PHCs. Based on the analytical results, PHC Fractions F2, F3 and F4 were above the applicable Table 2 SCS. The depth of the contaminants was located between 8 and 10 m bgs. A chromatograph of the results indicated that the product most resembled motor oil.
- The monitoring well indicating an exceedance of B(a)P (BH16-15) was resampled. The re-sampled analytical result confirmed an exceedance of benzo(a)pyrene at this location. A vertical delineation well (BH16-15A) was installed at a depth of 10.7 to 12.2 m bgs. The

analytical results for B(a)P from the groundwater sample indicated the concentration was below the applicable Table 2 SCS at this depth.

- The two (2) monitoring wells (BH16-15, BH16-14) that exhibited an exceedance of cobalt and sodium respectively were re-sampled. The analytical results once again indicated an exceedance for cobalt and sodium respectively. Four (4) vertical delineation monitoring wells were installed in the bedrock. Two (2) groundwater samples were submitted for metals and inorganics and two (2) samples were submitted for sodium and chloride analysis. An exceedance was noted for sodium and chloride in BH16-14A.
- Based on the analytical results, WSP concluded the following:
  - *The delineation program determined the horizontal and vertical extents of EC and SAR impacts in soil across the Site.*
  - *The delineation program determined the north, south and west horizontal and vertical extents of the PAH impacts, however, the extent of PAH impacts to the east is still unknown.*
  - *The investigation determined the cobalt impacts identified in the shallow monitoring wells BH16-5 and BH16-14 did not extend to the deep monitoring wells installed adjacent to these wells at BH16-5A and BH16-14A.*
  - *The investigation found the sodium and chloride impacts identified in the shallow monitoring wells BH16-5, BH16-9 and BH16-15 did not extend to the deep monitoring wells installed adjacent to these wells BH16-5A, BH16-9A and BH16-15A.*
  - *Sodium and chloride impacts were found in the shallow monitoring well BH16-14 and in the deep well BH16-14A. These wells are in the vicinity of the former salt storage and these exceedances are likely attributed to this. The vertical extents of sodium and chloride impacts in groundwater are unknown at this time.*

## **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 on-Site to address the identified APECs.

### **3.2 Media Investigated**

The Phase Two ESA included the investigation of the Site soil and groundwater. As there were no surface water bodies on the Site, sediment sampling was not required.

### **3.3 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 (Appendix A). No significant deviations from the Sampling and Analysis Plan were reported, that could affect the sampling and data quality objectives for the Site.

### **3.4 Impediments**

Interior drilling within the footprint of the hospital was limited due to site access, time constraints, and associated costs.

Two (2) test pits (TP1 and TP3) from the northeast corner of the Site were eliminated from the program due to site access (exterior staircase and road access) and driveway heating systems.

Note that the former school building was not included as part of the scope of work for the Phase One and Two ESA.

No other physical impediments were encountered during the field investigation; and the entire property was accessible at the time of the investigation.



## 4. Investigation Method

### 4.1 General

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

- Request local utility locating companies (cable, telephone, gas, hydro) to mark any underground utilities present at the Site;
- Retain a private utility locating company to mark any underground utilities present in the vicinity of the test pit/borehole locations and to clear the individual test pit/borehole locations;
- Retain a geophysical surveying contractor to complete a geophysical survey of the Site to identify any subsurface anomalies that could indicate the presence of USTs or disturbed soil indicating excavation activity, and to mark any underground utilities present in the vicinity of the borehole locations located in the interior of the Site buildings;
- Advance twenty-four (24) boreholes; eighteen (18) of which were instrumented as groundwater monitoring wells including four (4) overburden monitoring wells, four (4) interior monitoring wells, eight (8) shallow bedrock monitoring wells, and two (2) vertical delineation monitoring wells;
- Advance eight (8) test pits using a rubber-tired backhoe;
- Collect representative soil samples from the boreholes for laboratory analysis of Metals, Electrical Conductivity (EC), Sodium Adsorption Ratio (SAR), Polycyclic Aromatic Hydrocarbons (PAHs), Petroleum Hydrocarbons (PHCs) including Benzene, Toluene, Ethylbenzene and Xylenes (BTEX) and Volatile Organic Compounds (VOCs), pH and 75 micron ( $\mu\text{m}$ ) sieve;
- Collect representative groundwater samples from the installed groundwater monitoring wells for laboratory analysis of dissolved metals, sodium, chloride, PAHs, PHCs and VOCs including BTEX;
- Prepare a report of the findings.

**Exp** personnel who conducted assessment work for this project included:

- Mr. Jon Charles, P.Geo. (Limited) (Qualified Person);
- Ms. Stephanie Hsia, B.Sc. (Project Manager);
- Ms. Katie McIsaac (Field Technician); and
- Ms. Jaclyn Hart, B.E.S. (Field Technician).

## 4.2 Borehole Drilling, Test Pitting and Soil Sampling

Prior to the commencement of excavation activities, the locations of underground public utilities including telephone, natural gas and electrical lines were determined and marked, where necessary, at the Site by locating companies. A private utility locating contractor was also retained to clear the individual test pit locations.

In September 2016, **exp** was retained by the Town of Oakville to complete a delineation program to address PHC impacts in groundwater (west side of the hospital) and PAH impacts in soil. The scope of work also included addressing any remaining APECs identified in **exp**'s draft Phase One ESA report.

Twenty-four (24) boreholes (BH/MW16-201 to BH/MW16-221 [including BH/MW16-203A], and BH/MW16-5B, BH/MW16-14B) were advanced between September and November 2016 by various drilling companies (Landshark, Landtech, and Pontil) using a Geoprobe 7822DT, CME 55 drill rig, CME 75 drill rig and a hand-held Pionjar for internal boreholes under the full-time supervision of **exp** field staff. The boreholes were advanced to delineate previous impacts identified in the Phase Two ESA report completed by WSP and additional APECs identified in the Phase One ESA completed by **exp** in October 2016.

The boreholes were advanced to completion depths between approximately 1.6 and 15.2 metres below ground surface (bgs). Petroleum-based greases or solvents were not used during drilling activities.

The approximate locations of the above-mentioned boreholes advanced on the Site are shown on Figure 4.

The soil sampling and handling was consistent with the procedures outlined in Section 4.2 and the Sampling and Analysis Plan presented in Appendix A. Field observations are summarized on the borehole logs provided in Appendix C.

Selected soil samples were submitted to Maxxam under transported/submitted under Chain of Custody documentation. A list of soil samples analyzed and corresponding rationale is provided in Table 2.

## 4.3 Test Pitting Program and Shallow Soil Sampling

In November 2016, eight (8) test pits were advanced across to Site to delineate and characterize the extent of fill material observed in the borehole / monitoring well program. In addition, one (1) test pit was completed to address the former machine shop located at the former school (TP9 - south portion of the Site). The test pits were advanced to completion depths ranging between approximately 3.0 and 5.5 m bgs. Petroleum-based greases or solvents were not used during test pitting activities.

In addition, three (3) surface soil samples (below landscaped areas) were collected using stainless steel hand-held tools to address possible particulate matter associated with a former incinerator on-Site.

The approximate locations of the test pits (TP2, TP4, TP5 to TP10) and surface soil samples (INC SS1 to SS3) advanced on the Site are shown on Figure 4.

The soil sampling during the completion of this Phase Two ESA was undertaken in accordance with the Sampling and Analysis Plan presented in Appendix A.

**Exp** continuously monitored the test pit excavation activities to record the physical characteristics of the soil, depth of soil sample collection and total depth of each test pit. Field observations of each test pit are provided in the test pit logs in Appendix B. Representative soil samples were recovered in the overburden of the test pits at regular intervals.

Soil sampling activities were conducted in accordance to **exp's** Standard Operating Procedures (SOPs). Dedicated nitrile gloves were used during sample handling. Soil samples were placed directly into pre-cleaned, laboratory-supplied glass sample jars/vials. The soil samples were placed in clean ice-packed coolers prior to and during transportation to the subcontract laboratory, Maxxam Analytics Inc. (Maxxam) of Mississauga, Ontario and were transported/submitted under Chain of Custody documentation. A list of soil samples analyzed and corresponding rationale is provided in Table 4.10.1.

Soil samples were subsequently delivered to **exp's** laboratory for visual, textural and olfactory classification.

#### 4.4 Field Screening Measurements

A portion of each soil sample collected from the test pits and boreholes was placed in a sealed “zip-lock” plastic bag and allowed to reach ambient temperature prior to field screening using a Minirae 3000 Photoionization Gas Detector (PID), calibrated with isobutylene. 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 vapors 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.

#### 4.5 Groundwater Monitoring Well Installation

Eighteen (18) groundwater monitoring wells were installed at the Site between September and November 2016 (refer to Figure 4).

The rationale and locations of the monitoring wells are detailed in the table below:

MW ID	Location on Site (Reynolds is situated west of the Site)	Rationale
BH16-5B	West side of former hospital	Vertical delineation of PHC impacts in groundwater
BH16-201 to 16-203, 203A	West and south side of former hospital	Horizontal and vertical delineation of PHC impacts in groundwater
BH16-210, BH16-211		

MW ID	Location on Site (Reynolds is situated west of the Site)	Rationale
BH16-214 to BH16-217		
BH16-213 and 214; BH16- 218 and 219	Southwest corner of former hospital	Interior horizontal delineation of PHC impacts in groundwater (overburden wells only)
BH16-14B	Southeast corner of Site (south side of parking garage)	Vertical delineation of Na / Cl impacts in groundwater
MW16-220	West side of former hospital (northwest corner)	Former UST location (overburden monitoring well)
MW16-221, MW16-222	Mid-portion of Site	To address hospital as a registered waste generator

The monitoring wells were installed in general accordance with the Ontario Water Resources Act - R.R.O. 1990, Regulation 903 - Amended to O. Reg. 128/03 and were installed by various licensed well contractors (Landshark, Landtech and Pontil) using a Geoprobe 7822DT, CME 55 drill rig, CME 75 drill rig and a hand-held Pionjar for the internal boreholes. Petroleum-based greases or solvents were not used during well installation activities.

The monitoring wells consisted of a 3 m length of 50 mm diameter PVC screen and an appropriate length of PVC riser pipe. The annular space around the wells were 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 aboveground protective well casings.

The current property owners are considered to be the owners of the wells installed in the specific areas of the Site ("well owner", Section 1.0, Regulation 903). 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.

## 4.6 Field Measurement of Water Quality Parameters

Prior to and during groundwater sampling activities, field parameters (temperature, pH, and electrical conductivity) were measured in the purged water from the groundwater monitoring wells using a Horiba water quality meter. The meter was calibrated by Pine Environmental Limited prior to the fieldwork using standard pH and conductivity solution.

## 4.7 Groundwater Sampling

Groundwater samples were collected from the newly installed monitoring wells and several existing monitoring wells between September and November 2016. Groundwater samples were submitted to Maxxam for chemical analysis (see Table 4). Groundwater samples that were analyzed for metals

were field filtered using 0.45 micron inline filters prior to filling the laboratory supplied bottle. Preservatives were provided in the laboratory supplied bottles, where required. Dedicated nitrile gloves were utilized during sample handling.

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.

## 4.8 Sediment Sampling

As there were no surface water bodies on the Site, sediment sampling was not required.

## 4.9 Analytical Testing

The contracted laboratory selected to perform chemical analysis on select soil and water samples was Maxxam Analytics. Maxxam is an accredited laboratory under the Standards Council of Canada/Canadian Association of Laboratory Accreditation (CALA) (Accredited Laboratory No. 97) in accordance with ISO/IEC 17025:1999- "General Requirements for the Competence of Testing and Calibration Laboratories".

### 4.9.1 Soil Analysis

Soil samples, including QA/QC field duplicate samples, were analyzed from the boreholes and test pits during the analytical program. The analytical testing conducted on the soil samples and corresponding submission rationale is summarized in Table 2.

### 4.9.2 Groundwater Analysis

Groundwater samples, including QA/QC field duplicate samples were analyzed during the initial analytical program. The analytical testing conducted on the representative groundwater samples and corresponding submission rationale is summarized in Table 4.

## 4.10 Residue Management Procedures

The drill cuttings from the monitoring well installation and purged water from groundwater sampling were stored on-Site in labeled drums.

## 4.11 Elevation Survey

**Exp** staff surveyed the test pit, borehole and monitoring well locations with respect to an arbitrary temporary bench marks (TBM) described as the north corner of the manhole located west of BH16-5A, assigned an elevation of 100 m.

The elevations of the test pits and boreholes and presented on the test pit and borehole logs. The installation details of the installed monitoring wells are summarized in Table 3.

#### **4.12 Quality Assurance and Quality Control Measures**

Quality Assurance/Quality Control (QA/QC) measures were integral components of the field sampling and laboratory analytical programs undertaken for this project. The field QA/QC measures consisted of the use of dedicated sampling equipment, the implementation of decontamination procedures, the use of laboratory supplied analytical test group specific sampling containers and preservatives as required, the collection of duplicate samples, Chain of Custody protocols and sample preservation following analytical test group temperature and holding time requirements.

Details regarding quality assurance measures taken in the field, including instrument calibration, decontamination procedures, use of dedicated equipment, sample storage and Chain of Custody documentation are provided in Section 4 above.

Maxxam'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.

Field duplicate soil samples, and field duplicate groundwater samples, as well as laboratory trip blanks were analyzed as part of this investigation. Details regarding the results of the QA/QC program are presented in Section 5.10.

## 5. Review and Evaluation

### 5.1 Geology

The detailed soil profiles encountered during this investigation are provided on the attached test pit logs and borehole logs (Appendix B). Boundaries of soil indicated on the log sheets are intended to reflect transition zones for the purpose of environmental assessment and should not be interpreted as exact planes of geological change.

The general stratigraphy at the Site, as observed in the boreholes, consisted of silty sand / sandy silt overlying silty clay. Fill material was encountered in several locations across the Site. A brief description of the soil stratigraphy at the Site, in order of depth, is summarized in the following sections.

**Fill** - Fill material was encountered west of the former Oakville Hospital building and in the footprint of the former school (south portion of Site) and consisted of sand and gravel. The fill stratum extended to a maximum depth of approximately 3.8 m below existing ground surface in the south portion of the Site.

**Silty sand** - Native or reworked silty sand was encountered from surface (or below a thin layer of asphalt) in the majority of the site, and below the footprint of the fill material described above. This deposit was generally reddish brown in colour and moist.

**Silty clay** - A silty clay deposit was encountered at most locations across the Site. This deposit was brown to grey in colour until bedrock was encountered.

**Weathered shale** - Grey weathered shale was encountered across the Site. The bedrock appears to undulate between 4.0 to 5.0 m bgs, although in some areas the bedrock is not encountered at these depths.

### 5.2 Ground Water Elevations and Flow Direction

Groundwater was measured in the monitoring wells at least 24 hours following development and sampling. The depth to groundwater ranged between approximately 0.9 and 10 m bgs. Groundwater elevations relative to ground surface are summarized below in Table 5A and 5B.

Based on the groundwater data collected on November 22, 2016, the inferred local groundwater flow direction is generally to the southwest (true south). However, it is noted that the direction of localized groundwater flow may be influenced by the presence of utilities. The measured groundwater flow direction may not be representative of the regional groundwater flow.

### 5.3 Soil Texture

A review of the Phase Two ESA completed by WSP in 2016 indicated that Table 2 SCS for coarse-textured soil was selected as the appropriate standard. WSP did not complete a grain sized analysis as part of their Phase Two ESA.

Two soil samples submitted from BH16-5B were analysed for grain size (surface and subsurface). The results of the analysis indicate coarse-textured soil for the surface sample and fine-textured soil for the subsurface. For consistency purposes and utilizing the most stringent standards, **exp** selected Table 2 SCS for Residential/Parkland/Institutional property use with coarse-textured soil. A copy of the analysis is included in Appendix F.

### 5.4 Soil Field Screening

The soil vapour measurements in the recovered soil samples ranged between 0 and 3.1 parts per million (ppm). The vapour readings are presented on the borehole logs and test pit logs in Appendix B.

### 5.5 Soil Quality

In accordance with the authorized scope of work, chemical analyses were performed on selected soil samples recovered from the boreholes and test pits. The selection of representative “worst case” soil samples from each borehole and test pit was based on visual evidence of impacts or highest potential for impacts based on historic Site use. The summarized analytical data are presented in Appendix D. Copies of the laboratory Certificates of Analysis for the tested soil samples are provided in Appendix E.

The Table 2 SCS criteria are applicable if soil pH is in the range of 5 to 9 for surface soil (less than 1.5 m below soil surface) and 5 to 11 for subsurface soil (greater than 1.5 m below soil surface). The scope of work did not include pH analysis.

#### 5.5.1 PHCs including BTEX

Twenty-two (22) soils samples, including four (4) QA/QC field duplicate, were analyzed for PHCs including BTEX. The results of the analysis together with the applicable Table 2 SCS are presented in Table D1 in Appendix D.

The detected concentrations of PHCs in the soil samples analyzed were below the applicable Table 2 SCS. The laboratory Reportable Detection Limits (RDLs) were below the Table 2 SCS.

#### 5.5.2 VOCs

Two (2) soils samples were analyzed for VOCs. The results of the analysis together with the applicable Table 3 SCS are presented in Table D2 in Appendix D.



VOCs were not detected above the laboratory RDLs in the soil samples analyzed. The laboratory RDLs were below the Table 2 SCS.

### 5.5.3 PAHs

Thirty (30) soil samples, including three (3) QA/QC field duplicates, were analyzed for PAHs. The results of the analysis together with the applicable Table 2 SCS are presented in Table D3 in Appendix D.

The concentrations of PAHs in a number of the analyzed soil samples collected from within the footprint of the former school (south portion of the Site) were above the applicable Table 2 SCS. PAHs in the remaining samples were either detected below the Table 2 SCS or were not detected above the laboratory RDLs. The laboratory RDLs were below the Table 2 SCS.

### 5.5.4 Metals and Inorganics

Nineteen (19) soil samples, including two (2) QA/QC field duplicates, were analyzed for metals and inorganics. The results of the analysis together with the applicable Table 2 SCS are presented in Table D4 in Appendix D.

The values for EC and SAR were found to be above the Table 2 SCS in the soil sample submitted from borehole BH16-220 located on the west side of the hospital building. The metals and inorganic parameters in the remaining analyzed soil samples were either detected below the Table 2 SCS or were not detected above the laboratory RDLs. The laboratory RDLs were below the Table 2 SCS.

## 5.6 Groundwater Quality

The summarized analytical data are presented in Appendix D. Copies of the laboratory Certificates of Analysis for the groundwater samples are provided in Appendix E.

A sheen was observed in the purge water from BH16-210. A review of the analytical results indicated an exceedance for PHCs.

No other evidence of free product (i.e. visible film or sheen), or odour was observed during well purging and groundwater sampling.

### 5.6.1 PHCs

Twenty-two (22) water samples, including four (4) QA/QC field duplicate and one (1) QA/QC laboratory trip blank, were analyzed for PHCs. The results of the analysis together with the applicable Table 2 SCS are presented in Table D6 in Appendix D.

The concentrations of PHC F3 and F4 from BH/MW16-210 (south of the former hospital building) were above the applicable Table 2 SCS. PHCs in the remaining groundwater samples analyzed were either

below the Table 2 SCS or were not detected above RDLs. The laboratory RDLs were below the Table 2 SCS.

#### 5.6.2 VOCs

One (1) groundwater sample was analyzed for VOCs. The results of the analysis together with the applicable Table 2 SCS are presented in Table D7 in Appendix D.

VOCs within the groundwater sample analyzed were not detected above the laboratory RDLs. The laboratory RDLs were below the Table 2 SCS.

#### 5.6.3 Metals and Inorganics

Eighteen (18) groundwater samples, including two (2) QA/QC field duplicates, were analyzed for metals and inorganics. The groundwater samples included re-sampling two (2) existing monitoring wells (BH16-14, BH16-14A). The results of the analysis together with the applicable Table 2 SCS are presented in Table D8 in Appendix D.

The detected concentrations of cobalt in BH16-14 and BH 16-144 (duplicate of MW16-14), sodium and chloride in BH16-14A, MW16-14B, MW16-144B (duplicate of MW16-14B), and MW16-220, and sodium in MW16-221, were above the Table 2 SCS. Metals and inorganics parameters in the remaining samples analyzed were either detected below the Table 2 SCS or were not detected above the laboratory RDLs. The laboratory RDLs were below the Table 2 SCS.

#### 5.6.4 PAHs

One (1) groundwater sample was analyzed for PAHs. The results of the analysis together with the applicable Table 2 SCS are presented in Table D10 in Appendix D.

PAHs were not detected above the laboratory RDLs. The laboratory RDLs were below the Table 2 SCS.

## 5.7 Sediment Quality

As there were no surface water bodies on the Site, sediment sampling was not conducted.

## 5.8 Quality Assurance and Quality Control Results

As part of this Phase Two ESA, the following field duplicate soil samples were submitted for analysis:

- two (2) for metals and inorganics
- three (3) for PAHs, and
- four (4) for PHCs.

As part of this Phase Two ESA, the following field duplicate groundwater samples were submitted for analysis:

- two (2) for metals; and
- four (4) for PHCs.

The laboratory quality assurance program included the analysis of laboratory duplicate (replicate) samples, method blanks, spiked blanks, spiked samples and samples of reference materials in accordance with the Analytical Protocol. These analytical results comprise portions of the Certificates of Analysis in Appendix D.

One (1) laboratory-prepared trip blank was transported in the field during the groundwater sampling and re-analyzed for PHCs. PHCs were not detected in the blank indicating that the field sampling procedures did not contribute to the addition of PHCs.

The results of all QA/QC analysis provide confidence in the laboratory results obtained during this investigation.

## 6. Phase Two Conceptual Site Model

This section presents the Phase Two Conceptual Site Model (P2CSM), as it relates to the Site designated as 327 Reynolds Street, 291 Reynolds Street and 348 Allan Street providing a narrative, graphical and tabulated description integrating information related to the Site geologic and hydrogeologic conditions, areas of potential environmental concern/potential contaminating activities, the presence and distribution of potential contaminants of concern, contaminant fate and transport, and potential exposure pathways. The P2CSM was completed in accordance with Ontario Regulation 153/04, as amended (O.Reg.153/04), as defined by the Ontario Ministry of the Environment and Climate Change (MOECC).

### 6.1 Introduction

The Site, known as 327 Reynolds Street, 291 Reynolds Street and 348 Allan Street, and recognized as the Former Oakville Hospital Lands, is situated on the east side of Reynolds Street and the west side of Allan Street, in Oakville, Ontario (Figures 1 and 2). The Site measures approximately 5.7 hectares (14 acres). At the time of the Site visit, the Site was occupied multiple buildings including the former Oakville Trafalgar Memorial Hospital, the Helen Lawson building, a multi-level parking garage and a vacant former school building.

The surrounding properties within the Phase One Environmental Site Assessment (ESA) study area predominantly consists of residential dwellings, a retirement home, and several commercial establishments. The Phase One ESA study area and a Surrounding Land Use Plan are shown on Figure 2.

Refer to Table 1 for the Site identification information.

**Table 1:** Site Identification Information

<b>Civic Address</b>	327 and 291 Reynolds Street, 348 Allan Street, Oakville, Ontario
<b>Current Land Use</b>	Institutional (former hospital and school)
<b>Proposed Land Use</b>	Residential
<b>Legal Description</b>	Part Of Park Lots H, P, Q, R, S, T, U & V, Plan 1, And Part Of Lawson Street, Plan 1, Closed By By-law 642592 Designated As Parts 1, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27 & 28, 20r-20164 And Parts 11, 12 & 13, 20r-14568; S/t 650174; S/t 685689 Together With An Easement Over Parts 3 & 6, 20r-20164 As In Hr1287336 Subject To An Easement Over Parts 9, 14, 21, 22, 20r-20164 In Favour Of Parts 2 To 7, 20r-20164 As In Hr1287336 Subject To An Easement Over Part 28, 20r-20164 In Favour Of Parts 2 To 7, 20r-20164 As In Hr1287336 Subject To An Easement Over Parts 12, 14, 15, 18, 24, 20r-20164 In Favour Of Parts 2 To 7, 20r-20164 As In Hr1287336 Subject To An Easement Over Parts 9, 10, 26, 20r-20164 In Favour Of Parts 2 To 7, 20r-20164 As In Hr1287336 Subject To An Easement Over Parts 9, 17, 18, 19, 20r-20164 In Favour Of Parts 2 To 7, 20r-20164 As In Hr1287336 Subject To An Easement In Gross Over Parts 9, 10, 26 20r-20164 As In Hr1285154 Subject To An Easement In Gross Over Parts 12, 14, 15, 18, 24, 20r-20164 As In Hr1285778 Town Of Oakville

<b>Property Identification Number (PIN)</b>	248080-073 (LT)
<b>Assessment Roll Number (ARN)</b>	South side: 240104005005400 North side: 240104005006300
<b>Universal Transverse Mercator (UTM) coordinates</b>	NAD83 17T 607360E 4812027N
<b>Site Area</b>	5.7 hectares (14 acres)
<b>Property Owners, Owner Contact and Address</b>	The Town of Oakville 1225 Trafalgar Road Oakville, ON L6H 0H3

## 6.2 Areas of Potential Environmental Concern (APECs)

### 6.2.1 Areas of Potential Environmental Concern (APECs)

Based on the evaluation of the PCAs located within the Phase One Study Area, eighteen (18) areas of potential environmental concern (APECs) were identified, as presented in Table 2.

**Table 2: Areas of Potential Environmental Concern**

<b>Area of Potential Environmental Concern (APEC)<sup>(1)</sup></b>	<b>Location of APEC on Phase One Property</b>	<b>Potentially Contaminating Activity (PCA)<sup>(2)</sup></b>	<b>Location of PCA (on-Site or off-Site)</b>	<b>Contaminants of Potential Concern<sup>(3)</sup></b>	<b>Media Potentially Impacted (Groundwater, soil and/or sediment)</b>
<b>APEC 1:</b> Presence of two (2) underground storage tanks on west side of building addressed as 327 Reynolds St.	Northwest corner of Site	28: Gasoline and Associated Products Storage in Fixed Tanks	On-Site	PHCs, BTEX	Soil and Groundwater
<b>APEC 2:</b> Two (2) former fuel oil USTs on west side of building addressed as 327 Reynolds St.	Northwest corner of Site	28: Gasoline and Associated Products Storage in Fixed Tanks	On-Site	PHCs, BTEX	Soil and Groundwater
<b>APEC 3:</b> Potential poor fill quality in area of former fuel oil USTs	Northwest corner of Site	30: Importation of Fill Material of Unknown Quality	On-Site	Metals	Soil
<b>APEC 4:</b> Presence of collection pit storage tank west of the building	West side of Site	8: Chemical Manufacturing, Processing and Bulk Storage	On-Site	PHCs, BTEX, Metals	Soil and Groundwater

Area of Potential Environmental Concern (APEC) <sup>(1)</sup>	Location of APEC on Phase One Property	Potentially Contaminating Activity (PCA) <sup>(2)</sup>	Location of PCA (on-Site or off-Site)	Contaminants of Potential Concern <sup>(3)</sup>	Media Potentially Impacted (Groundwater, soil and/or sediment)
addressed as 327 Reynolds St.					
<b>APEC 5:</b> Former PCB storage site listing for 327 Reynolds St.	Northeast corner of Site	Not listed: PCB storage Site	On-Site	PCBs	Soil
<b>APEC 6:</b> Presence of underground storage tank / collection tank on east side of building addressed as 327 Reynolds St.	Mid-portion of Site	28: Gasoline and Associated Products Storage in Fixed Tanks	On-Site	PHCs, BTEX	Soil and Groundwater
<b>APEC 7:</b> Presence of diesel AST in the mechanical room.	West portion of Site	28: Gasoline and Associated Products Storage in Fixed Tanks	On-Site	PHCs, BTEX	Soil and Groundwater
<b>APEC 8:</b> Registered waste generator of various waste streams including halogenated solvents	Northwest portion of Site	58: Waste Disposal and Waste Management, including thermal treatment, landfilling, and transfer of waste, other than use of biosoils as soil conditioners	On-Site	PHCs, BTEX VOCs Metals and As, Se, Sb, Hg, EC, SAR	Soil and Groundwater
<b>APEC 9:</b> Potential presence of fuel tank at former high school (presence of fill pipe, east side-291 Reynolds St)	Southwest portion of Site (east side of building)	28: Gasoline and Associated Products Storage in Fixed Tanks	On-Site	PHCs, BTEX	Soil and Groundwater
<b>APEC 10:</b> Potential presence of fuel tank at former high school (presence of fill	Southwest portion of Site (west side of building)	28: Gasoline and Associated Products Storage in Fixed Tanks	On-Site	PHCs, BTEX	Soil and Groundwater

Area of Potential Environmental Concern (APEC) <sup>(1)</sup>	Location of APEC on Phase One Property	Potentially Contaminating Activity (PCA) <sup>(2)</sup>	Location of PCA (on-Site or off-Site)	Contaminants of Potential Concern <sup>(3)</sup>	Media Potentially Impacted (Groundwater, soil and/or sediment)
pipe, west side-291 Reynolds St)					
<b>APEC 11:</b> Registered waste generator of various waste streams including halogenated solvents (Oakville High School, 291 Reynolds St)	Southwest portion of Site	58: Waste Disposal and Waste Management, including thermal treatment, landfilling, and transfer of waste, other than use of biosoils as soil conditioners	On-Site	PHCs, BTEX VOCs Metals and As, Se, Sb, Hg, EC SAR	Soil and Groundwater
<b>APEC 12:</b> Potential presence of fill material in area of former building footprint (Oakville High School, 291 Reynolds St)	Southwest portion of Site	30: Importation of Fill Material of Unknown Quality	On-Site	Metals PAHs	Soil
<b>APEC 13:</b> Former shop class area associated with former Oakville High School	Southwest corner of Site	Not listed: Former shop class area	On-Site	PHCs, BTEX	Soil
<b>APEC 14:</b> Application of de-icing salts on asphalt covered surfaces on Site	Entire Site (only asphalt covered surfaces)	Not listed: Application of de-icing salts	On-Site	EC, SAR (Soil) Na, Cl (Groundwater)	Soil and Groundwater
<b>APEC 15:</b> Potential presence of fill material	Entire Site (only asphalt covered surfaces)	30: Importation of Fill Material of Unknown Quality	On-Site	Metals PAHs	Soil
<b>APEC 16:</b> Presence of brine UST on west side of former Hospital building	West portion of Site	8: Chemical Manufacturing, Processing and Bulk Storage	On-Site	EC, SAR (Soil) Na, Cl (Groundwater)	Soil and Groundwater

Area of Potential Environmental Concern (APEC) <sup>(1)</sup>	Location of APEC on Phase One Property	Potentially Contaminating Activity (PCA) <sup>(2)</sup>	Location of PCA (on-Site or off-Site)	Contaminants of Potential Concern <sup>(3)</sup>	Media Potentially Impacted (Groundwater, soil and/or sediment)
<b>APEC 17:</b> Presence of smoke stack / chimney on Site building	Landscaped areas of the Site	Not listed – presence of smoke stack / chimney	On-Site	PAHs Metals	Soil
<b>APEC 18:</b> Spill incident from off-Site UST (west of Site-358 Reynolds)	Off-Site (west)	Not listed: Spill incident	Off-Site	PHCs, BTEX VOCs	Groundwater

(1) Potentially contaminating activity means a use or activity set out in Column A of Table 2 of Schedule D (O.Reg.153/04, as amended) that is occurring or has occurred in a Phase One Study area.

Refer to Figure 4 for the location of the APECs.

#### 6.2.2 Underground Utilities

Potable water is provided to the hospital building and Helen Lawson building through the municipal water distribution system and sanitary wastewater is discharged to the municipal sewer system. Electrical services to the hospital building and Helen Lawson building is supplied by local Hydro.

The former school building was not accessible at the time of the Site reconnaissance; it is likely the services have been disconnected.

A natural gas line is situated at the northwest corner of the Site building (former hospital), along the west side of the building.

Cable and bell lines are situated within the asphalt parking south of the former hospital building and west of the parking garage. Bell lines are also situated in the asphalt parking areas south of the parking garage and east of the former school.

Overhead hydro was also observed along Reynolds Street (west side of Site).

A review of the historical information and previous reports indicated that an underground steam distribution piping tunnel connects the former hospital building and Lawson Building.

Given that underground utilities are located on the Site, there is the potential for the distribution and transport of contaminants via the underground utilities.



## 6.3 Physical Site Description

### 6.3.1 Stratigraphy

The Site is located in the physiographic region characterized by Shale Plain. The surficial geology of the Site and surrounding areas are comprised of lacustrine and outwash sand. South of the Site surrounding Sixteen Mile Creek is comprised of bedrock (shale and dolomite). The bedrock in the general area was part of a group belonging to the Georgian Bay Formation, Blue Mountain Formation, Billings Formation, Collingwood Member and Eastview Member consisting of shale, limestone, dolostone and siltstone. According to previous environmental reports, the depth to bedrock for the Site was encountered between 3.7 to 6.7 m below ground surface (bgs).

The general stratigraphy at the Site, as observed in the boreholes, consisted of silty sand / sandy silt overlying silty clay. Fill material was encountered in several locations across the Site. A brief description of the soil stratigraphy at the Site, in order of depth, is summarized in the following sections.

**Fill** - Fill material was encountered west of the former Oakville Hospital building and in the footprint of the former school (south portion of Site) and consisted of sand and gravel. The fill stratum extended to a maximum depth of approximately 3.8 m below existing ground surface in the south portion of the Site.

**Silty sand** - Native or reworked silty sand was encountered from surface (or below a thin layer of asphalt) in the majority of the site, and below the footprint of the fill material described above. This deposit was generally reddish brown in colour and moist.

**Silty clay** - A silty clay deposit was encountered at most locations across the Site. This deposit was brown to grey in colour until bedrock was encountered. 4.0 m

**Weathered shale** - Grey weathered shale was encountered across the Site. The bedrock appears to undulate between 4.0 to 5.0 m bgs, although in some areas the bedrock is not encountered at these depths.

### 6.3.2 Hydrogeology

The Site is relatively flat with no discernible slopes. Sixteen Mile Creek is located approximately 225 m west of the Site. Based on the information provided on the topographic map, regional groundwater is expected to flow to the south / southwest. Based on the groundwater data collected from across the Site, the inferred local groundwater flow direction is generally to the southwest (true south). However, **exp** notes that the direction of localized groundwater flow may be influenced by the presence of underground utilities.

Refer to Table 4 for the Site hydrogeology characteristics based on groundwater monitoring observations.

**Table 4:** Site Hydrogeology Characteristics

Parameter	Observations
Depth to Groundwater	0.96 m bgs (basement) to 4.22 m bgs (overburden) 2.73 m bgs (basement) to 10 m bgs (bedrock)
Groundwater Elevation	88.59 m AMSL to 88.17 m AMSL 89.08 m AMSL to 82.48 m AMSL
Direction of Groundwater Flow	Southwest (true south)

### 6.3.3 Site Sensitivity

The Site 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 Site is sensitive, as presented in Table 5.

**Table 5: Site Sensitivity**

Sensitivity	Classification	Does Sensitivity Apply to Site?
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 site 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

### 6.3.4 Land Use

A review of the historical records indicated that 327 Reynolds Street, the hospital building, has occupied the Site since the late 1940s with additions constructed between 1950 and early 2000s. The multi-level parking garage located at 327 Reynolds Street was constructed in the late 1970s on the central portion of the Site. The former school building located at 291 Reynolds Street, has occupied the Site as Oakville Trafalgar High School since 1908 with additions constructed in the 1950s. Additions were demolished in the late 1990s and only the original building remains on-Site. The Helen Lawson building, located at 348 Allan Street, was constructed in the 1960s and the building footprint remains unchanged.

Asphalt parking lots surround the Site buildings with landscaped areas throughout the Site.

This RSC will be used to support a future residential development, community centre and Parkland area on the Site.

## 6.4 Contaminants of Concern

The Table 2: Full Depth Generic SCS in a Potable Groundwater Condition for Residential Property Use and coarse-textured soil were considered applicable for determining contaminants of concern (COCs), based on the reasons presented in Table 6.

**Table 6: Site Condition Standards**

Descriptor	Site-Specific Condition
Section 41 Site Sensitivity	<p>Not applicable</p> <ul style="list-style-type: none"> <li>○ The soil at the Site has pH values between 5 and 9 for surficial soil; and, between 5 and 11 for subsurface soil.</li> <li>○ The Site is not located within, or adjacent to, an area of natural significance, or part of such an area; and, the Site does not include land that is within 30 m of an area of natural significance, or part of such an area.</li> </ul>
Section 43.1 Site Sensitivity	<p>Not applicable</p> <ul style="list-style-type: none"> <li>○ The Site is not considered a shallow soil property, based on the recovered soil cores, which indicated that more than two-thirds of the Site has an overburden thickness in excess of 2 m; and,</li> <li>○ The Site is not located within 30 m of a surface water body; the nearest surface water body, Sixteen Mile Creek, is located approximately 225 m west of the RSC property boundary.</li> </ul>
Ground Water	<p>Non-Potable</p> <ul style="list-style-type: none"> <li>○ The Site is supplied by the Town of Oakville water system.</li> </ul>
Land Use	<p>Residential</p> <ul style="list-style-type: none"> <li>○ The future use of the Site will be residential / community land use</li> </ul>
Soil Texture	<p>Coarse</p> <ul style="list-style-type: none"> <li>○ The predominant texture of soils at the Site is considered to be coarse, as per grain size analysis results</li> </ul>

Based on the reported analytical results, the following parameters were detected at concentrations above the applicable Table 3 SCS:

- Soil:
  - Select PAHs
  - EC and SAR
- Groundwater
  - PHCs
  - Cobalt
  - Sodium and Chloride

As noted previously, a remediation program in accordance with O.Reg.153/04 has been undertaken and the impacts identified in soil have been removed from the Site.

## 6.5 Contaminant Fate and Transport

### 6.5.1 Soil Media

The soil COCs found at the Site comprised of select PAHs (anthracene, benz[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, dibenz[a,h]anthracene, fluoranthene and indeno[1,2,3-cd]pyrene), EC and SAR.

Based on the former activities on and within the vicinity of the Site, the PAH impacts in soil are likely associated with the footprint for the former school (south portion of Site) and the EC/SAR impacts are likely associated with the de-icing operations on the asphalt surfaces of the Site.

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 volatile chemical constituents (i.e. moderately high Henry's Law Constant and saturated vapour pressure), anthracene, benz(a)anthracene and fluoranthene can volatilize into soil gas and be transported through soil gas under the influence of pressure (e.g. water table fluctuations) and partial pressure gradients in the unsaturated zone. The transport of volatile COCs can also be retarded by sorption on to organic material that may be associated with the soil mineral particles through the overburden material. As non-volatile chemical constituents, PHC F3 and F4 may undergo abiotic or biotic chemical reactions associated with the soil mineral particles and the micro-organisms present in the overburden material. It is possible for EC and SAR to desorb from soil particles, particularly in the vadose zone, and dissolve in groundwater to form sodium and chloride ions.

As a result of the various natural attenuation mechanisms in the soil environment, the concentrations of COCs in soil are expected to reduce at the Site in the long-term.

There are no known preferential pathways for contaminants present in soil media.

### 6.5.2 Groundwater Media

The groundwater COCs found at the Site comprised of PHCs, cobalt, sodium and chloride.

Based on the former activities on and within the vicinity of the Site, the PHC impacts in groundwater may be associated with former heating oil or lubricants utilized in the hospital mechanical rooms and the sodium / chloride exceedances are likely associated with de-icing operations at the Site (and possible historic salt storage area in vicinity of BH16-14B). The source for the exceedance in cobalt is not known.

A variety of physical, chemical and biochemical mechanisms affect the fate and transport of the potential COCs in groundwater, the contribution of which is dependent on the groundwater conditions and the chemical/physical properties of the COCs. Relevant fate and transport mechanisms are advection, dispersion, molecule diffusion, phase partitioning (including adsorption and ion exchange), as well as chemical and biochemical reaction. The relevant physical properties are water solubility, saturated vapour pressure, Henry's Law Constants (as a measure of the potential for partitioning into the vapour phase) and, the sorption partition coefficient (as a measure of the potential for surface interactions or solid phase).

Concentrations of the groundwater COCs are reduced and mass velocities retarded while being transported along the groundwater flow paths by the combined effects of mechanical dispersion and molecular diffusion. Molecular diffusion is mixing arising from concentration gradients and differences in molecule thermal energies and velocities. Mechanical dispersion is mixing arising from differences in fluid velocities both within pores as a result of frictional effects and along flow paths due to differences in pore geometry and orientation. The greater contribution is provided by mechanical dispersion by as much as four (4) orders of magnitude as compared to molecular diffusion. Concentrations of the COCs are also reduced by bulk mixing of groundwater up-gradient of the source zone with the source zone groundwater.

While migrating along groundwater flow paths, COC groundwater concentrations can be reduced by the volatilization into the air-filled pore spaces of the unsaturated overburden and fill materials. This mechanism is most relevant to the aliphatic fractions of PHC F2, which are characterized by moderate vapour pressures/Henry's Law constants and therefore greater tendency for vapour phase partitioning. As a result, and under optimal conditions, these compounds may partition from soil or groundwater into soil gas in the soil unsaturated zone and potentially be transported through soil gas under the influence of pressure and partial pressure gradients to outdoor air or the indoor air of an overlying building. The heavier aromatic PHC fractions F3 and F4 has almost negligible vapour pressures and therefore limited tendency for vapour phase partitioning.

The movement of COCs can be retarded by sorption on to organic carbon associated with soil mineral particles. The degree of retardation is dependent on the organic carbon content of the soil mineral particles and the magnitude of the organic carbon partition coefficient of the chemical. In the case of sand, this mechanism may not be significant due to the limited organic material that may be present. However, the lithology of the Site is heterogeneous, with varying instances of silt and silty clay; where these materials are encountered within the aquifer unit, the movement of chemicals with moderate to high organic carbon partition coefficients may be retarded. Given that PHCs have high organic carbon partition coefficients, the movement of these COCs may be retarded as groundwater passes through high organic content materials.

For metals, the movement of COCs in groundwater can also be retarded by sorption and ion exchange mechanisms depending on the surface characteristics of the soil mineral particles and the exchangeable cations present. At slightly alkaline soil pH metal ions may be removed from solution by exchange reactions at cationic exchange sites on the soil mineral particle surfaces. Metal ions can also be removed from the solution through ionic and non-ionic binding interactions with iron and

aluminum oxyhydroxide precipitates. These species can also be immobilized through binding interactions with complexing agents and precipitate formation. As a result, due to retardation effects by sorption/ion exchange and other mechanisms, a significantly lower contaminant velocity than the linear groundwater velocity can be expected at the Site.

The constituents can potentially be degraded by chemical and biochemical reactions in the groundwater environment.

As a result of the physical and chemical processes affecting the fate and transport of COCs at the Site, the mass velocities of these chemical constituents can be expected to be much less than the linear groundwater velocity. Furthermore, the concentrations of COCs in groundwater are expected to reduce at the Site in the long-term.

The preferential pathways for contaminants present in groundwater media include various underground utilities, building footings and surface features.

### 6.5.3 Preferential Pathways

The preferential pathways for contaminants present in soil and groundwater media include various underground utilities, building footings and subsurface features.

Underground utilities were identified across the Site, as described in Section 6.2.2. As such, there is a potential for underground utilities to affect the distribution and transport of groundwater and soil vapour contaminants located on the Site.

Details on the preferential pathways for the impacts are summarized in Table 9.

**Table 9:** Preferential Pathways

<p>G. anything known about migration of the contaminants present on, in or under the phase two property at a concentration greater than the applicable site condition standard away from any area of potential environmental concern, including the identification of any preferential pathways,</p>	<p>Potable water is provided to the hospital building and Helen Lawson building through the municipal water distribution system and sanitary wastewater is discharged to the municipal sewer system. Electrical services to the hospital building and Helen Lawson building is supplied by local Hydro.</p> <p>A natural gas line is situated at the northwest corner of the Site building (former hospital), along the west side of the building.</p> <p>Cable and bell lines are situated within the asphalt parking south of the former hospital building and west of the parking garage. Bell lines are also situated in the asphalt parking areas south of the parking garage and east of the former school.</p> <p>The former school building was not accessible; and it is likely the services have been disconnected.</p>
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### 6.5.4 Climatic Conditions

It is noted that climatic or meteorological conditions may influence the distribution and migration of COCs at the Site. Seasonal fluctuations in groundwater due to cyclical increases and decreases in precipitation can affect groundwater recharge. Groundwater levels may be elevated in the spring and

fall due to snow melt and/or increases in precipitation; and, groundwater levels may be lowered in the winter and summer due to snow storage and/or increased evaporation. Such fluctuations can increase the vertical distribution of COCs in the capillary zone, as well as alter the direction of groundwater flow paths based on changes in infiltration rates. However, based on the conditions observed at the Site and the observed depth of groundwater, it is not anticipated that the climatic or meteorological changes will result in significant alterations in the distribution of contaminants.

Details on the climatic or meteorological conditions are summarized in Table 10.

**Table 10:** Climatic or Meteorological Conditions

H. climatic or meteorological conditions that may have influenced distribution and migration of the contaminants, such as temporal fluctuations in ground water levels, and	Some groundwater fluctuations are expected at the Site, but not significant variation
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#### 6.5.5 Soil Vapour Migration

Given the presence of volatile COCs in soil and groundwater, soil vapour intrusion is a potential contaminant transport mechanism for volatile COCs in soil and groundwater. Intrusion of vapour-phase contaminants into the indoor air occurs from volatilization of chemicals from the dissolved or non-aqueous phases in the subsurface.

The relevant mechanisms for soil vapour intrusion are soil gas advection and vapour migration from diffusion through the building foundation. Soil gas advection is the dominant mechanism when the pressure gradient is greater than 1 Pascal (MOECC 2011b), as is the case in many commercial buildings. Soil gas advection can occur through any unsealed entry points, cracks or openings present in the building foundation.

Soil vapour flow is greatest within 1 m to 2 m below the building foundation (MOECC 2011b); as such, the soil permeability of backfill beneath the building foundation will affect the soil vapour flow rate. Furthermore, pressure gradients (i.e. depressurization of the indoor airspace of the building) created by temperature differences between indoor and outdoor air may affect soil gas flow rate by creating a “stack effect” where, as warm air rises, it is replaced by air infiltrating through doors and windows, and soil gas migrating through the foundation.

As such, in the event that the vapour intrusion pathway is present there may be potential for unacceptable health risks to building occupants via inhalation of indoor air

Details on soil vapour migration are summarized in Table 11.

**Table 11:** Soil Vapour Migration

1. if applicable, information concerning soil vapour intrusion of the contaminants into buildings including,	There is a potential for soil vapours to be present within the subsurface (sourced from soil and groundwater); to migrate along preferential pathways such as building footings and underground utility services; and, eventually to migrate into an overlying building or the atmosphere.
2. relevant construction features of a building, such	Unknown.



as a basement or crawl space,	
3. building heating, ventilating and air conditioning design and operation, and	Unknown
4. subsurface utilities,	Underground utilities could affect soil vapour migration, given that utility lines are connected to the current buildings and will be connected to the future buildings.

## 6.6 Exposure Pathways

### 6.6.1 Human Health Receptors and Exposure Pathways

The Site was most recently used as a hospital and school. The proposed land use is residential on the north portion of the Site and community and parkland on the south portion of the Site. The potential human receptors on the Site consist of residents (adult, teen, child, toddler and infant), students (teen, child), long-term workers, short-term workers, construction workers, and property visitors (adult, teen, child, toddler and infant).

The COCs present at the Site are were observed in soil and groundwater media. There is a potential for select on-Site receptors to come into direct contact with contaminated soil and groundwater media. It is noted that the Site is currently serviced with potable groundwater from a municipal supply; however, the Site is located within area designated in a municipal official plan as a well-head protection area or other designation identified by the municipality for the protection of groundwater. Therefore, it has been assumed that the potable groundwater ingestion pathway is considered complete. well Furthermore, given that select COCs are considered to be volatile, there is a potential for select on-Site receptors to come into indirect contact with COCs, through the volatilization of parameters into soil gas followed by the migration of vapours to outdoor air or intrusion into an overlying building.

The potential exposure pathways for the human receptors at the Phase Two Property include:

- Resident, student and property visitor
  - Inadvertent soil ingestion;
  - Soil dermal contact;
  - Soil particulate inhalation;
  - Potable groundwater ingestion;
  - Indoor air inhalation;
  - Vapour skin contact; and,
  - Outdoor air inhalation.
- Long-term worker
  - Potable groundwater ingestion;
  - Indoor air inhalation;
  - Vapour skin contact; and,
  - Outdoor air inhalation.
- Construction worker

- Inadvertent soil ingestion;
- Soil dermal contact;
- Soil particulate inhalation;
- Incidental groundwater ingestion;
- Incidental groundwater dermal contact;
- Outdoor air inhalation (trench scenario); and,
- Vapour skin contact.
- Short-term (outdoor) worker:
  - Soil particulate inhalation;
  - Soil dermal contact;
  - Inadvertent soil ingestion;
  - Outdoor air inhalation; and,
  - Vapour skin contact.

Refer to Figure 7 for the human health conceptual exposure model.

#### 6.6.2 Ecological Receptors and Exposure Pathways

The Site was most recently used as a hospital and school. The proposed land use is residential on the north portion of the Site and community and parkland on the south portion of the Site. Therefore, the potential ecological receptors that may be present on the Site include: terrestrial vegetation such as trees, grasses and shrubs; soil invertebrates such as earthworms, millipedes and beetles; terrestrial birds such as pigeons, sparrows and robins; and, terrestrial mammals such as moles, voles and mice.

The COCs present at the Site were observed in soil media and groundwater. The COCs present at the Site were observed in soil and groundwater media. There is a potential for select on-Site receptors to come into direct contact with contaminated soil and groundwater media. Furthermore, given that select COCs are considered to be volatile, there is a potential for select on-Site receptors to come into indirect contact with COCs, through the volatilization of parameters into soil gas followed by the migration of vapours to outdoor air.

Given that the shallowest depth to groundwater at the Site is approximately 1.0 m bgs in June 2016 (WSP, 2016), the exposure pathways relevant to groundwater are considered complete.

The MOECC evaluates exposure to aquatic receptors at properties within 5 km of a surface water body. Sixteen Mile Creek is located approximately 225 m west of the Site. Given that the nearest surface water body to the Site are located within 5 km of the Site, aquatic receptors, such as aquatic vegetation, benthic and pelagic invertebrates, birds, mammals and fish are also considered. Thus, there is a potential for select aquatic receptors off the Phase Two Property to come into indirect contact with contaminated groundwater, through the leaching of contaminants into groundwater media, and eventually discharging to the downgradient water body.

The potential ecological receptors and exposure pathways include the following:

- Terrestrial Vegetation

- root uptake of soil;
- route uptake of groundwater; and,
- stem and foliar uptake of vapour.
- Soil Organisms
  - dermal contact with soil;
  - ingestion of soil;
  - soil particulate inhalation;
  - dermal contact with groundwater;
  - ingestion of groundwater; and,
  - inhalation of vapour.
- Terrestrial Mammals and Birds
  - soil dermal contact;
  - ingestion of soil;
  - soil particulate inhalation;
  - dermal contact with groundwater;
  - ingestion of groundwater;
  - inhalation of vapour; and,
  - tissue residue ingestion.
- Aquatic Receptors in Downgradient Surface Water Bodies
  - surface water dermal contact;
  - surface water ingestion;
  - ingestion of plant and animal tissue; and,
  - gill uptake.

Refer to Figure 8 for the ecological conceptual exposure model.

## 6.7 Summary and Conclusion

Based on the results of the Phase Two ESA, a remediation program with a risk assessment is required prior to filing a Record of Site Condition. Details regarding possible remedial options / risk assessment measures are provided under a separate cover.

## 7. Summary and Conclusions

Based on the results of the subsurface investigation conducted at the Site, the following findings are presented:

- 6) A Phase Two ESA was completed by WSP in 2016 which identified PAH impacts in soil and PHC impacts in groundwater. **Exp** was retained by the Town of Oakville to complete a Phase Two ESA to delineate the extent of known impacts and address any remaining APECs. The scope of work included the advancement of a total of twenty-four (24) boreholes, eighteen (18) of which were instrumented as groundwater monitoring wells, and eight (8) test pits.
- 7) The general stratigraphy at the Site, as observed in the boreholes, consisted of silty sand / sandy silt overlying silty clay. Fill material was encountered in several locations across the Site.
- 8) The groundwater depths ranged between approximately 0.96 m bgs (in the basement) to 4.22 m bgs within the overburden monitoring wells and 2.73 m bgs to 10 m bgs in bedrock monitoring wells. Based on the relative groundwater elevations, the inferred local groundwater flow direction is generally to the southwest (true south). However, **exp** notes that the direction of localized groundwater flow may be influenced by the presence of underground utilities.
- 9) To assess the quality of soil and groundwater quality at the Site, select soil samples were submitted for Metals, Electrical Conductivity (EC), Sodium Adsorption Ratio (SAR), Polycyclic Aromatic Hydrocarbons (PAHs), Petroleum Hydrocarbons (PHCs) including Benzene, Toluene, Ethylbenzene and Xylenes (BTEX) and Volatile Organic Compounds (VOCs) and select groundwater samples were submitted for laboratory analysis of metals, sodium, chloride, PAHs, PHCs and VOCs including BTEX.
- 10) A review of the analytical results for the soil and groundwater samples submitted indicated the following:
  - a. The concentrations of PAHs in a number of the analyzed soil samples collected from within the footprint of the former school (south portion of the Site) were above the applicable Table 2 SCS. These concentrations are likely associated with poor fill material.
  - b. The detected values of EC and SAR in the soil sample analyzed from borehole BH16-220-SS4 were above the applicable Table 2 SCS.
  - c. Several groundwater samples were submitted for the analysis of PHCs in groundwater. The concentration of PHC F3 and F4 from BH/MW16-210 (south of the former hospital building) were above the applicable Table 2 SCS.
  - d. Based on the analytical results from the Phase Two ESA completed by WSP in 2016 and the current program completed by **exp**, the extent of PAH impacted soil as well as extent of EC/SAR impacts in soil has been delineated. Horizontal and vertical delineation of PHC impacts in groundwater on the west and south side of the hospital

building has been delineated, with the exception of below the footprint of the building (due to cost and site access restrictions, additional work may be required upon demolition of the hospital building).

- e. Sodium and chloride exceedances are present in groundwater across the Site. Vertical delineation of Sodium and Chloride groundwater impacts at BH16-14/14A/14B has not been achieved. Additional work may be required if a Record of Site Condition is to be filed for the Site.
- f. A cobalt exceedance was noted in the groundwater sample collected from BH16-14. The source of the cobalt exceedance is not known at this time.

Based on the results of the Phase Two ESA, a remediation program with a risk assessment is required prior to filing a Record of Site Condition. Details regarding possible remedial options / risk assessment measures are provided under a separate cover.

## 8. 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 and Climate Change. Specific reference is made to the following:

- “*Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario*,” Ministry of the Environment of Ontario, December 1996;
- *The Ontario Water Resources Act - R.R.O. 1990, Regulation 903 - Amended to O. Reg. 128/03*, August 2003;
- “*Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*,” 2011;
- “*Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act*,” March 2004 (amended as of July 1, 2011);
- *Ontario Regulation 153/04 (made under the Environmental Protection Act)*, May 2004 (as amended by O. Reg. 511/09 and O. Reg. 179/11);
- *Environmental Protection Act*, R.S.O. 1990, Chapter E.19, as amended, September 2004;
- “*DRAFT Phase One Environmental Site Assessment, 327 and 291 Reynolds Street, 348 Allan Street, Oakville, Ontario*,” **exp** Services Inc., September 30, 2016.

## 9. 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 subject property. The conclusions and recommendations presented in this report reflect Site conditions existing at the time of the investigation (October, November 2016).

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** 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 Ministry of Environment and Climate Change. 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.

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We trust this report is satisfactory for your purposes. Should you have any questions, please do not hesitate to contact this office.

Yours truly,

**exp Services Inc.**



Stephanie Hsia, B.Sc.  
Environmental Scientist  
Earth and Environment




Jon Charles, P.Ge. (Limited) QP<sub>ESA</sub>  
Senior Environmental Scientist  
Earth and Environment



## Figures



 Approximate Site Boundary



 **exp Services Inc.**  
 1595 CLARK BOULEVARD  
 BRAMPTON, ONTARIO  
 L6T 4V1  
 T - (905) 793-9800  
 F - (905) 793-0641

PROJECT TITLE:  
 PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
 FORMER OAKVILLE HOSPITAL LANDS  
 OAKVILLE, ON

DRAWING TITLE:  
 SITE LOCATION PLAN

PROJECT No.:	BRM-00235695-A0	DWN:	MS
SCALE:	AS NOTED	CHD:	JC
DATE:	SEPTEMBER 2016	FIG. No.:	1



● PCA Identifier     
 **Zoning**     
  Institutional

Approximate Site Boundary     
 Residential     
 Natural Area

Phase One ESA Study Area     
 Community     
 Park

**exp Services Inc.**  
 1595 CLARK BOULEVARD  
 BRAMPTON, ONTARIO  
 L6T 4V1  
 T - (905) 793-9800  
 F - (905) 793-0641

PROJECT TITLE:  
 PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
 FORMER OAKVILLE HOSPITAL  
 OAKVILLE, ONTARIO

DRAWING TITLE:  
 PHASE ONE STUDY AREA,  
 SURROUNDING LAND USE  
 & POTENTIALLY CONTAMINATING  
 ACTIVITIES (PCAs)

PROJECT No.:	BRM-00235695-A0	DWN:	MS
SCALE:	AS NOTED	CHK'D:	JC
DATE:	SEPTEMBER 2016	FIG. No.:	2



- Approximate Site Boundary
- APEC 4
- APEC 7
- APEC 10
- APEC 12
- APEC 17
- APEC 1
- APEC 5
- APEC 8
- APEC 14,15
- APEC 13
- APEC 18
- APEC 2,3
- APEC 6
- APEC 9
- APEC 11
- APEC 16

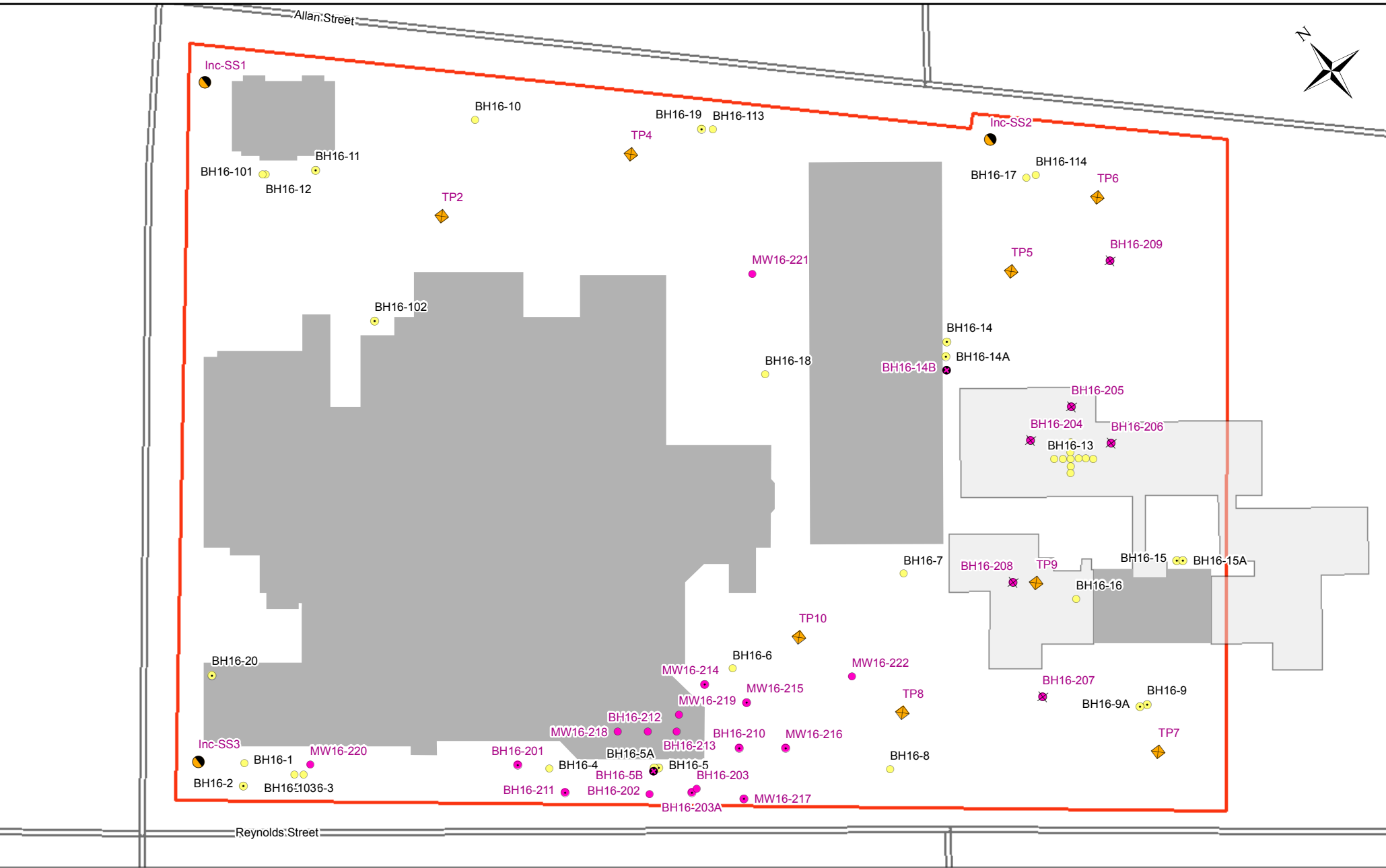


**exp.** **exp Services Inc.**  
 1595 CLARK BOULEVARD  
 BRAMPTON, ONTARIO  
 L6T 4V1  
 T - (905) 793-9800  
 F - (905) 793-0641

PROJECT TITLE:  
 PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
 FORMER OAKVILLE HOSPITAL LANDS  
 OAKVILLE, ONTARIO

DRAWING TITLE:  
 AREAS OF POTENTIAL  
 ENVIRONMENTAL CONCERN  
 (APECs)

PROJECT No.:	BRM-00235695-A0	DWN:	EE
SCALE:	AS NOTED	CHKD:	JC
DATE:	SEPTEMBER 2016	FIG. No.:	3



- Approximate Site Boundary
- Existing Building Footprint
- Former Building Footprint
- ◆ Test Pit
- Surface Sample
- Borehole - 3 m (exp)
- Shallow Bedrock - 8 m (exp)
- Borehole (WSP)
- Overburden - 5-6 m (exp)
- Deep Bedrock - 12-15 m (exp)
- Monitoring Well (WSP)

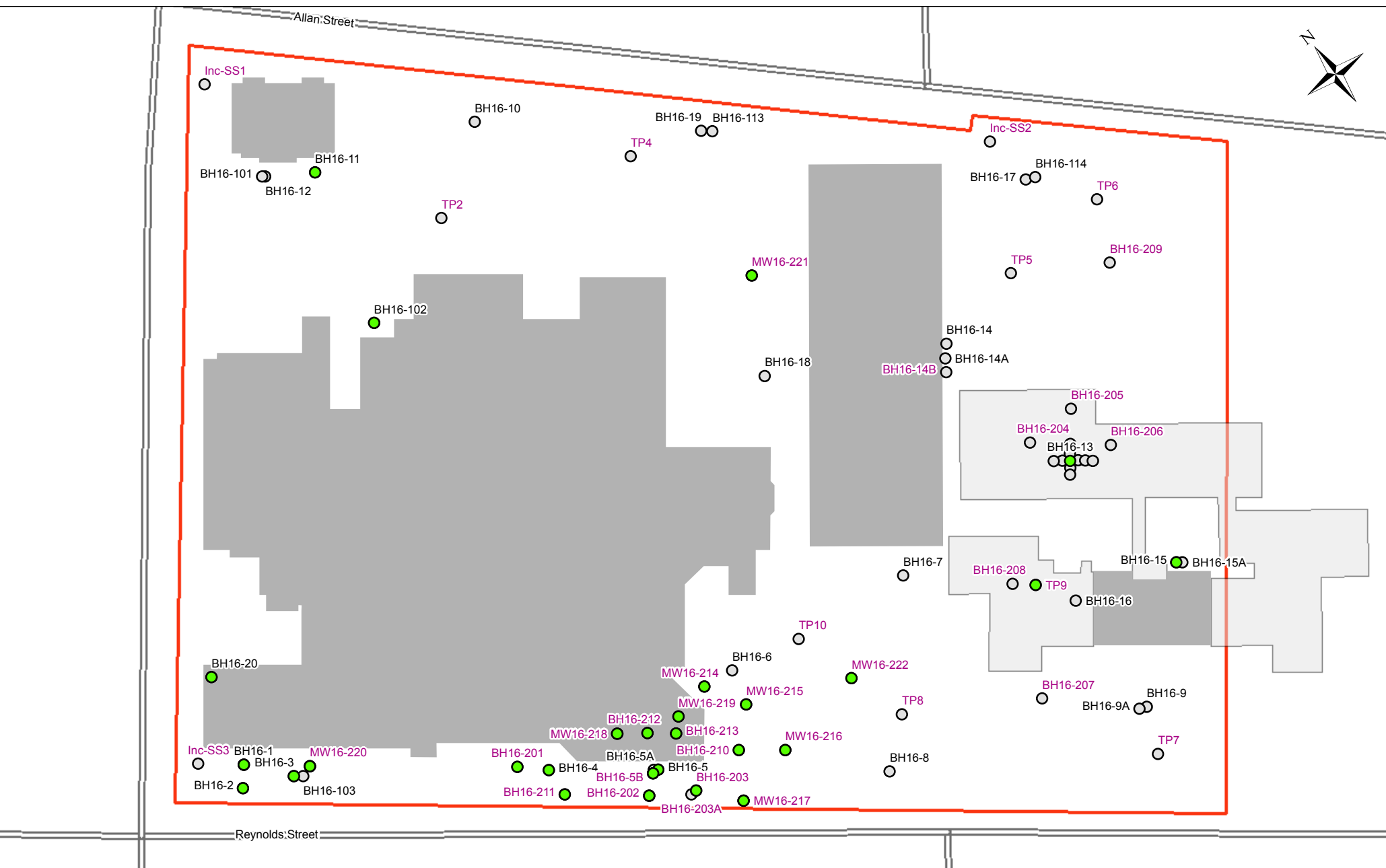


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 BRAMPTON, ONTARIO  
 L6T 4V1  
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 F - (905) 793-0641

PROJECT TITLE:  
 PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
 FORMER OAKVILLE HOSPITAL LANDS  
 OAKVILLE, ONTARIO

DRAWING TITLE:  
 BOREHOLE/MONITORING WELL  
 LOCATION PLAN

PROJECT No.:	BRM-00235695-A0	DWN:	EE
SCALE:	AS NOTED	CHKD:	JC
DATE:	FEBRUARY 2017	FIG. No.:	4



- Approximate Site Boundary
- Soil Meets Table 2 SCS for PHCs
- Existing Building Footprint
- Soil Sample Not Analyzed For PHCs
- Former Building Footprint

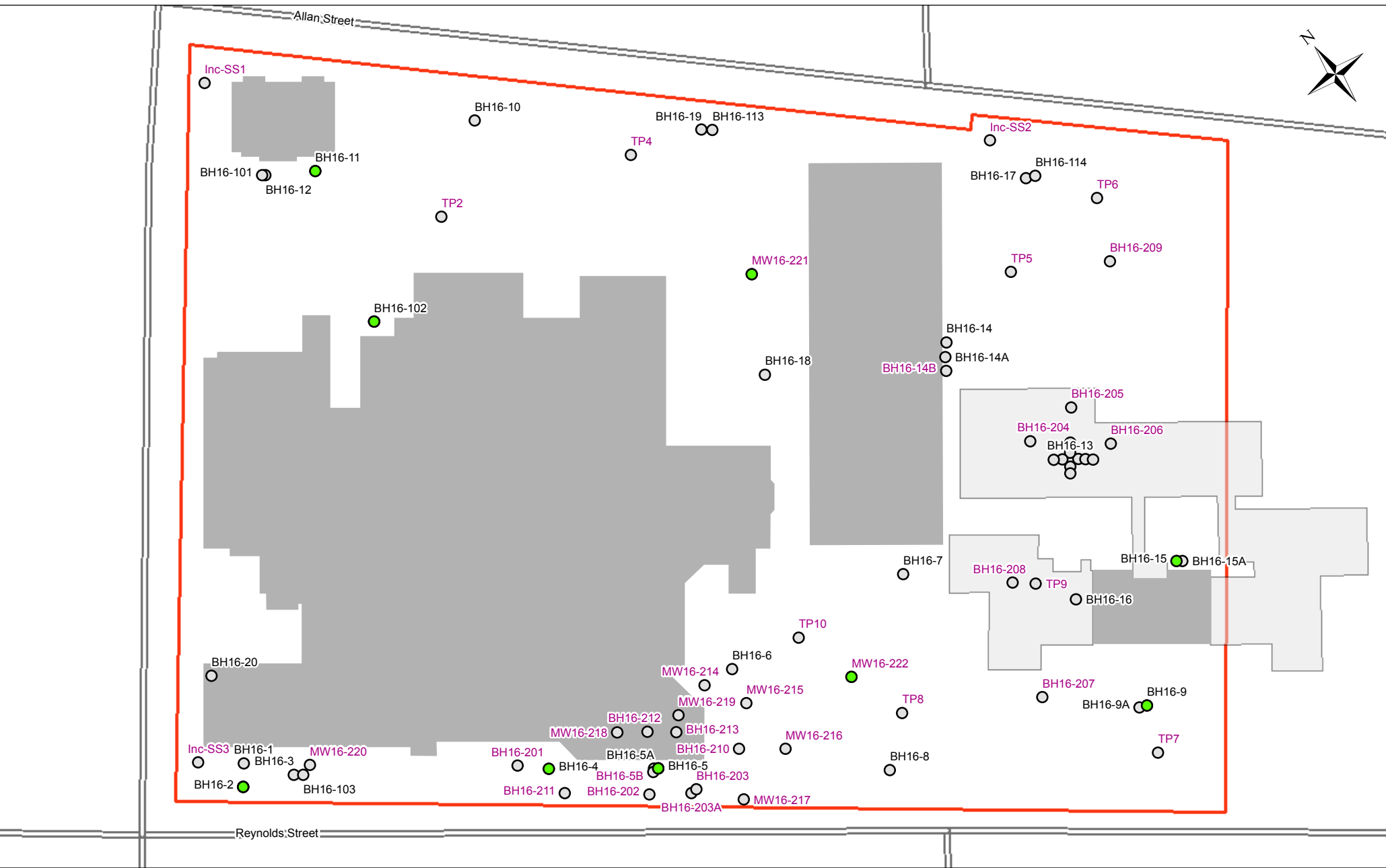


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 F - (905) 793-0641

PROJECT TITLE:  
 PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
 FORMER OAKVILLE HOSPITAL LANDS  
 OAKVILLE, ONTARIO

DRAWING TITLE:  
 CONCENTRATIONS OF PHCs  
 IN SOIL

PROJECT No.: BRM-00235695-A0	DWN: EE
SCALE: AS NOTED	CHKD: JC
DATE: FEBRUARY 2017	FIG. No.: 5A



- Approximate Site Boundary
- Soil Meets Table 2 SCS for VOCs
- Existing Building Footprint
- Soil Sample Not Analyzed For VOCs
- Former Building Footprint

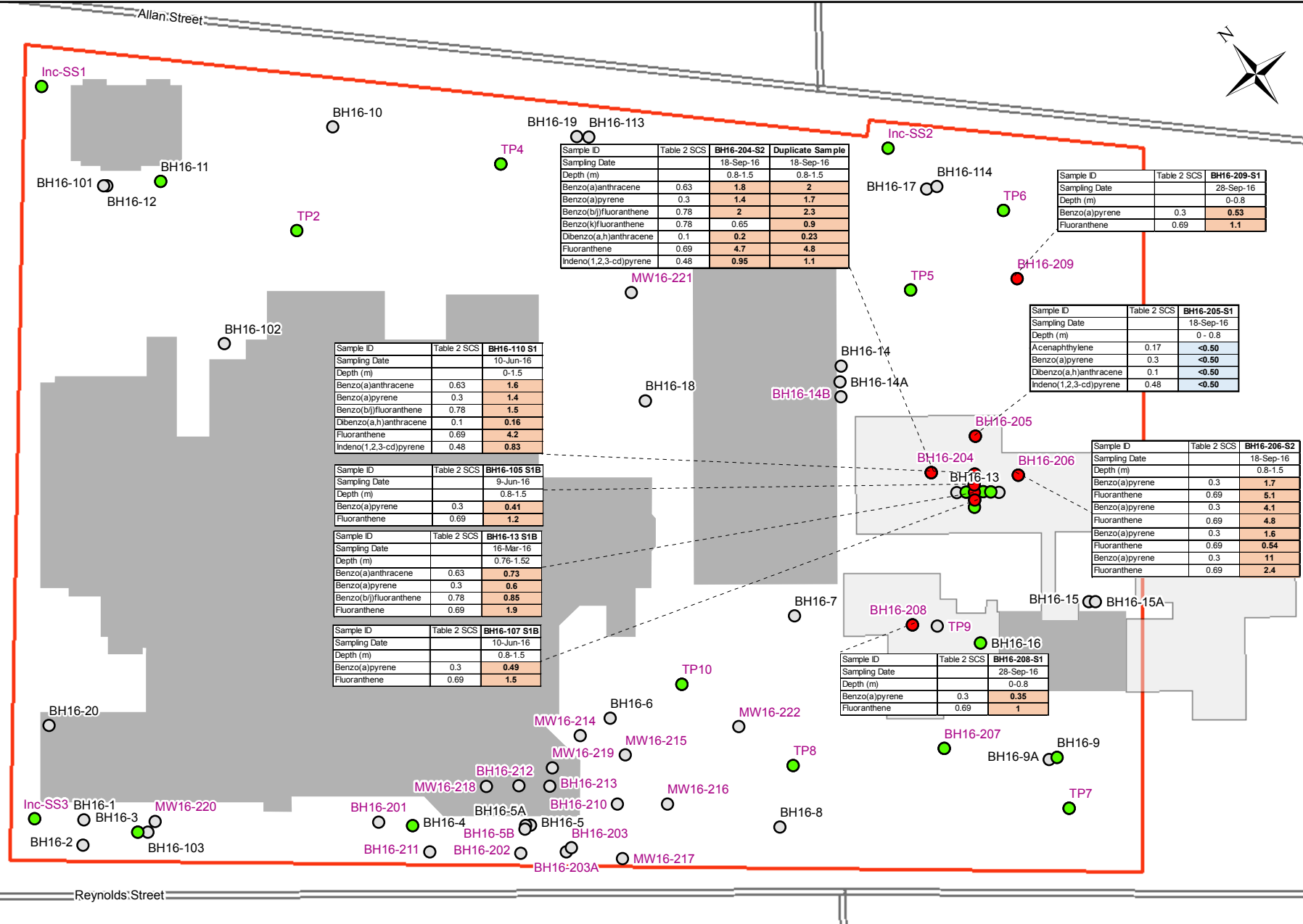


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 BRAMPTON, ONTARIO  
 L6T 4V1  
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 F - (905) 793-0641

PROJECT TITLE:  
 PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
 FORMER OAKVILLE HOSPITAL LANDS  
 OAKVILLE, ONTARIO

DRAWING TITLE:  
 CONCENTRATIONS OF VOCs  
 IN SOIL

PROJECT No.:	BRM-00235695-A0	DWN:	EE
SCALE:	AS NOTED	CHKD:	JC
DATE:	FEBRUARY 2017	FIG. No.:	5B



Sample ID	Table 2 SCS	BH16-204-S2	Duplicate Sample
Sampling Date		18-Sep-16	18-Sep-16
Depth (m)		0.8-1.5	0.8-1.5
Benzo(a)anthracene	0.63	1.8	2
Benzo(a)pyrene	0.3	1.4	1.7
Benzo(b)fluoranthene	0.78	2	2.3
Benzo(k)fluoranthene	0.78	0.65	0.9
Dibenzo(a,h)anthracene	0.1	0.2	0.23
Fluoranthene	0.69	4.7	4.8
Indeno(1,2,3-cd)pyrene	0.48	0.95	1.1

Sample ID	Table 2 SCS	BH16-209-S1
Sampling Date		28-Sep-16
Depth (m)		0-0.8
Benzo(a)pyrene	0.3	0.53
Fluoranthene	0.69	1.1

Sample ID	Table 2 SCS	BH16-205-S1
Sampling Date		18-Sep-16
Depth (m)		0 - 0.8
Acenaphthylene	0.17	<0.50
Benzo(a)pyrene	0.3	<0.50
Dibenzo(a,h)anthracene	0.1	<0.50
Indeno(1,2,3-cd)pyrene	0.48	<0.50

Sample ID	Table 2 SCS	BH16-110 S1
Sampling Date		10-Jun-16
Depth (m)		0-1.5
Benzo(a)anthracene	0.63	1.6
Benzo(a)pyrene	0.3	1.4
Benzo(b)fluoranthene	0.78	1.5
Dibenzo(a,h)anthracene	0.1	0.16
Fluoranthene	0.69	4.2
Indeno(1,2,3-cd)pyrene	0.48	0.83

Sample ID	Table 2 SCS	BH16-105 S1B
Sampling Date		9-Jun-16
Depth (m)		0.8-1.5
Benzo(a)pyrene	0.3	0.41
Fluoranthene	0.69	1.2

Sample ID	Table 2 SCS	BH16-13 S1B
Sampling Date		16-Mar-16
Depth (m)		0.76-1.52
Benzo(a)anthracene	0.63	0.73
Benzo(a)pyrene	0.3	0.6
Benzo(b)fluoranthene	0.78	0.85
Fluoranthene	0.69	1.9

Sample ID	Table 2 SCS	BH16-107 S1B
Sampling Date		10-Jun-16
Depth (m)		0.8-1.5
Benzo(a)pyrene	0.3	0.49
Fluoranthene	0.69	1.5

Sample ID	Table 2 SCS	BH16-206-S2
Sampling Date		18-Sep-16
Depth (m)		0.8-1.5
Benzo(a)pyrene	0.3	1.7
Fluoranthene	0.69	5.1
Benzo(a)pyrene	0.3	4.1
Fluoranthene	0.69	4.8
Benzo(a)pyrene	0.3	1.6
Fluoranthene	0.69	0.54
Benzo(a)pyrene	0.3	11
Fluoranthene	0.69	2.4

Sample ID	Table 2 SCS	BH16-208-S1
Sampling Date		28-Sep-16
Depth (m)		0-0.8
Benzo(a)pyrene	0.3	0.35
Fluoranthene	0.69	1

- Approximate Site Boundary
- Existing Building Footprint
- Former Building Footprint
- Soil Exceeds Table 2 SCS for PAHs
- Soil Meets Table 2 SCS for PAHs
- Soil Sample Not Analyzed For PAHs



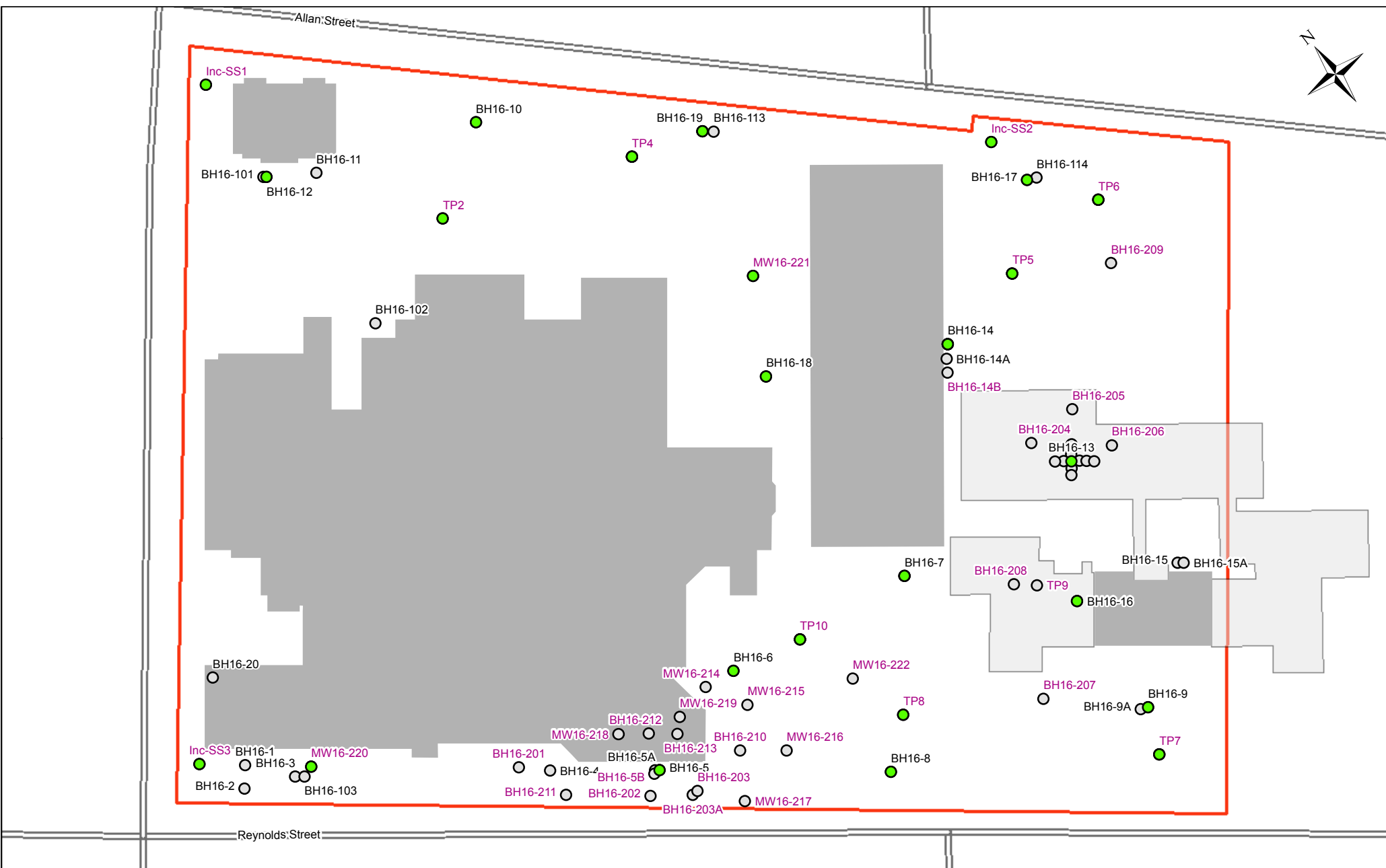
**exp.** **exp Services Inc.**  
 1595 CLARK BOULEVARD  
 BRAMPTON, ONTARIO  
 L6T 4V1  
 T - (905) 793-9800  
 F - (905) 793-0641

PROJECT TITLE:  
 PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
 FORMER OAKVILLE HOSPITAL LANDS  
 OAKVILLE, ONTARIO

DRAWING TITLE:  
 CONCENTRATIONS OF PAHs  
 IN SOIL

PROJECT No.:	BRM-00235695-A0	DWN:	EE
SCALE:	AS NOTED	CHKD:	JC
DATE:	FEBRUARY 2017	FIG. No.:	5C





- Approximate Site Boundary
- Soil Meets Table 2 SCS for Metals
- Existing Building Footprint
- Former Building Footprint
- Soil Sample Not Analyzed For Metals

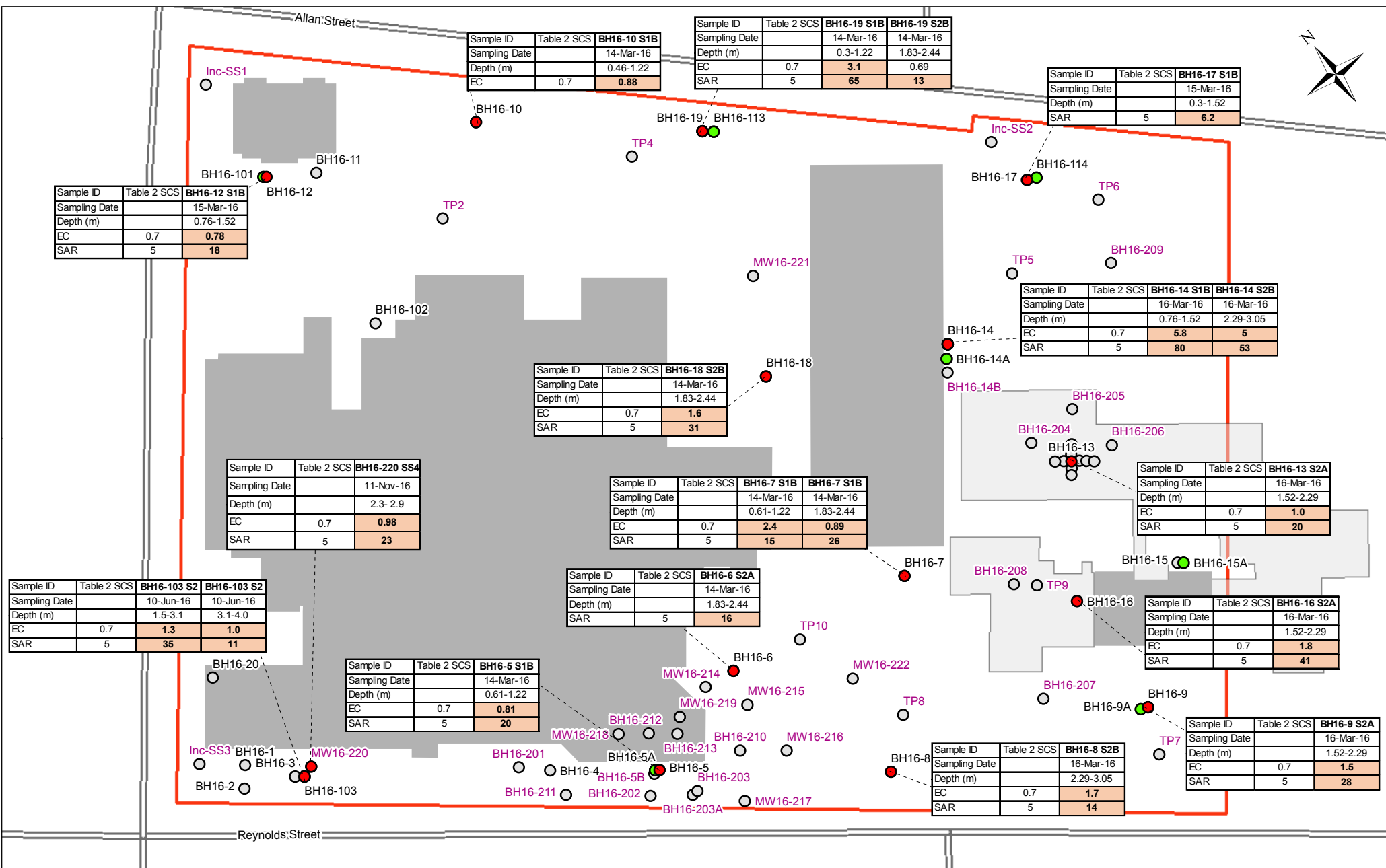



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 L6T 4V1  
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 F - (905) 793-0641

PROJECT TITLE:  
 PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
 FORMER OAKVILLE HOSPITAL LANDS  
 OAKVILLE, ONTARIO

DRAWING TITLE:  
 CONCENTRATIONS OF METALS  
 IN SOIL

PROJECT No.:	DWN:
BRM-00235695-A0	EE
SCALE:	CHKD:
AS NOTED	JC
DATE:	FIG. No.:
FEBRUARY 2017	5D



- Approximate Site Boundary
- Soil Exceeds Table 2 SCS for EC/SAR
- Soil Meets Table 2 SCS for EC/SAR
- Existing Building Footprint
- Soil Sample Not Analyzed For EC/SAR
- Former Building Footprint
- Soil Sample Not Analyzed For EC/SAR

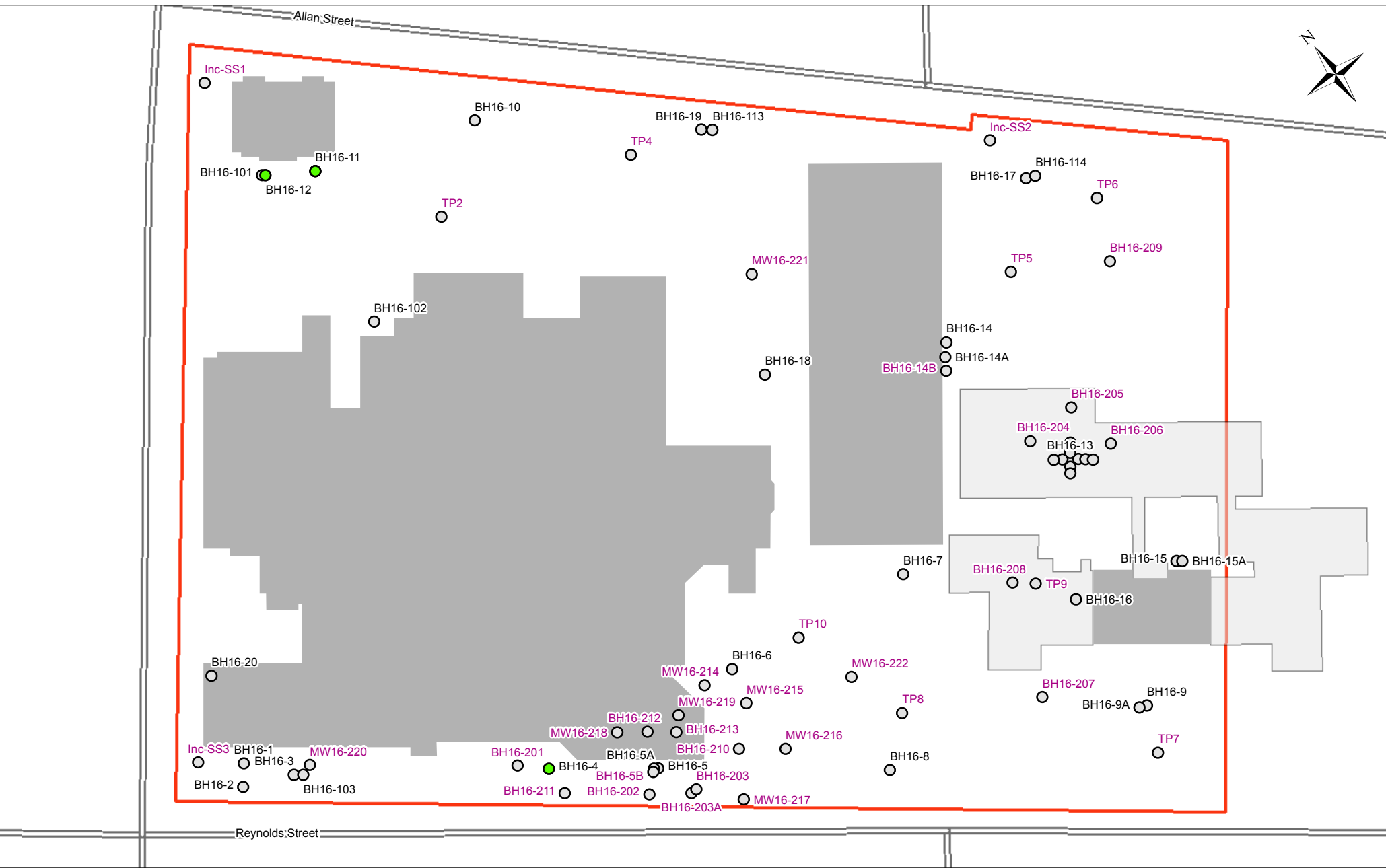


**exp.** **exp Services Inc.**  
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 BRAMPTON, ONTARIO  
 L6T 4V1  
 T - (905) 793-9800  
 F - (905) 793-0641

PROJECT TITLE:  
 PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
 FORMER OAKVILLE HOSPITAL LANDS  
 OAKVILLE, ONTARIO

DRAWING TITLE:  
 VALUES OF EC/SAR  
 IN SOIL

PROJECT No.: BRM-00235695-A0	DWN: EE
SCALE: AS NOTED	CHKD: JC
DATE: FEBRUARY 2017	FIG. No.: 5E



- Approximate Site Boundary
- Existing Building Footprint
- Former Building Footprint
- Soil Meets Table 2 SCS for PCBs
- Soil Sample Not Analyzed For PCBs

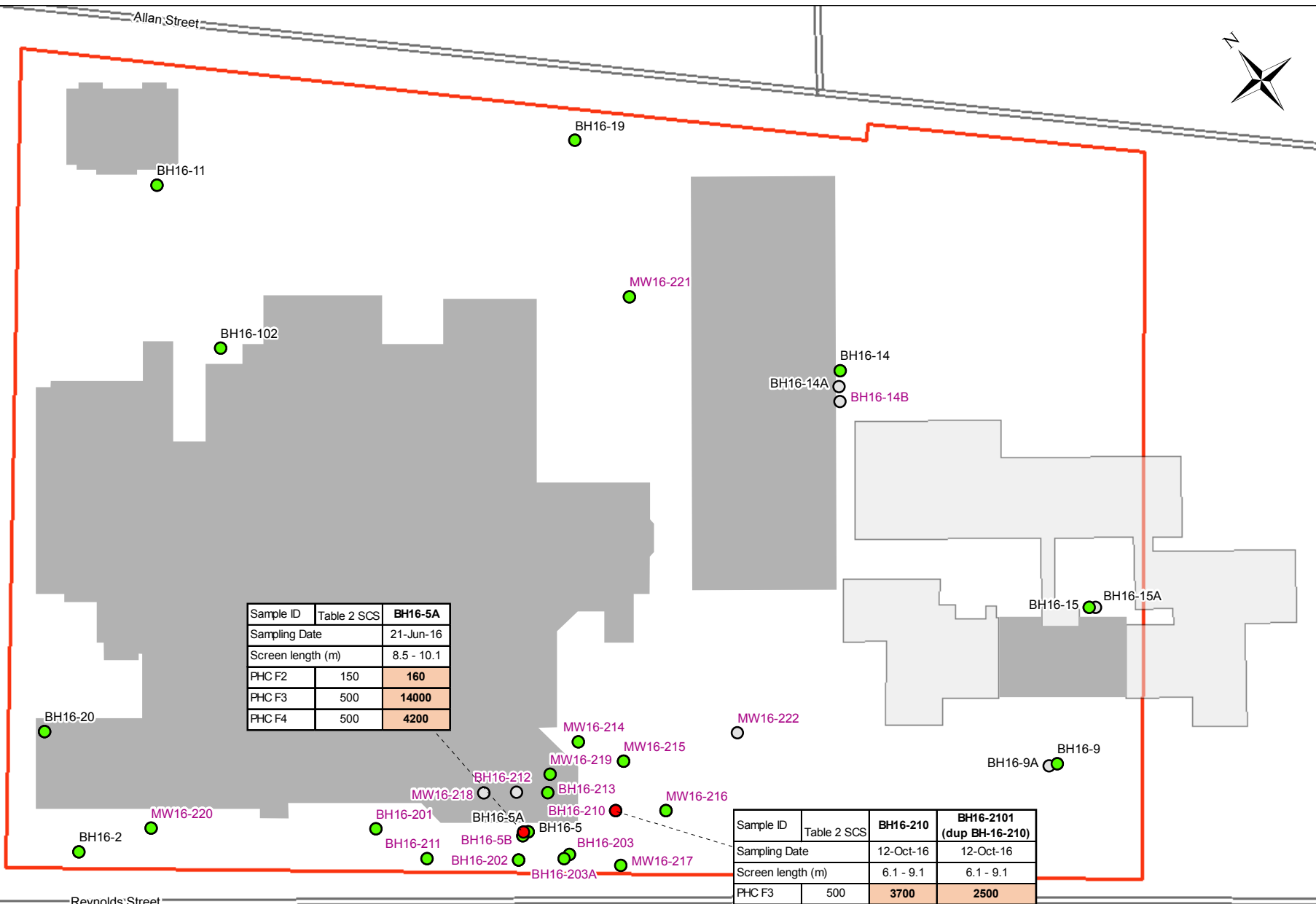


**exp.** **exp Services Inc.**  
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 BRAMPTON, ONTARIO  
 L6T 4V1  
 T - (905) 793-9800  
 F - (905) 793-0641

PROJECT TITLE:  
 PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
 FORMER OAKVILLE HOSPITAL LANDS  
 OAKVILLE, ONTARIO

DRAWING TITLE:  
 CONCENTRATIONS OF PCBs  
 IN SOIL

PROJECT No.:	BRM-00235695-A0	DWN:	EE
SCALE:	AS NOTED	CHKD:	JC
DATE:	FEBRUARY 2017	FIG. No.:	5F



Sample ID	Table 2 SCS	BH16-5A
Sampling Date		21-Jun-16
Screen length (m)		8.5 - 10.1
PHC F2	150	160
PHC F3	500	14000
PHC F4	500	4200

Sample ID	Table 2 SCS	BH16-210	BH16-2101 (dup BH-16-210)
Sampling Date		12-Oct-16	12-Oct-16
Screen length (m)		6.1 - 9.1	6.1 - 9.1
PHC F3	500	3700	2500
PHC F4	500	1100	700

- ▭ Approximate Site Boundary
- Existing Building Footprint
- Former Building Footprint
- Groundwater Exceeds Table 2 SCS for PHCs
- Groundwater Meets Table 2 SCS for PHCs
- Groundwater Sample Not Analyzed For PHCs

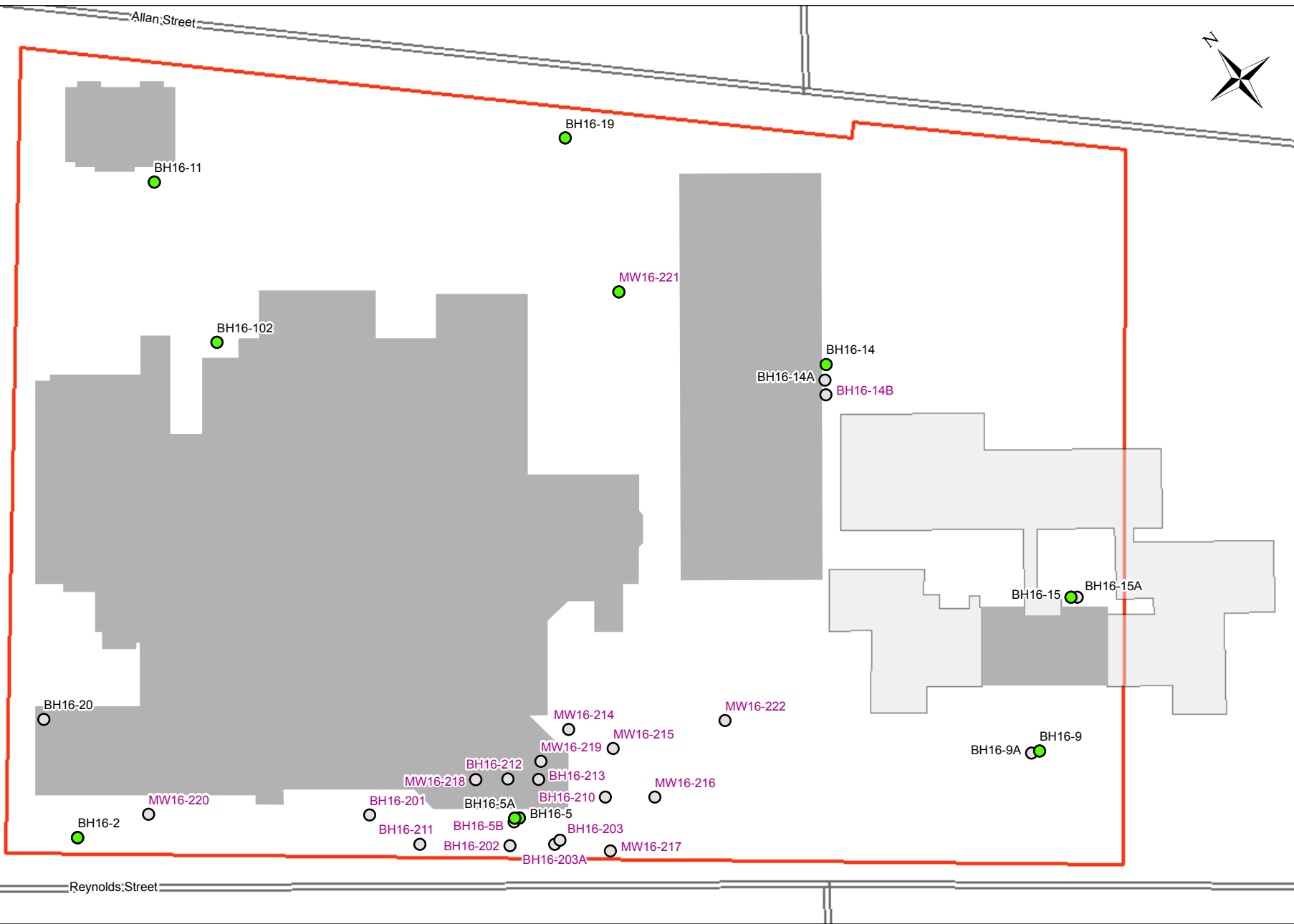


**exp.** **exp Services Inc.**  
 1595 CLARK BOULEVARD  
 BRAMPTON, ONTARIO  
 L6T 4V1  
 T - (905) 793-9800  
 F - (905) 793-0641

PROJECT TITLE:  
 PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
 FORMER OAKVILLE HOSPITAL LANDS  
 OAKVILLE, ONTARIO

DRAWING TITLE:  
 CONCENTRATIONS OF PHCs  
 IN GROUNDWATER

PROJECT No.:	BRM-00235695-A0	DWN:	EE
SCALE:	AS NOTED	CHKD:	JC
DATE:	FEBRUARY 2017	FIG. No.:	6A



- ▭ Approximate Site Boundary
- Groundwater Meets Table 2 SCS for VOCs
- Existing Building Footprint
- Former Building Footprint
- Groundwater Sample Not Analyzed For VOCs

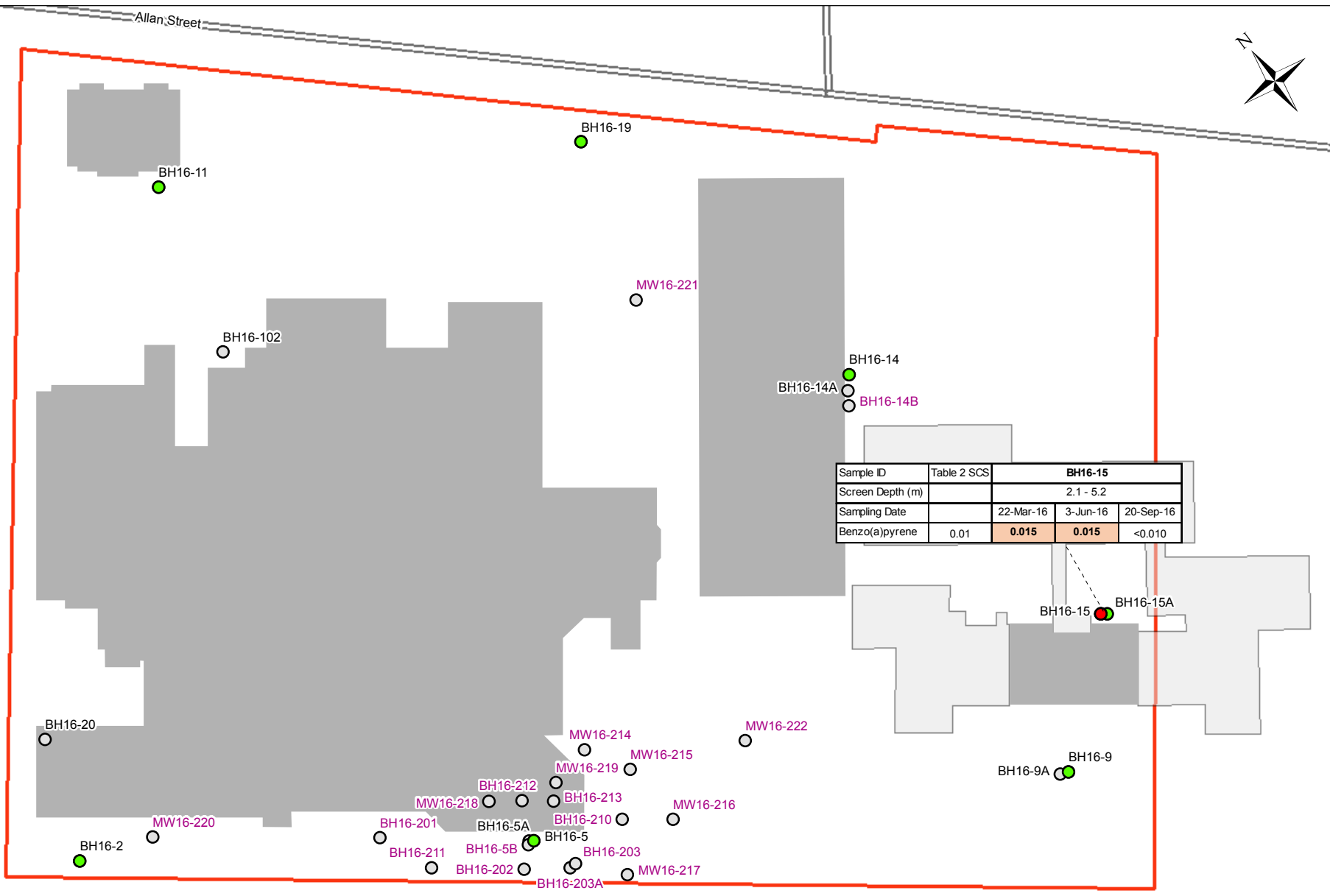



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 BRAMPTON, ONTARIO  
 L6T 4V1  
 T - (905) 793-9800  
 F - (905) 793-0641


PROJECT TITLE:  
 PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
 FORMER OAKVILLE HOSPITAL LANDS  
 OAKVILLE, ONTARIO

DRAWING TITLE:  
 CONCENTRATIONS OF VOCs  
 IN GROUNDWATER

PROJECT No.:	BRM-00235695-A0	DWN:	EE
SCALE:	AS NOTED	CHKD:	JC
DATE:	FEBRUARY 2017	FIG. No.:	6B



- Approximate Site Boundary
- Existing Building Footprint
- Former Building Footprint
- Groundwater Exceeds Table 2 SCS for PAHs
- Groundwater Meets Table 2 SCS for PAHs
- Groundwater Sample Not Analyzed For PAHs

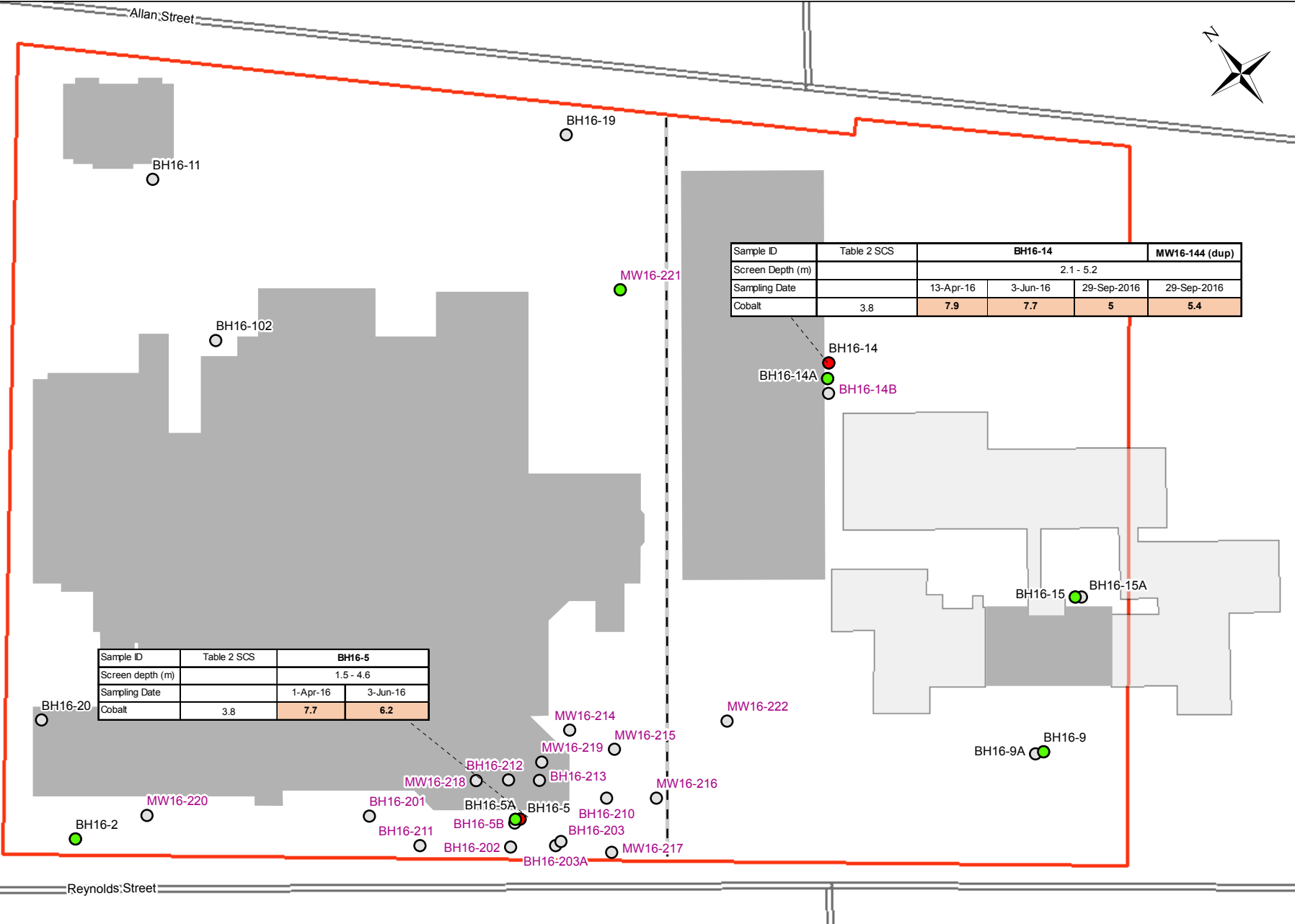



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 BRAMPTON, ONTARIO  
 L6T 4V1  
 T - (905) 793-9800  
 F - (905) 793-0641

PROJECT TITLE:  
 PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
 FORMER OAKVILLE HOSPITAL LANDS  
 OAKVILLE, ONTARIO

DRAWING TITLE:  
 CONCENTRATIONS OF PAHs  
 IN GROUNDWATER

PROJECT No.:	BRM-00235695-A0	DWN:	EE
SCALE:	AS NOTED	CHKD:	JC
DATE:	FEBRUARY 2017	FIG. No.:	6C



Sample ID	Table 2 SCS	BH16-14			MW16-144 (dup)
Screen Depth (m)		2.1 - 5.2			
Sampling Date		13-Apr-16	3-Jun-16	29-Sep-2016	29-Sep-2016
Cobalt	3.8	7.9	7.7	5	5.4

Sample ID	Table 2 SCS	BH16-5	
Screen depth (m)		1.5 - 4.6	
Sampling Date		1-Apr-16	3-Jun-16
Cobalt	3.8	7.7	6.2

- ▭ Approximate Site Boundary
- ▭ Existing Building Footprint
- ▭ Former Building Footprint
- Groundwater Exceeds Table 2 SCS for Metals
- Groundwater Meets Table 2 SCS for Metals
- Groundwater Sample Not Analyzed for Metals

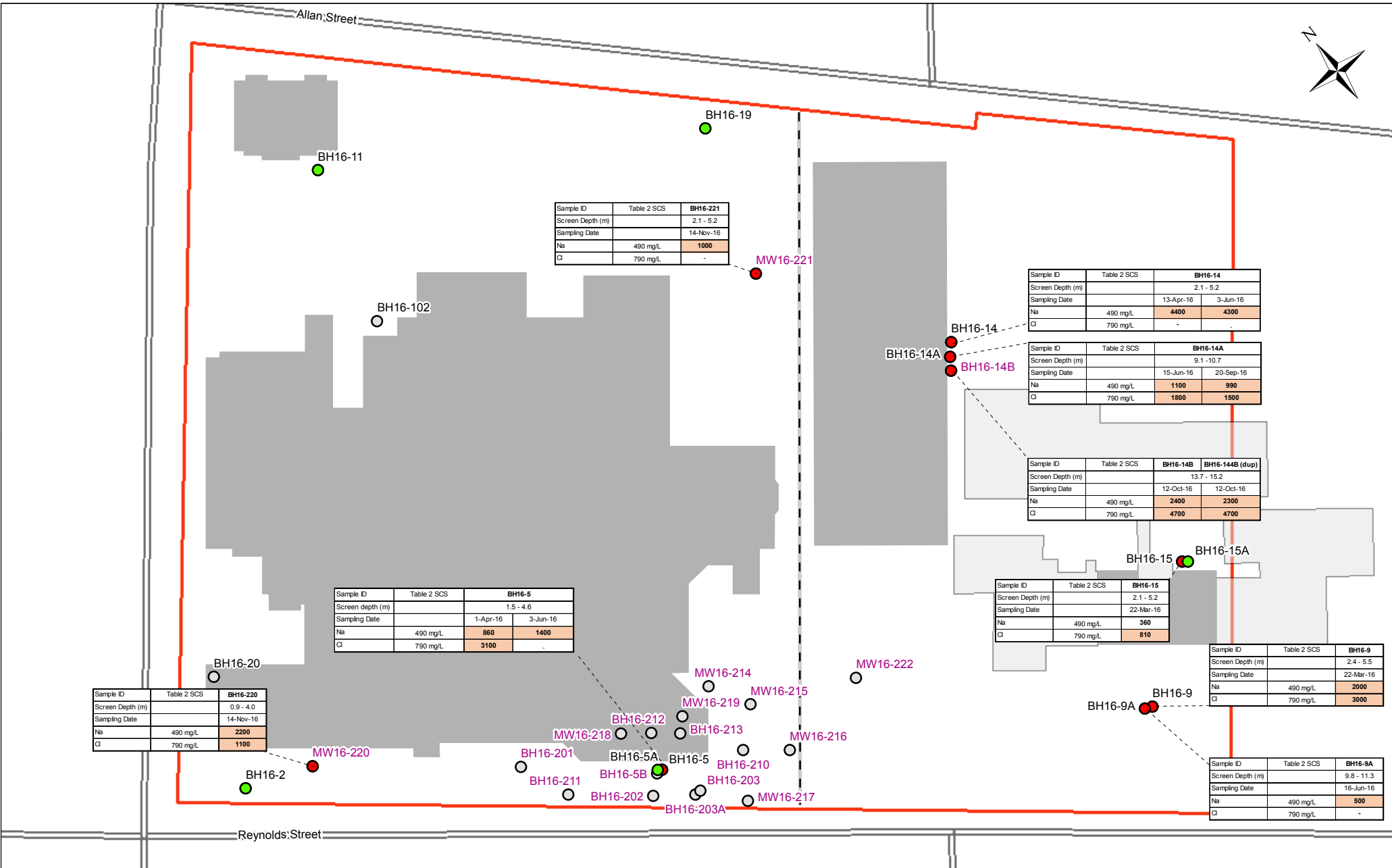


**exp.** **exp Services Inc.**  
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 BRAMPTON, ONTARIO  
 L6T 4V1  
 T - (905) 793-9800  
 F - (905) 793-0641

PROJECT TITLE:  
 PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
 FORMER OAKVILLE HOSPITAL LANDS  
 OAKVILLE, ONTARIO

DRAWING TITLE:  
 CONCENTRATIONS OF METALS  
 IN GROUNDWATER

PROJECT No.:	BRM-00235695-A0	DWN:	EE
SCALE:	AS NOTED	CHKD:	JC
DATE:	FEBRUARY 2017	FIG. No.:	6D



Sample ID	Table 2 SCS	BH16-221
Screen Depth (m)		2.1 - 5.2
Sampling Date		14-Nov-16
Na	490 mg/L	1000
Cl	790 mg/L	-

Sample ID	Table 2 SCS	BH16-14	
Screen Depth (m)		2.1 - 5.2	
Sampling Date		13-Apr-16	3-Jun-16
Na	490 mg/L	4400	4300
Cl	790 mg/L	-	-

Sample ID	Table 2 SCS	BH16-14A	
Screen Depth (m)		9.1 - 10.7	
Sampling Date		15-Jun-16	20-Sep-16
Na	490 mg/L	1100	990
Cl	790 mg/L	1800	1500

Sample ID	Table 2 SCS	BH16-14B	BH16-144B (dup)
Screen Depth (m)		13.7 - 15.2	
Sampling Date		12-Oct-16	12-Oct-16
Na	490 mg/L	2400	2300
Cl	790 mg/L	4700	4700

Sample ID	Table 2 SCS	BH16-5	
Screen depth (m)		1.5 - 4.6	
Sampling Date		1-Apr-16	3-Jun-16
Na	490 mg/L	860	1400
Cl	790 mg/L	3100	-

Sample ID	Table 2 SCS	BH16-15	
Screen Depth (m)		2.1 - 5.2	
Sampling Date		22-Mar-16	
Na	490 mg/L	360	
Cl	790 mg/L	810	

Sample ID	Table 2 SCS	BH16-220	
Screen Depth (m)		0.9 - 4.0	
Sampling Date		14-Nov-16	
Na	490 mg/L	2200	
Cl	790 mg/L	1100	

Sample ID	Table 2 SCS	BH16-9	
Screen Depth (m)		2.4 - 5.5	
Sampling Date		22-Mar-16	
Na	490 mg/L	2000	
Cl	790 mg/L	3000	

Sample ID	Table 2 SCS	BH16-9A	
Screen Depth (m)		9.8 - 11.3	
Sampling Date		16-Jun-16	
Na	490 mg/L	500	
Cl	790 mg/L	-	

- ▭ Approximate Site Boundary
- ▭ Existing Building Footprint
- ▭ Former Building Footprint
- Groundwater Exceeds Table 2 SCS for Na/Cl
- Groundwater Meets Table 2 SCS for Na/Cl
- Groundwater Sample Not Analyzed for Na/Cl



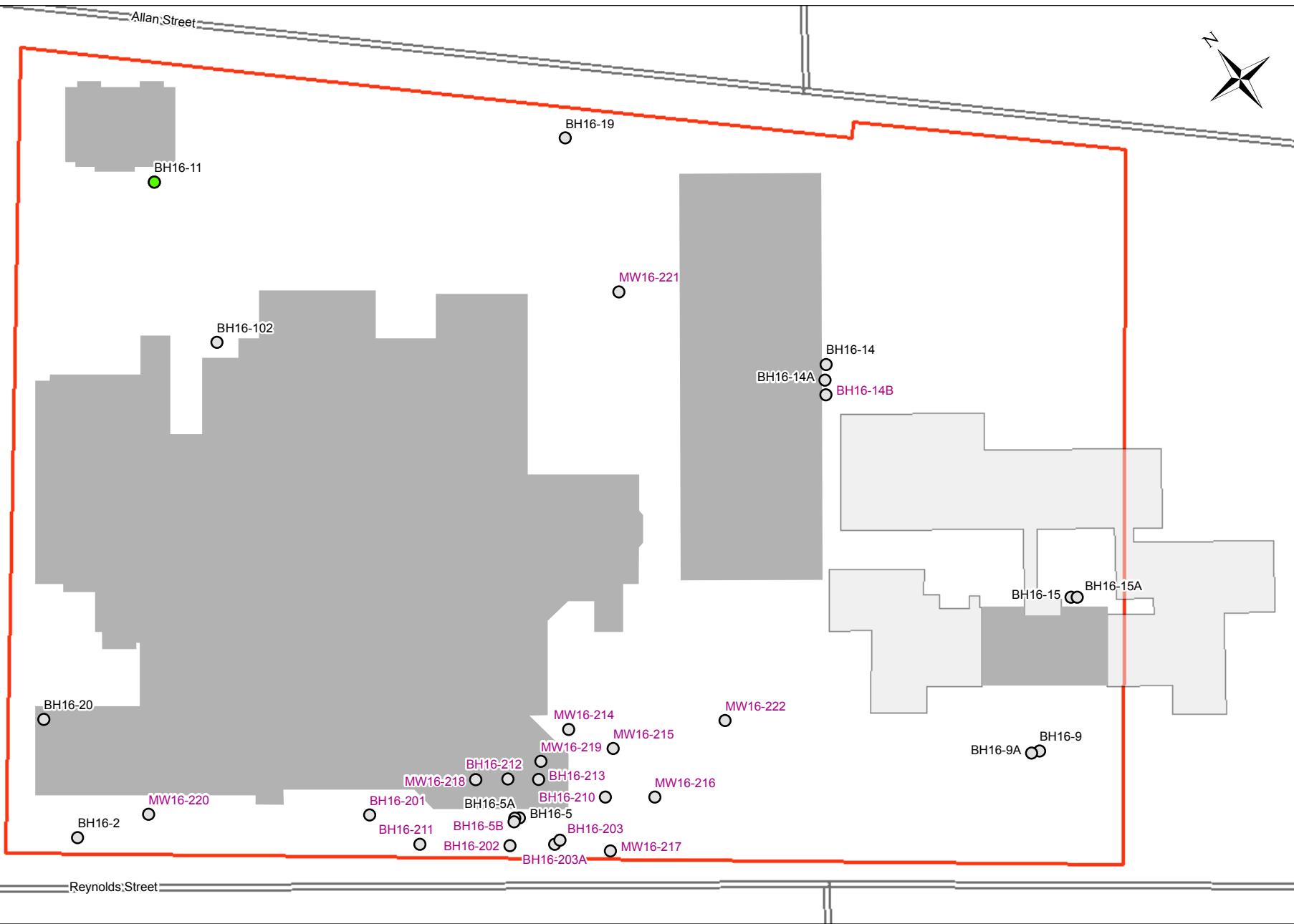
**exp.** **exp Services Inc.**  
 1595 CLARK BOULEVARD  
 BRAMPTON, ONTARIO  
 L6T 4V1  
 T - (905) 793-9800  
 F - (905) 793-0641

PROJECT TITLE:  
 PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
 FORMER OAKVILLE HOSPITAL LANDS  
 OAKVILLE, ONTARIO

DRAWING TITLE:  
 CONCENTRATIONS OF Na & Cl  
 IN GROUNDWATER

PROJECT No.:	BRM-00235695-A0	DWN:	EE
SCALE:	AS NOTED	CHKD:	JC
DATE:	FEBRUARY 2017	FIG. No.:	6E





- Approximate Site Boundary
- Groundwater Meets Table 2 SCS for PCBs
- Existing Building Footprint
- Groundwater Sample Not Analyzed For PCBs
- Former Building Footprint

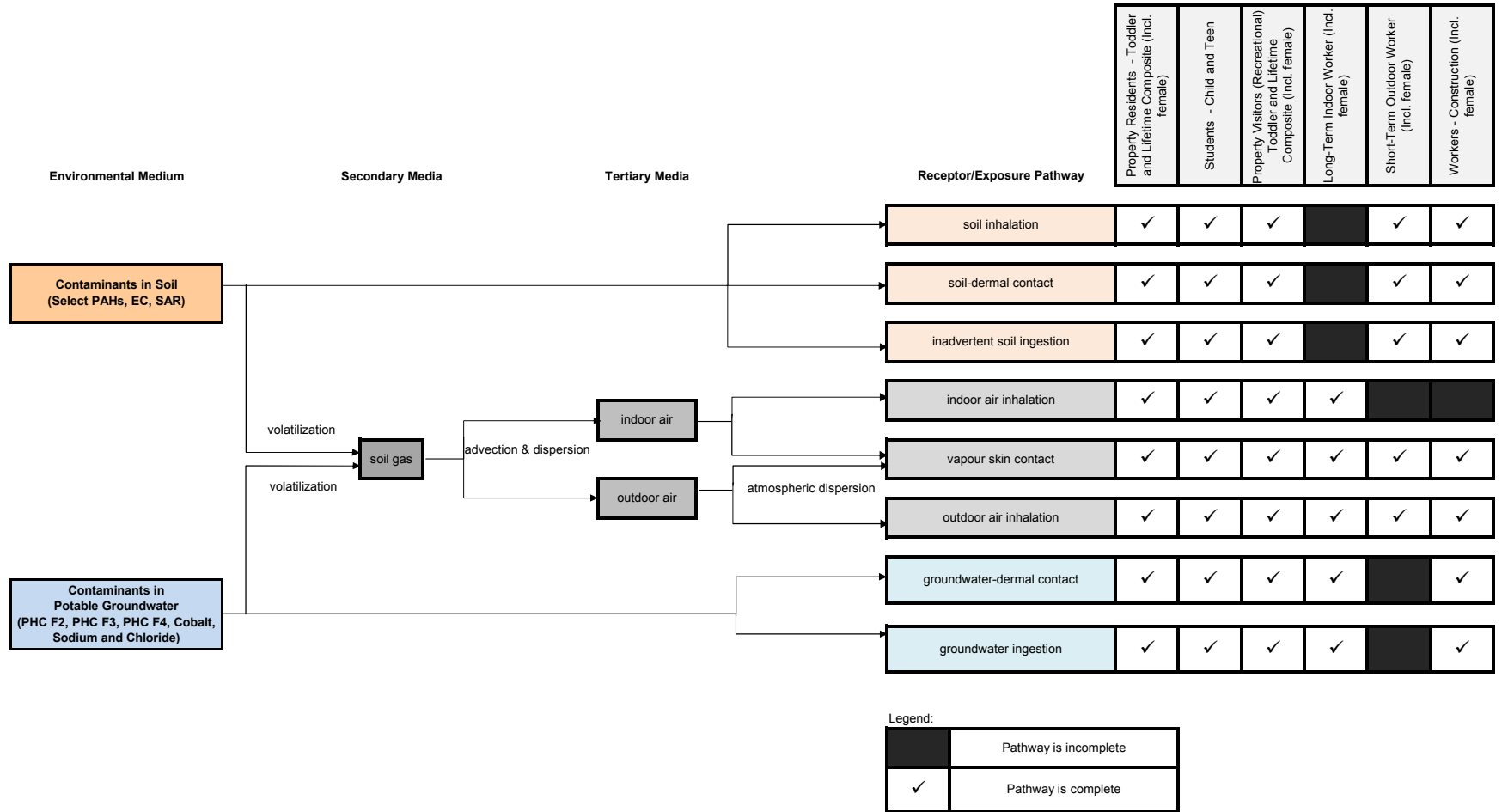


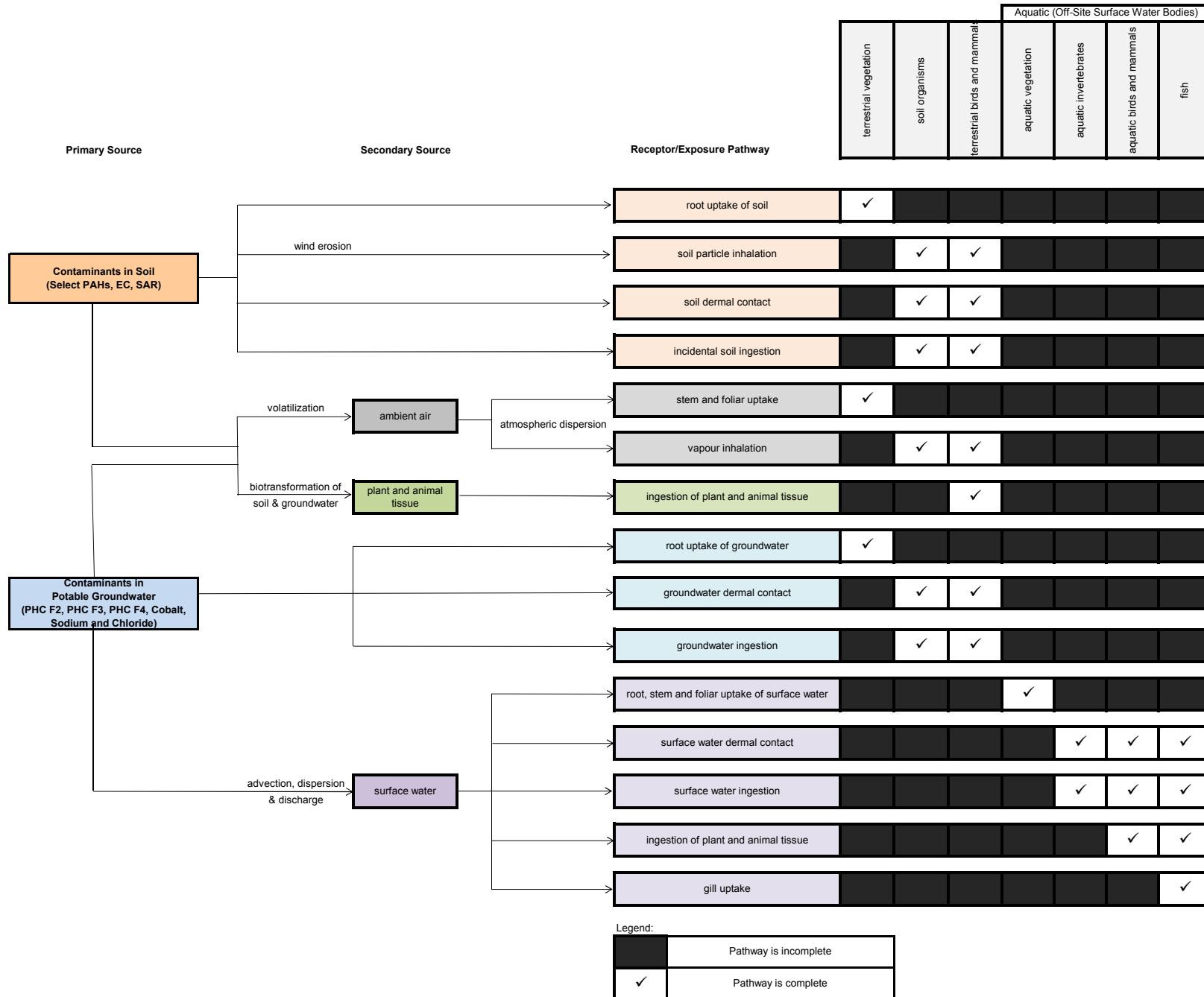

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 1595 CLARK BOULEVARD  
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 T - (905) 793-9800  
 F - (905) 793-0641

PROJECT TITLE:  
 PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
 FORMER OAKVILLE HOSPITAL LANDS  
 OAKVILLE, ONTARIO

DRAWING TITLE:  
 CONCENTRATIONS OF PCBs  
 IN GROUNDWATER

PROJECT No.:	BRM-00235695-A0	DWN:	EE
SCALE:	AS NOTED	CHKD:	JC
DATE:	FEBRUARY 2017	FIG. No.:	6F

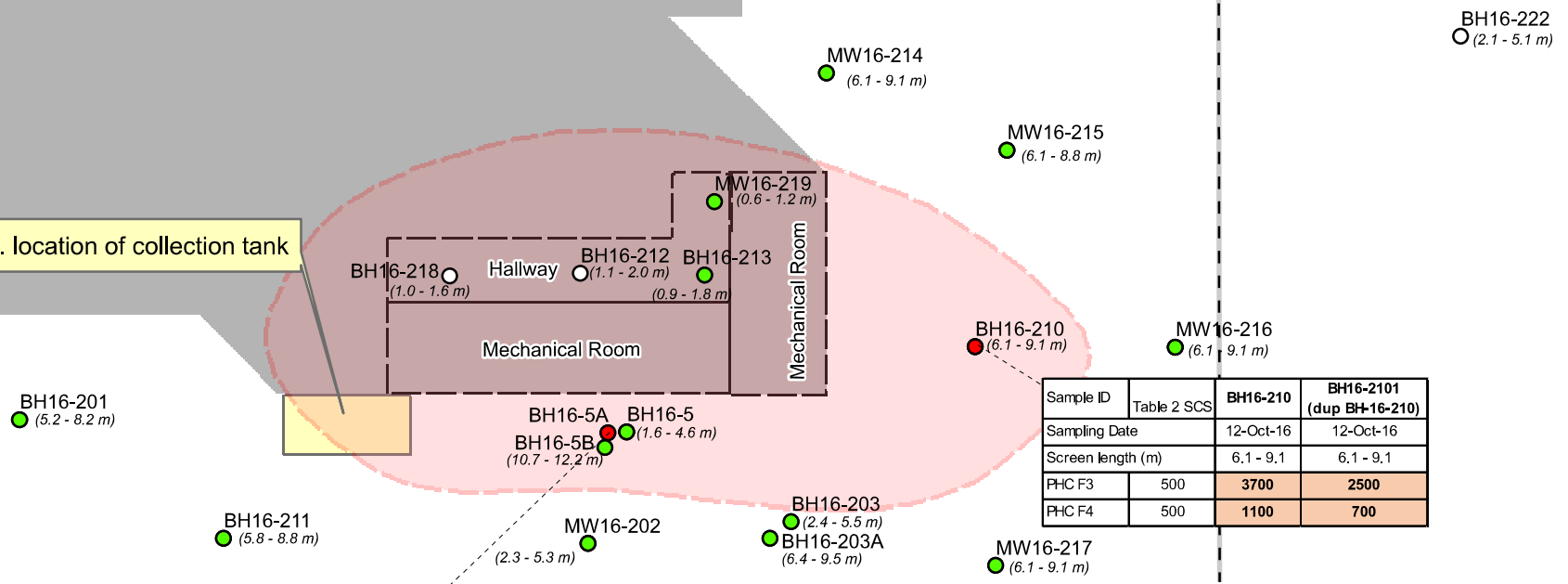






NORTH SOUTH

Approx. location of collection tank



Sample ID	Table 2 SCS	BH16-210	BH16-2101 (dup BH-16-210)
Sampling Date		12-Oct-16	12-Oct-16
Screen length (m)		6.1 - 9.1	6.1 - 9.1
PHC F3	500	3700	2500
PHC F4	500	1100	700

Sample ID	Table 2 SCS	BH16-5A
Sampling Date		21-Jun-16
Screen length (m)		8.5 - 10.1
PHC F2	150	160
PHC F3	500	14000
PHC F4	500	4200



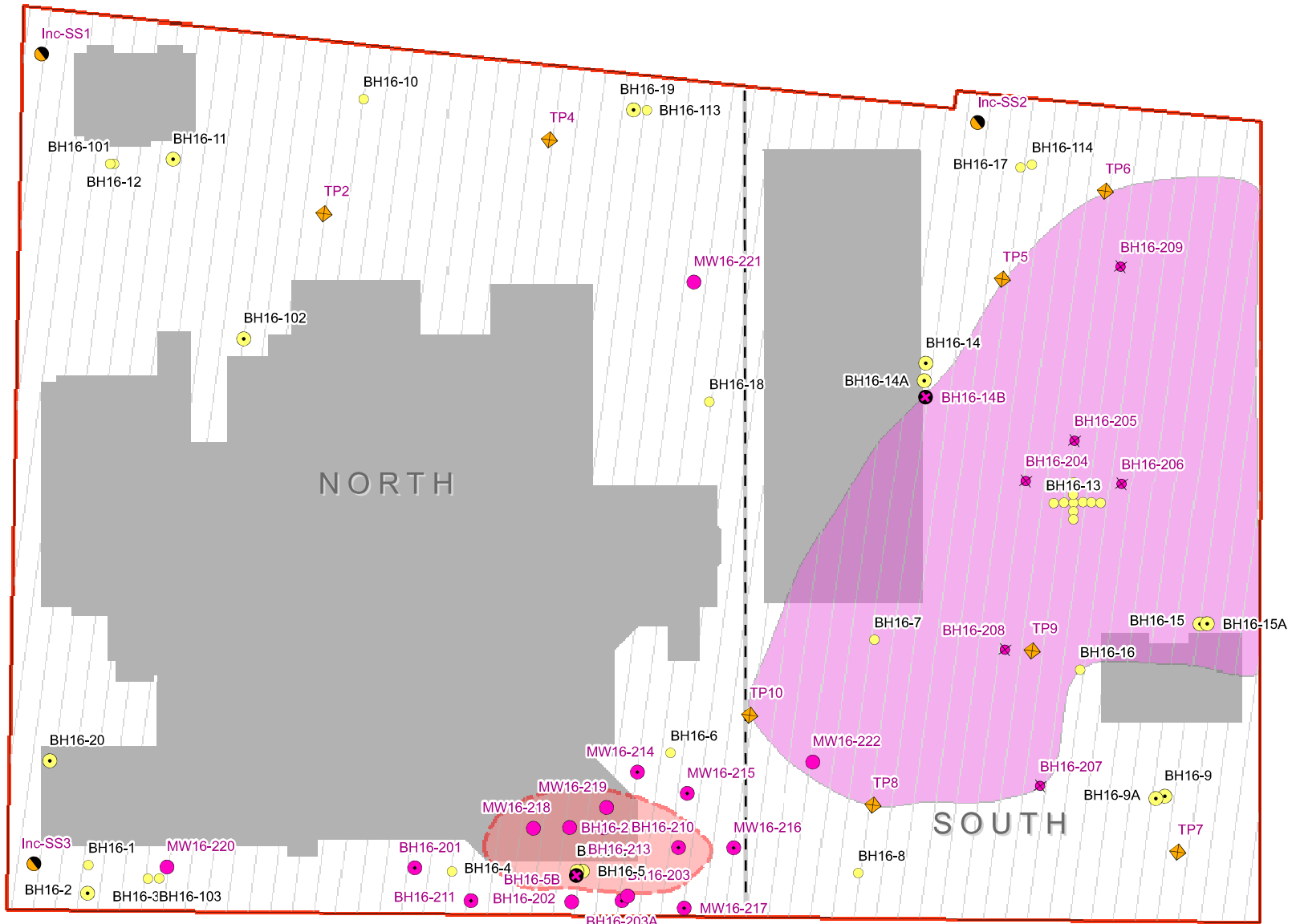
Approximate Site Boundary  
 ● Groundwater Meets Table 2 SCS  
 ○ Insufficient Groundwater Recovery (no data)  
  Estimated Extent of PHC impacted Groundwater  
 Existing Building Footprint  
 ● Groundwater Exceeds Table 2 SCS (2.3 - 5.3 m) Well Screened Interval (m bgs)

**exp Services Inc.**  
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 BRAMPTON, ONTARIO  
 L6T 4V1  
 T - (905) 793-9800  
 F - (905) 793-0641

PROJECT TITLE:  
 PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
 FORMER OAKVILLE HOSPITAL LANDS  
 OAKVILLE, ONTARIO

DRAWING TITLE:  
 PETROLEUM DELINEATION AREA  
 GROUNDWATER EXCEEDANCES

PROJECT No.:	BRM-00235695-A0	DWN:	EE
SCALE:	AS NOTED	CHD:	RH
DATE:	NOVEMBER 2016	FIG. No.:	9



- Approximate Site Boundary
- Existing Building Footprint
- Borehole (WSP)
- Monitoring Well (WSP)
- Overburden - 5-6 m (exp)
- Shallow Bedrock - 8 m (exp)
- Deep Bedrock - 12-15 m (exp)
- ◇ Test Pit (exp)
- ◇ Borehole - 3 m (exp)
- EC/SAR Impacted Soil
- PAH Impacted Soil
- Estimated Extent of PHC impacted Groundwater



**exp Services Inc.**  
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PROJECT TITLE:  
 PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
 FORMER OAKVILLE HOSPITAL LANDS  
 OAKVILLE, ONTARIO

DRAWING TITLE:  
 SITE OVERVIEW

PROJECT No.:	BRM-00235695-A0	DWN:	EE
SCALE:	AS NOTED	CHKD:	RH
DATE:	NOVEMBER 2016	FIG. No.:	10

## Tables

**TABLE 1 - Identified Areas of Potential Environmental Concern (APECs)**

BRM-00235695-A0 Former Oakville Hospital Lands, Oakville, ON

Area of Potential Environmental Concern (APEC) <sup>(1)</sup>	Location of APEC on Phase Two Property	Potentially Contaminating Activity (PCA) <sup>(2)</sup>	Location of PCA (on-Site or off-Site)	Contaminants of Potential Concern <sup>(3)</sup>	Media Potentially Impacted (Groundwater, soil and/or sediment)
<b>APEC 1:</b> Presence of two (2) underground storage tanks on west side of building addressed as 327 Reynolds St.	Northwest corner of Site	28: Gasoline and Associated Products Storage in Fixed Tanks	On-Site	PHCs, BTEX	Soil and Groundwater
<b>APEC 2:</b> Two (2) former fuel oil USTs on west side of building addressed as 327 Reynolds St.	Northwest corner of Site	28: Gasoline and Associated Products Storage in Fixed Tanks	On-Site	PHCs, BTEX	Soil and Groundwater
<b>APEC 3:</b> Potential poor fill quality in area of former fuel oil USTs	Northwest corner of Site	30: Importation of Fill Material of Unknown Quality	On-Site	Metals	Soil
<b>APEC 4:</b> Presence of collection pit storage tank west of the building addressed as 327 Reynolds St	West side of Site	8: Chemical Manufacturing, Processing and Bulk Storage	On-Site	PHCs, BTEX, Metals	Soil and Groundwater
<b>APEC 5:</b> Former PCB storage site listing for 327 Reynolds St.	Northeast corner of Site	Not listed: PCB storage Site	On-Site	PCBs	Soil
<b>APEC 6:</b> Presence of underground storage tank / collection tank on east side of building addressed as 327 Reynolds St	Mid-portion of Site	28: Gasoline and Associated Products Storage in Fixed Tanks	On-Site	PHCs, BTEX	Soil and Groundwater
<b>APEC 7:</b> Presence of diesel AST in the mechanical room.	West portion of Site	28: Gasoline and Associated Products Storage in Fixed Tanks	On-Site	PHCs, BTEX	Soil and Groundwater
<b>APEC 8:</b> Registered waste generator of various waste streams including halogenated solvents	Northwest portion of Site	58: Waste Disposal and Waste Management, including thermal treatment, landfilling, and transfer of waste, other than use of biosoils as soil conditioners	On-Site	PHCs, BTEX VOCs MET & ING	Soil and Groundwater
<b>APEC 9:</b> Potential presence of fuel tank at former high school (presence of fill pipe, east side- 291 Reynolds St)	Southwest portion of Site (east side of building)	28: Gasoline and Associated Products Storage in Fixed Tanks	On-Site	PHCs, BTEX	Soil and Groundwater
<b>APEC 10:</b> Potential presence of fuel tank at former high school (presence of fill pipe, west side- 291 Reynolds St)	Southwest portion of Site (west side of building)	28: Gasoline and Associated Products Storage in Fixed Tanks	On-Site	PHCs, BTEX	Soil and Groundwater
<b>APEC 11:</b> Registered waste generator of various waste streams including halogenated solvents (Oakville High School, 291 Reynolds St)	Southwest portion of Site	58: Waste Disposal and Waste Management, including thermal treatment, landfilling, and transfer of waste, other than use of biosoils as soil conditioners	On-Site	PHCs, BTEX VOCs MET & ING	Soil and Groundwater
<b>APEC 12:</b> Potential presence of fill material in area of former building footprint (Oakville High School, 291 Reynolds St)	Southwest portion of Site	30: Importation of Fill Material of Unknown Quality	On-Site	MET PAHs	Soil

**TABLE 1 - Identified Areas of Potential Environmental Concern (APECs)**

BRM-00235695-A0 Former Oakville Hospital Lands, Oakville, ON

Area of Potential Environmental Concern (APEC) <sup>(1)</sup>	Location of APEC on Phase Two Property	Potentially Contaminating Activity (PCA) <sup>(2)</sup>	Location of PCA (on-Site or off-Site)	Contaminants of Potential Concern <sup>(3)</sup>	Media Potentially Impacted (Groundwater, soil and/or sediment)
<b>APEC 13:</b> Former shop class area associated with former Oakville High School	Southwest corner of Site	Not listed: Former shop class area	On-Site	PHCs, BTEX	Soil
<b>APEC 14:</b> Application of de-icing salts on asphalt covered surfaces on Site	Entire Site (only asphalt covered surfaces)	Not listed: Application of de-icing salts	On-Site	EC, SAR (Soil) Na, Cl (Groundwater)	Soil and Groundwater
<b>APEC 15:</b> Potential presence of fill material	Entire Site (only asphalt covered surfaces)	30: Importation of Fill Material of Unknown Quality	On-Site	MET PAHs	Soil
<b>APEC 16:</b> Presence of brine UST on west side of former Hospital building	West portion of Site	8: Chemical Manufacturing, Processing and Bulk Storage	On-Site	EC, SAR (Soil) Na, Cl (Groundwater)	Soil and Groundwater
<b>APEC 17:</b> Presence of smoke stack / chimney on Site building	Landscaped areas of the Site	Not listed – presence of smoke stack / chimney	On-Site	PAHs Metals	Soil
<b>APEC 18:</b> Spill incident from off-Site UST (west of Site- 358 Reynolds)	Off-Site (west)	Not listed: Spill incident	Off-Site	PHCs, BTEX VOCs	Groundwater

exp Services Inc.

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Notes:

1. Area of Potential Environmental Concern means the area on, in or under a phase one study area where one or more contaminants are potentially present, as determined through the PI ESA, including through (a) identification of past or present uses on, in or under the phase one property, and (b) identification of potentially contaminating activities

2. Potentially contaminating activity means a use or activity set out in Column A of Table 2 of Schedule I that is occurring or has occurred in a phase one study area:

3. When completing this column, identify all contaminants of potential concern using the Method Groups as identified in the "Protocol for in the Assessment of Properties under Part XV.1 of the Environmental Protection Act, March 9, 2004, amended as of July 1, 2011, as specified below

ABNs	PCBs	Metals	Electrical Conductivity	SAR
CPs	PAHs	As, Sb, Se	Cr (VI)	
1,4- Dioxane	THMs	Na	Hg	
Dioxins/Furans, PCDDs/PCDFs	VOCs	B-HWS	Methyl Mercury	
OCs	BTEX	Cl-	high pH	
PHCs	Ca, Mg	CN-	low pH	

4. When submitting a record of site condition for filing, a copy of this table must be attached

**\*\*Cette publication hautement spécialisée n'est disponible qu'en anglais en vertu du règlement 671/92, qui en exempte l'application de la Loi sur les services en français. Pour obtenir de l'aide en français, veuillez communiquer avec le ministère de l'Environnement au 1-800-461-6290**



**TABLE 2 - Summary of Soil Samples Submitted for Chemical Analysis**  
 BRM-00235695-A0 Former Oakville Hospital Lands, Oakville, ON

Soil Sample Number	Sample Depth Interval (m)	Rationale	Analysis	Consultant
BH16-5B-S5	3.1-3.7	PHC Delineation of BH16-5A (Vertical delineation)	PHCs including BTEX	exp Services Inc.
BH16-201-5	3.1-3.7	PHC Delineation		exp Services Inc.
BH16-202-5	3.1-3.8			exp Services Inc.
BH16-203-5	3.1-3.8			exp Services Inc.
BH16-204-S2	0.8-1.5		PAH Delineation	PAHs
BH16-204-S5	3.1-3.8	exp Services Inc.		
BH16-204-S6	3.8-4.6	exp Services Inc.		
BH16-205-S1	0-0.8	exp Services Inc.		
BH16-205-S3	1.5-2.3	exp Services Inc.		
BH16-206-S2	0.8-1.5	exp Services Inc.		
BH16-206-S4	2.3-3.05	exp Services Inc.		
BH16-207-S2	0.8-1.5	exp Services Inc.		
BH16-207-S5	3.1-3.8	exp Services Inc.		
BH16-208-S1	0-0.8	exp Services Inc.		
BH16-208-S4	2.3-3.1	exp Services Inc.		
BH16-209-S1	0-0.8	exp Services Inc.		
BH16-209-S3	1.5-2.3	exp Services Inc.		
BH16-210-S5	3.1-3.7	PHC Delineation		
BH16-211-S5	3.1-3.7		exp Services Inc.	
BH16-212-S3	1.2-1.8		exp Services Inc.	
BH16-213-S3	1.2-1.8		exp Services Inc.	
BH16-214-SS6	3.8 - 4.4		exp Services Inc.	
BH16-215-SS5	3.1 - 3.7		exp Services Inc.	
BH16-216-SS5	3.1 - 3.7		exp Services Inc.	
BH16-217-SS5	3.1 - 3.7		exp Services Inc.	
BH16-218-SS3	1.2 - 1.7		exp Services Inc.	
BH16-219-SS3	1.2 - 1.8		exp Services Inc.	
BH16-220-SS2	0.8 - 1.4	Fill material characterization	Metals	exp Services Inc.
BH16-220-SS4	2.3 - 2.9	EC / SAR delineation	EC/ SAR	exp Services Inc.
BH16-221-SS1	0 - 0.6	Fill material characterization	Metals	exp Services Inc.

**TABLE 2 - Summary of Soil Samples Submitted for Chemical Analysis**  
 BRM-00235695-A0 Former Oakville Hospital Lands, Oakville, ON

Soil Sample Number	Sample Depth Interval (m)	Rationale	Analysis	Consultant
BH16-221-SS5	3.1 - 3.7	Former registered waste generator	PHCs	exp Services Inc.
BH16-221-SS6	3.8 - 4.4		VOCs	exp Services Inc.
BH16-222-SS4	2.3 - 2.9		PHCs	exp Services Inc.
BH16-222-SS6	4.6 - 5.2		VOCs	exp Services Inc.
TP2-SS1	0 - 0.8	Delineation of fill material	PAHs, Metals	exp Services Inc.
TP4-SS2	0.8 - 1.5			exp Services Inc.
TP4-SS6	3.8 - 4.6			exp Services Inc.
TP5-SS1	0 - 0.8			exp Services Inc.
TP6-SS2	0.8 - 1.5			exp Services Inc.
TP6-SS6	3.8 - 4.6			exp Services Inc.
TP7-SS2	0.8 - 1.5			exp Services Inc.
TP7-SS5	3.1 - 3.8			exp Services Inc.
TP8-SS2	0.8 - 1.5			exp Services Inc.
TP9-SS1	0 - 0.8			Former machine shop
TP10-SS2	0.8 - 1.5	Delineation of fill material	PAHs, Metals	exp Services Inc.
TP10-SS5	3.1 - 3.8			exp Services Inc.
INC-SS1	0 - 0.3	Surface soil sample- potential particulates associated with former incinerator	PAHs, Metals	exp Services Inc.
INC-SS2	0 - 0.3			exp Services Inc.
INC-SS3	0 - 0.3			exp Services Inc.
<b>QA/QC Samples:</b>				
BH16-55B-S5 (duplicate of BH16-5B-S5)	3.1-3.7	QA/QC	PHCs including BTEX	exp Services Inc.
BH16-2022-5 (duplicate of BH16-202-5)	3.1-3.8	QA/QC	PHCs including BTEX	exp Services Inc.
BH16-2044-S2 (Dup of BH16-204 S2)	0.8-1.5	QA/QC	PAHs	exp Services Inc.
BH16-257-SS5 (Dup of BH16-217-SS5)	3.1 - 3.7	QA/QC	PHCs including BTEX	exp Services Inc.
BH16-250-SS4 (Dup of BH16-220-SS4)	2.3 - 2.9	QA/QC	PHCs including BTEX	exp Services Inc.
TP44-SS22 (Dup TP4-SS2)	0.8 - 1.5	QA/QC	PAHs, Metals	exp Services Inc.
TP55-SS11 (Dup TP5-SS1)	0 - 0.8	QA/QC	PAHs, Metals	exp Services Inc.

**TABLE 3 - Monitoring Well Completion Details**

BRM-00235695-A0 Former Oakville Hospital Lands, Oakville, ON

Monitoring Well ID	Ground Elevation (mAMSL)	Stickdown (m)	Top of Pipe Elevation (mAMSL)	Length of Well (m)	Screen Length (m)	Water Level (m)	Riser Length (m)	Top of Screen (mAMSL)	Bottom of Screen (mAMSL)	Geologic Units Intercepted by Well Screen
MW16-201	91.91	0.10	91.81	8.20	3.00	2.70	5.20	86.71	83.71	
MW16-5B	92.61	0.13	92.48	12.10	1.50	10.00	10.60	82.01	80.51	Shale Bedrock
MW16-14B	92.26	0.14	92.112	15.20	1.50	8.60	13.70	78.56	77.06	Shale Bedrock
MW16-201	91.91	0.08	91.83	8.20	3.00	2.70	5.20	86.71	83.71	Shale Bedrock
MW16-202	92.51	0.14	92.37	5.30	3.00	4.10	2.30	90.21	87.21	Silty clay / silty sand
MW16-203	92.50	0.11	92.39	5.40	3.00	4.00	2.40	90.10	87.10	Silty clay / silty sand
MW16-203A	92.48	0.16	92.32	9.40	3.00	4.20	6.40	86.08	83.08	Shale Bedrock
MW16-210*	92.49	0.12	92.37	9.10	3.00	6.40	6.10	86.39	83.39	Shale Bedrock
MW16-211	92.51	0.17	92.34	8.80	3.00	6.30	5.80	86.71	83.71	Shale Bedrock
MW16-212	89.62	0.04	89.58	1.90	0.90	1.90	1.00	88.62	87.72	Silty clay
MW16-213	89.62	0.07	89.55	1.80	0.90	1.50	0.90	88.72	87.82	Silty clay / silty sand
MW16-214	92.75	0.11	92.64	9.10	3.00	7.70	6.10	86.65	83.65	Shale Bedrock
MW16-215	92.12	0.12	92	8.80	2.70	6.60	6.10	86.02	83.32	Shale Bedrock
MW16-216	92.03	0.09	91.94	9.10	3.00	6.70	6.10	85.93	82.93	Shale Bedrock
MW16-217	92.03	0.13	91.9	9.10	3.00	7.40	6.10	85.93	82.93	Shale Bedrock
MW16-218	89.64	0.08	89.56	1.60	0.90	Dry	0.70	88.94	88.04	Clay / silty sand
MW16-219	89.61	0.05	89.56	2.00	1.08	0.90	0.92	88.69	87.61	Clay / silty sand
MW16-220	93.51	0.90	92.61	4.00	3.00	2.70	1.00	92.51	89.51	Silty sand / sand
MW16-221	93.69	0.10	93.59	5.10	3.00	3.40	2.10	91.59	88.59	Clayey silt / sand
MW16-222	91.97	0.12	91.85	5.10	3.00	Dry	2.10	89.87	86.87	Silty clay / silty sand

mAMSL - meters above mean sea level (Water level from November 22, 2016, \*- water level from October 12, 2016)

mbgs - meters below ground surface

**TABLE 4 - Summary of Groundwater Samples Submitted for Chemical Analysis**

BRM-00235695-A0 Former Oakville Hospital Lands, Oakville, ON

Sample Identification	Sampling Date	Rationale	Analysis	Consultant
MW16-5B	13-Oct-16	Vertical delineation of PHC impacts	PHCs	exp Services Inc.
BH16-14A	20-Sep-16	Vertical delineation well for Na/Cl installed by WSP, Re sampling for confirmation of Na/Cl impacts in groundwater	Sodium, Chloride	exp Services Inc.
MW16-14B	12-Oct-16	Vertical delineation of Na/Cl impacts in groundwater	Sodium, Chloride	exp Services Inc.
MW16-201	29-Sep-16	Horizontal and vertical delineation of PHC impacts in groundwater	PHCs including BTEX	exp Services Inc.
MW16-202	29-Sep-16			exp Services Inc.
MW16-203	29-Sep-16			exp Services Inc.
MW16-203A	12-Oct-16			exp Services Inc.
MW16-210	12-Oct-16			exp Services Inc.
MW16-211	12-Oct-16			exp Services Inc.
MW16-213	13-Oct-16			Horizontal delineation of PHC impacts in groundwater (interior)
MW16-214	10-Nov-16	Horizontal and vertical delineation of PHC impacts in groundwater		exp Services Inc.
MW16-215	10-Nov-16			exp Services Inc.
MW16-216	11-Nov-16			exp Services Inc.
MW16-217	11-Nov-16			exp Services Inc.
MW16-219	10-Nov-16	Horizontal delineation of PHC impacts in groundwater (interior)		exp Services Inc.
MW16-220	14-Nov-16	Former UST location		PHCs including BTEX, Na, Cl
MW16-221	14-Nov-16	Former Oakville Hospital- registered waste generator	PHCs, VOCs, Metals and Inorganics	exp Services Inc.
<b>QA/QC Samples:</b>				
MW16-2101 (dup of MW16-210)	12-Oct-16	Sampling for QA/QC Purposes	PHCs including BTEX	exp Services Inc.
MW16-2022 (Dup of MW16-202)	29-Sep-16			exp Services Inc.
MW16-255 (Dup of MW16-215)	10-Nov-16			exp Services Inc.
MW16-255 (Dup of MW16-215)	11-Nov-16			exp Services Inc.
MW16-256 (Dup of MW16-216)	11-Nov-16			exp Services Inc.

**TABLE 5A - Summary of Groundwater Levels and Elevations in Bedrock**

BRM-00235695-A0 Former Oakville Hospital Lands, Oakville, ON

Monitoring Well ID	Ground Elevation (mAMSL)	Stickdown (m)	Top of Pipe Elevation (mAMSL)	Water Level Depth (m btop)	Water Level Depth (mAMSL)	Date
MW16-5B	92.61	0.18	92.43	10.00	82.43	13-Oct-16
	92.61	0.18	92.43	10.00	82.43	22-Nov-16
MW16-14B	92.26	0.14	92.12	8.73	83.39	12-Oct-16
	92.26	0.14	92.12	8.622	83.50	22-Nov-16
MW16-201	91.91	0.11	91.80	3.143	88.66	29-Sep-16
	91.91	0.11	91.80	2.734	89.07	22-Nov-16
MW16-203A	92.49	0.19	92.30	6.616	85.68	12-Oct-16
	92.49	0.19	92.30	7.235	85.06	22-Nov-16
MW16-210	92.49	0.12	92.37	6.38	85.99	12-Oct-16
MW16-211	92.50	0.16	92.34	6.199	86.14	12-Oct-16
	92.50	0.16	92.34	6.324	86.02	22-Nov-16
MW16-214	92.75	0.11	92.64	6.955	85.69	10-Nov-16
	92.75	0.11	92.64	7.745	84.90	22-Nov-16
MW16-215	92.12	0.12	92.00	6.375	85.63	10-Nov-16
	92.12	0.12	92.00	6.604	85.40	22-Nov-16
MW16-216	92.03	0.08	91.95	5.36	86.59	11-Nov-16
	92.03	0.08	91.95	6.759	85.19	22-Nov-16
MW16-217	92.03	0.13	91.90	5.9	86.00	11-Nov-16
	92.03	0.13	91.90	7.452	84.45	22-Nov-16

**TABLE 5B - Summary of Groundwater Levels and Elevations in Overburden**  
 BRM-00235695-A0 Former Oakville Hospital Lands, Oakville, ON

Monitoring Well ID	Ground Elevation (mAMSL)	Stickdown (m)	Top of Pipe Elevation (mAMSL)	Water Level Depth (m btop)	Water Level Depth (mAMSL)	Date
MW16-203	92.50	0.11	92.39	4.201	88.19	29-Sep-16
	92.50	0.11	92.39	4.222	88.17	22-Nov-16
MW16-202	92.50	0.14	92.36	4.17	88.19	29-Sep-16
	92.50	0.14	92.36	4.189	88.17	22-Nov-16
MW16-212	89.62	0.04	89.58	1.909	87.67	13-Oct-16
	89.62	0.04	89.58	1.915	87.67	22-Nov-16
MW16-213	89.62	0.07	89.55	1.501	88.05	13-Oct-16
	89.62	0.07	89.55	1.551	88.00	22-Nov-16
MW16-218	89.64	0.08	89.56	DRY	--	13-Oct-16
MW16-219	89.60	0.05	89.55	0.964	88.59	10-Nov-16
	89.60	0.05	89.55	0.965	88.59	22-Nov-16
MW16-220	93.51	0.09	93.42	3.09	90.33	14-Nov-16
	93.51	0.09	93.42	2.771	90.65	22-Nov-16
MW16-221	93.69	0.10	93.59	4.137	89.45	14-Nov-16
	93.69	0.10	93.59	3.46	90.13	22-Nov-16
MW16-222	91.97	0.12	91.85	DRY	--	14-Nov-16

## **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 327, 291 Reynolds Street and 348 Allan Street, in Oakville, Ontario (hereinafter referred to as the 'Site'). The Phase Two ESA will be conducted to provide further characterization of the Site subsurface conditions and define the extent of soil and groundwater impacts identified in previous investigations to support the Site Remediation and the subsequent filing of a Record of Site Condition (RSC) on the Ontario Ministry of the Environment (MOE) Brownfields Environmental Site Registry. 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. This SAAP was prepared prior to the completion of the Phase Two ESA and does not incorporate the additional delineation program.

## 2. Field Sampling Program

The field sampling program was developed to provide for the collection of samples of the surficial and subsurface soil materials for chemical analysis of petroleum hydrocarbons (PHCs), benzene, toluene, ethylbenzene and xylenes (collectively known as 'BTEX'), volatile organic compounds (VOCs), metals, inorganics, and polycyclic aromatic hydrocarbons (PAHs) in soil and for the analysis of PHCs, BTEX, VOCs, PAHs, metals and inorganics in groundwater. The soil sampling media is to consist of the surface soils and upper overburden materials (depths up to 6.1 m below grade). The soil sampling will be location-specific to assess for the potential presence of PHCs, BTEX, VOCs, metals and inorganic parameters based on the identification of areas of potential environmental concern (APECs). Vapour readings will also be collected in the field to determine samples to be submitted for BTEX and PHC F1-F2 analysis. The soil sample intervals will extend from the surface up to a maximum depth of approximately 6.1 m below grade.

The groundwater sampling will be location-specific to assess for the potential presence of PHCs, BTEX, VOCs, metals and inorganics based on the identification of APECs and for delineation purposes (extent of PHC impacts). The monitoring well network is to comprise of a series of overburden, shallow bedrock and deep bedrock monitoring, as well as existing wells installed in previous investigations (WSP).

Vertical control of the boreholes and monitoring wells will be obtained through the completion of an elevation survey with reference to a local structure with a known geodetic elevation. Groundwater flow and direction in the water table aquifer will also be determined through groundwater level measurements and the elevations established from 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;
- Monitoring Well Development;



- 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. Several boreholes are proposed to be advanced in the area of BH16-5A for horizontal and vertical delineation of the PHC impacts in groundwater and several boreholes in the vicinity of BH16-13 for horizontal and vertical delineation of PAH impacts in soil. The boreholes will be completed to provide for the collection of samples of the surficial and overburden materials beneath the Site.

Prior to borehole drilling, utility clearances will be obtained from public and private locators, as required. If any uncertainty regarding the location of a buried utility at a borehole location is encountered, hand augering or digging will be performed beforehand to confirm the location of the utility.

Where there is overlying asphalt or concrete, the overlying material will be mechanically cored to provide access to the underlying soil materials. The borehole drilling program will be conducted by a licensed driller under the oversight of **exp** field staff. Auger flights 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.

For drilling activities, the soil samples will be collected from the boreholes using 5 cm diameter, 150 cm long, PVC dual core sampling device. The dual-core sampling device will be attached to drill rods and advanced into the soil by means of a mechanically or manually driven 63.6 kg hammer dropped from a height of approximately 0.76 m, in accordance with ASTM method D-1586.

Upon retrieval from the boreholes, the dual-core and 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 VOCs, BTEX and PHC F1-F2 will be collected into jars provided with Teflon seals, and filled to minimize head-space volume. 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 contractual laboratory within analytical test group holding times under Chain of Custody protocols. New disposable chemical resistant gloves will be used for each soil core to prevent sample cross-contamination.

### 3.3 Monitoring Well Installation

Several boreholes will be instrumented as groundwater monitoring wells installed with 10 foot (3.05 m) long screens intercepting the native overburden material, where the water table aquifer is expected. The monitoring wells will be constructed using 51 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 flush mounted protective steel casings 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. The monitoring wells will be developed using a dedicated inertial pump and sample tubing to scrub the well screen or dedicated 1 L bailers dropped from a sufficient height to disturb the water column.

Monitoring well development will be monitored by visual observations of turbidity, and by taking field measurements of pH, specific conductance and temperature for every standing well (i.e. wetted casing) volume removed. Standing water volumes will be determined by means of an electronic water level meter. Water quality parameter measurements will be recorded using a multi meter instrument. The instrument probes will be calibrated prior to use following manufacturer's procedures using analytical grade reagents, or if obtained from a field equipment supplier, the calibration will be checked. Approximately 3 to 5 wetted well volumes will be removed and well development will continue until the purged water has chemically stabilized as indicated by visual observations and field parameter measurements. 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 newly installed and existing 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 or in a bound field notebook. 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 the newly installed monitoring well locations and select previously installed monitoring wells. The top of casing and ground surface elevation of each monitoring well location will be surveyed against a structure with a known geodetic elevation. Readings measured against a structure with a known geodetic elevation will be recorded as meters above mean sea level (m AMSL). The elevation survey will be accurate to within  $\pm 0.3$  cm.

### 3.7 Groundwater Sampling

Groundwater samples will be collected from newly installed and select existing monitoring wells for chemical analysis. The monitoring wells will be purged of three (3) to five (5) wetted well volumes of water to remove standing water and draw in fresh formation water. Wetted well volumes will be determined by measuring water levels with an electronic water level meter. A low-flow peristaltic pump and dedicated sample tubing, or dedicated bailers, will be used for well purging and sample collection. Wells, which are purged dry, are to recover to approximately 75% of static levels before sampling.

Recommended groundwater sample volumes will be collected into pre-cleaned 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. Samples for VOC analysis will be collected in triplicate vials prepared with concentrated hydrochloric acid or an acceptable substitute as a preservative. 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. Groundwater samples to be submitted for analysis of metals and inorganic parameters will be collected with a 45 micron disposable filter to remove fine sediment.

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 chain of custody 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. For the borehole drilling and soil sampling, split soil sampling devices and dual core samplers will be cleaned/decontaminated between sampling intervals and auger flights between borehole locations 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 control samples will be collected to evaluate the accuracy and reproducibility of the field sampling procedures. For groundwater sampling, one (1) field duplicate is to be collected for every ten (10) samples submitted for chemical analysis. For multiple day sampling events, at least one (1) field duplicate soil and groundwater sample will be 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.

For groundwater samples submitted for the analysis of VOCs or PHCs, one (1) trip blank prepared by the contractual laboratory will be submitted for chemical analysis to evaluate the potential for sample cross-contamination. The recommended alert criterion is the detection of any test group analyte at a concentration in excess of laboratory detection limits.

## **Appendix B: Plan of Survey**

## **Appendix C: Borehole Logs**

# Log of Borehole BH/MW16-14B

Project No. BRM-00235695-AO

Drawing No. B2

Project: Phase II ESA

Sheet No. 1 of 1

Location: Former Oakville Hospital, 327 Reynolds St. Oakville, ON

Please refer to Borehole Location Plan

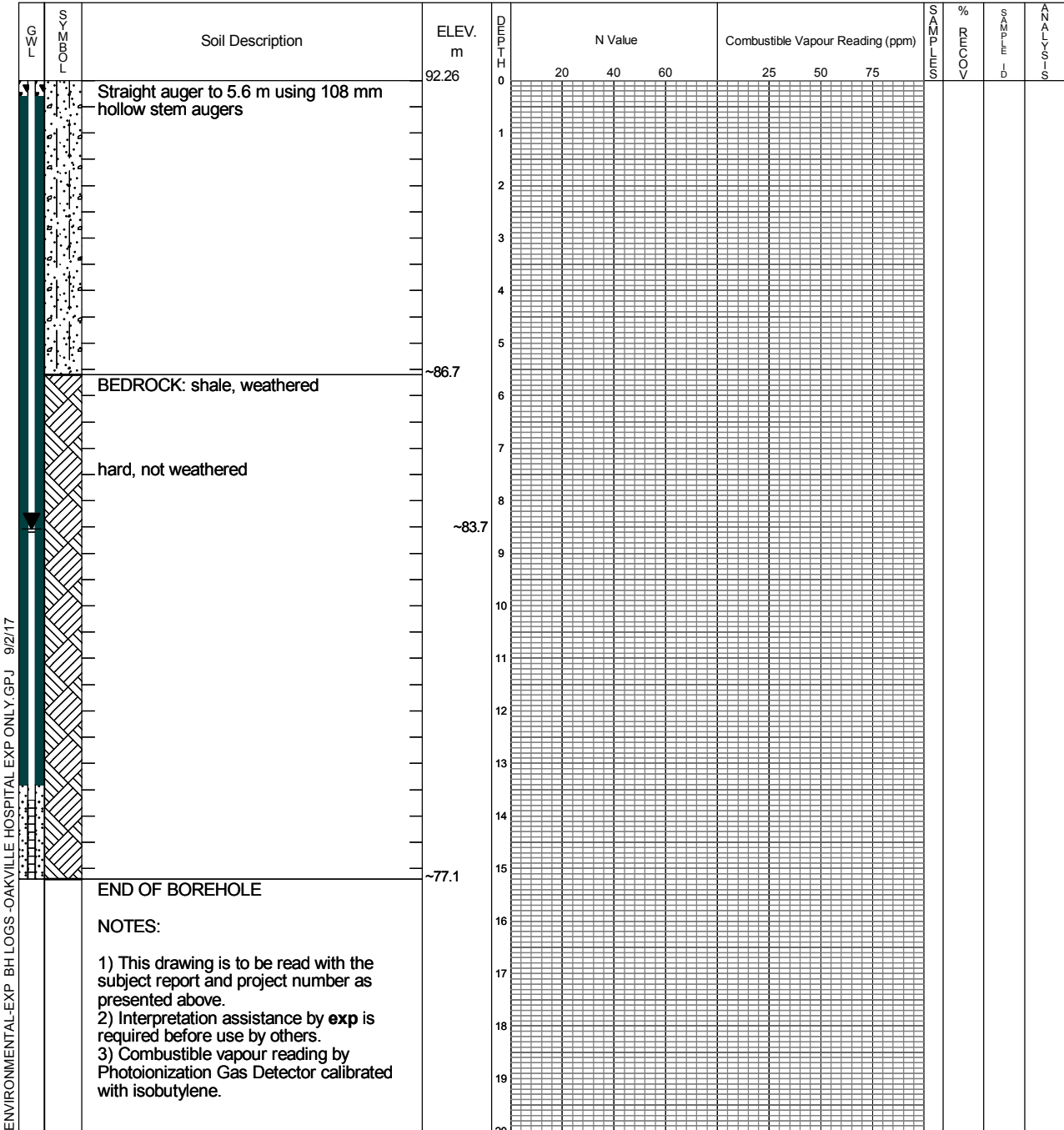
Date Drilled: October 4, 2016

**Chemical Analysis**


BTEX	Benzene, Toluene, Ethylbenzene and Xylenes	* Duplicate Sample
ING	Metals and Inorganics	PCB Polychlorinated Biphenyls
MET	Metals	PHC Petroleum Hydrocarbons (F1-F4)
PAH	Polycyclic Aromatic Hydrocarbons	VOC Volatile Organic Compounds
PEST	Organochlorine Pesticides	

Drill Type: Truckmount CME 55

Datum: Relative



ENVIRONMENTAL-EXP BH LOGS -OAKVILLE HOSPITAL EXP ONLY.GPJ 9/2/17

 exp Services Inc.  
 Brampton, Ontario  
 Telephone: 905-793-9800  
 Facsimile: 905-793-0641

Time	Water Level (m)	Depth to Cave (m)
October 12, 2016	8.7	
November 22, 2016	8.6 m	

# Log of Borehole BH/MW16-5B

Project No. BRM-00235695-AO

Drawing No. B1

Project: Phase II ESA

Sheet No. 1 of 1

Location: Former Oakville Hospital, 327 Reynolds St. Oakville, ON

Please refer to Borehole Location Plan

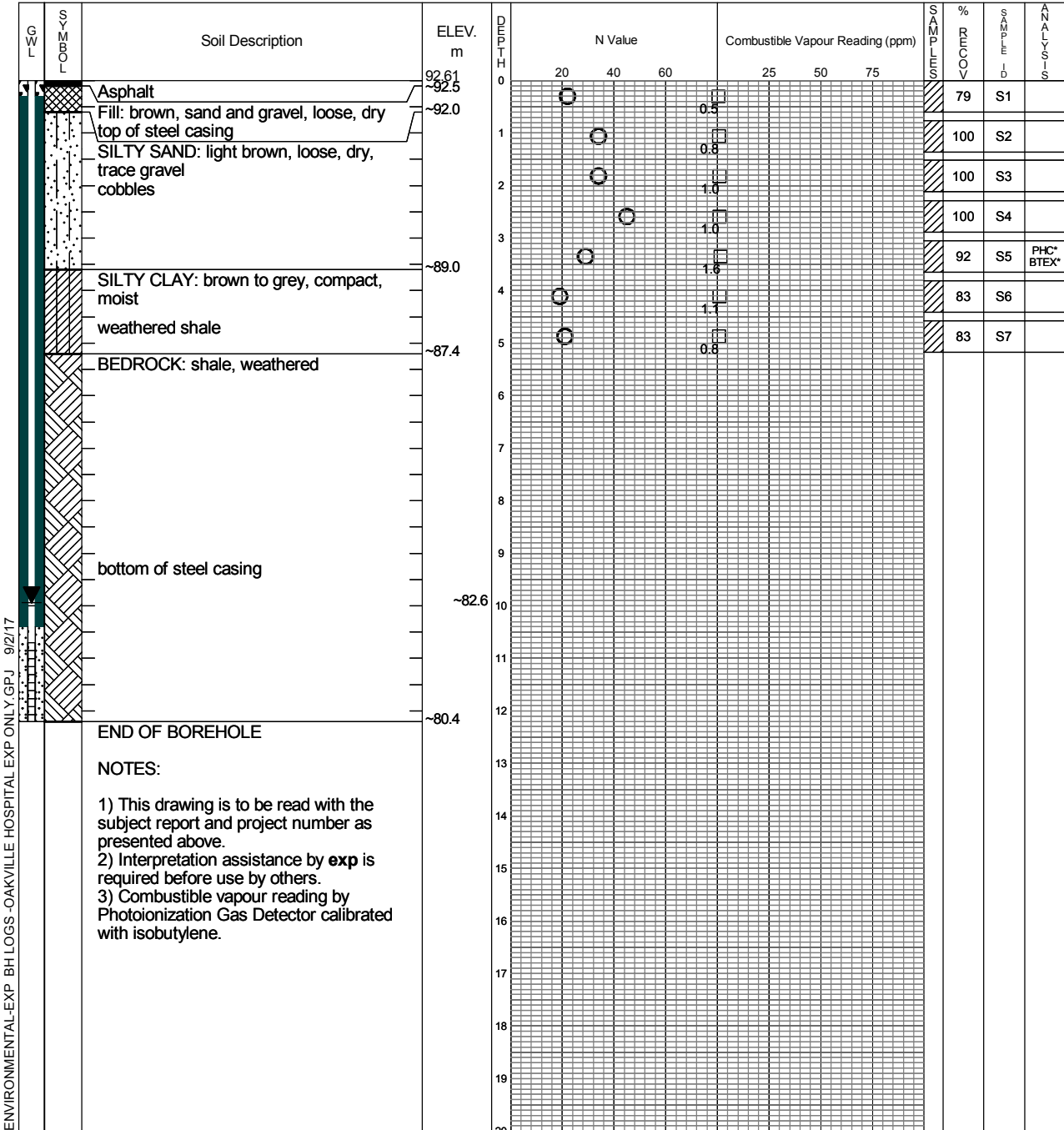
Date Drilled: October 6, 2016

**Chemical Analysis**


BTEX	Benzene, Toluene, Ethylbenzene and Xylenes	*	Duplicate Sample
ING	Metals and Inorganics	PCB	Polychlorinated Biphenyls
MET	Metals	PHC	Petroleum Hydrocarbons (F1-F4)
PAH	Polycyclic Aromatic Hydrocarbons	VOC	Volatile Organic Compounds
PEST	Organochlorine Pesticides		

Drill Type: Truckmount CME 55

Datum: Relative



ENVIRONMENTAL-EXP BH LOGS -OAKVILLE HOSPITAL EXP ONLY.GPJ 9/2/17

 exp Services Inc.  
Brampton, Ontario  
Telephone: 905-793-9800  
Facsimile: 905-793-0641

Time	Water Level (m)	Depth to Cave (m)
October 13, 2016	10.0 m	
November 22, 2016	10.0 m	



# Log of Borehole BH/MW16-201

Project No. BRM-00235695-AO

Drawing No. B3

Project: Phase II ESA

Sheet No. 1 of 1

Location: Former Oakville Hospital, 327 Reynolds St. Oakville, ON

Please refer to Borehole Location Plan

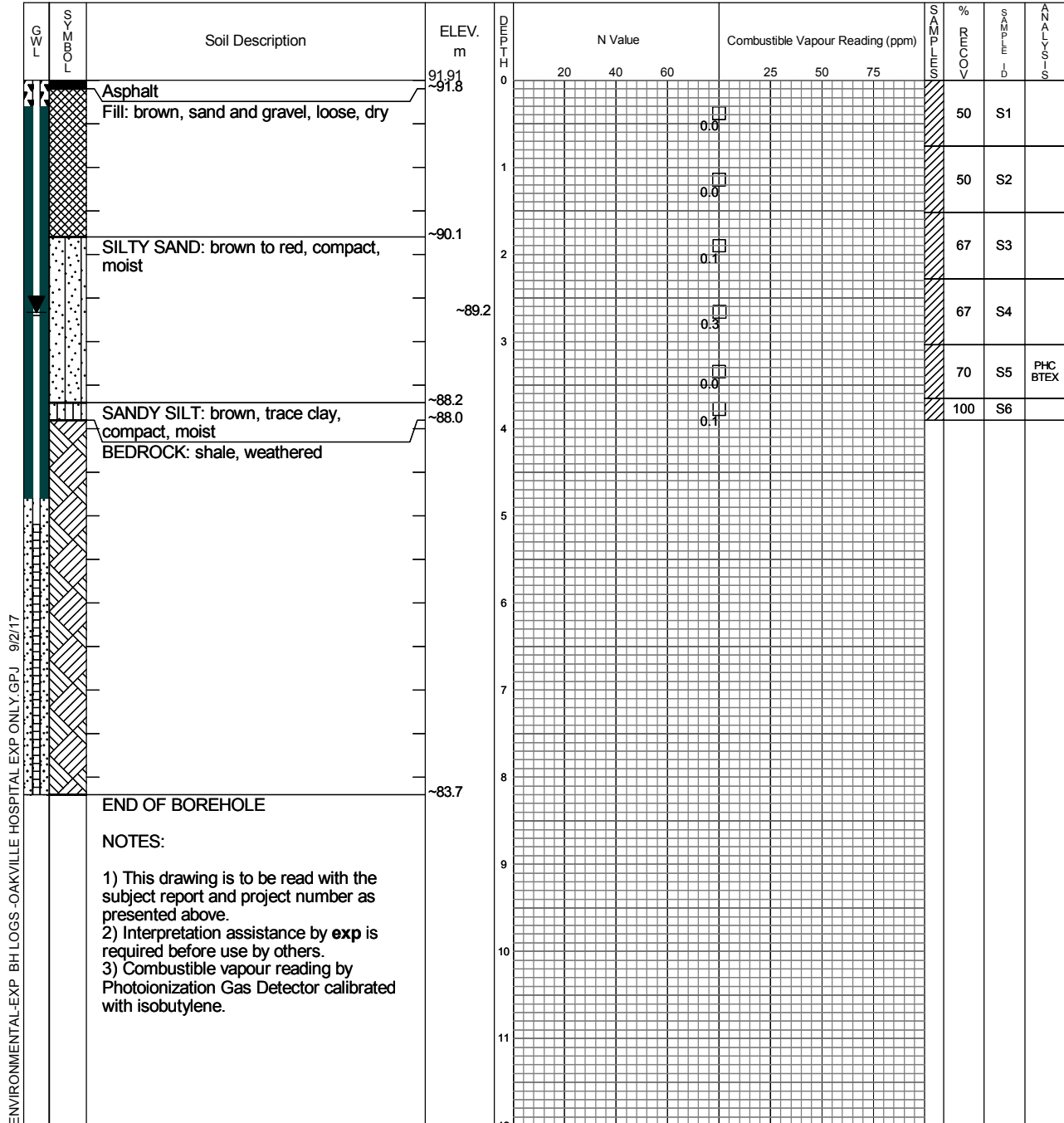
Date Drilled: September 26, 2016

**Chemical Analysis**

BTEX	Benzene, Toluene, Ethylbenzene and Xylenes	*	Duplicate Sample
ING	Metals and Inorganics	PCB	Polychlorinated Biphenyls
MET	Metals	PHC	Petroleum Hydrocarbons (F1-F4)
PAH	Polycyclic Aromatic Hydrocarbons	VOC	Volatile Organic Compounds
PEST	Organochlorine Pesticides		

Drill Type: Geoprobe 7822DT

Datum: Relative



ENVIRONMENTAL-EXP BH LOGS -OAKVILLE HOSPITAL EXP ONLY.GPJ 9/2/17

Time	Water Level (m)	Depth to Cave (m)
September 29, 2016	3.1 m	
November 22, 2016	2.7 m	

# Log of Borehole BH/MW16-202

Project No. BRM-00235695-AO

Drawing No. B4

Project: Phase II ESA

Sheet No. 1 of 1

Location: Former Oakville Hospital, 327 Reynolds St. Oakville, ON

Please refer to Borehole Location Plan

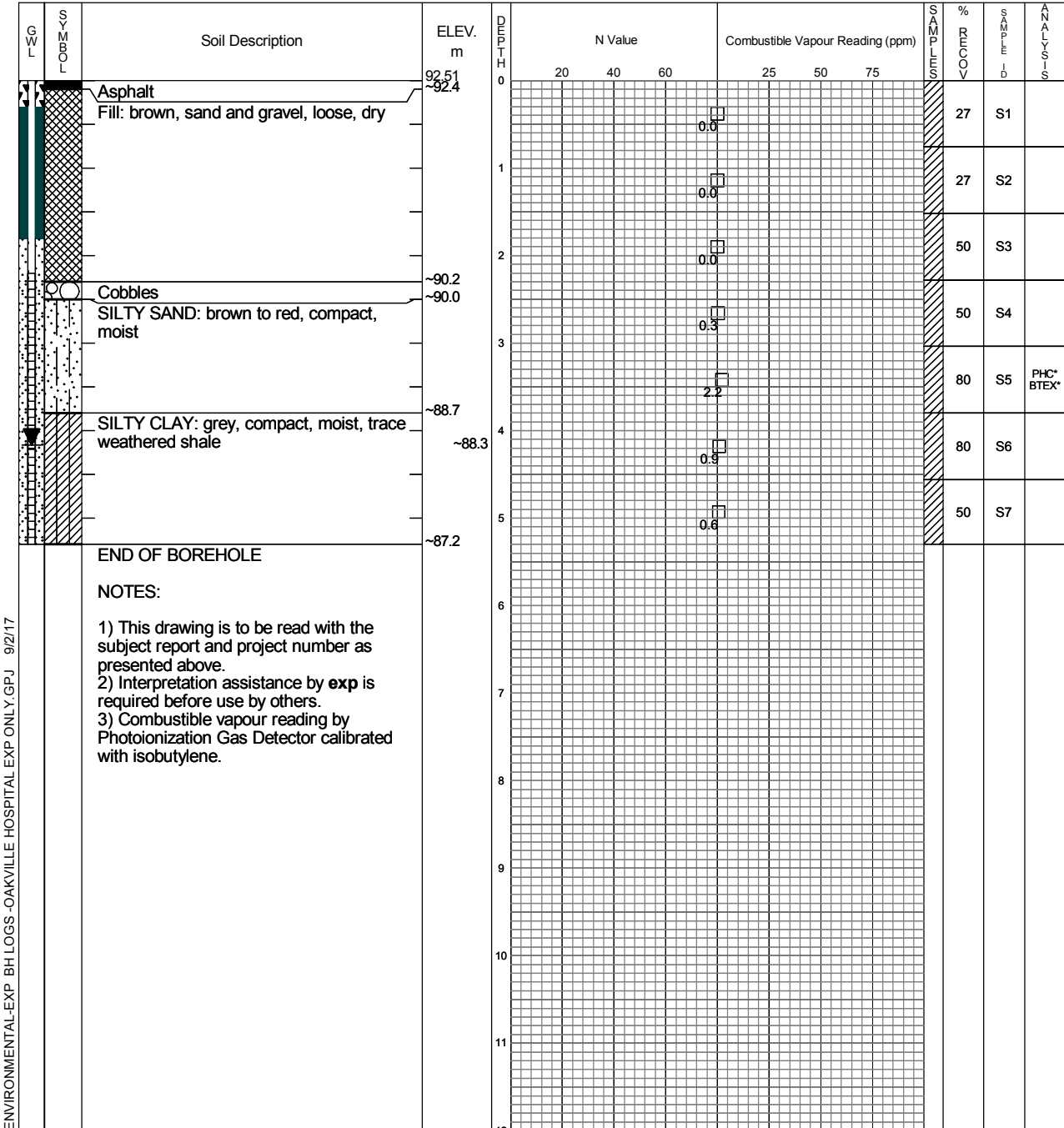
Date Drilled: September 27, 2016

**Chemical Analysis**

BTEX	Benzene, Toluene, Ethylbenzene and Xylenes	* Duplicate Sample
ING	Metals and Inorganics	PCB Polychlorinated Biphenyls
MET	Metals	PHC Petroleum Hydrocarbons (F1-F4)
PAH	Polycyclic Aromatic Hydrocarbons	VOC Volatile Organic Compounds
PEST	Organochlorine Pesticides	

Drill Type: Geoprobe 7822DT

Datum: Relative



ENVIRONMENTAL-EXP BH LOGS -OAKVILLE HOSPITAL EXP ONLY.GPJ 9/2/17

exp Services Inc.  
 Brampton, Ontario  
 Telephone: 905-793-9800  
 Facsimile: 905-793-0641

Time	Water Level (m)	Depth to Cave (m)
September 29, 2016	4.2 m	
November 22, 2016	4.2 m	

# Log of Borehole BH/MW16-203

Project No. BRM-00235695-AO

Drawing No. B5

Project: Phase II ESA

Sheet No. 1 of 1

Location: Former Oakville Hospital, 327 Reynolds St. Oakville, ON

Please refer to Borehole Location Plan

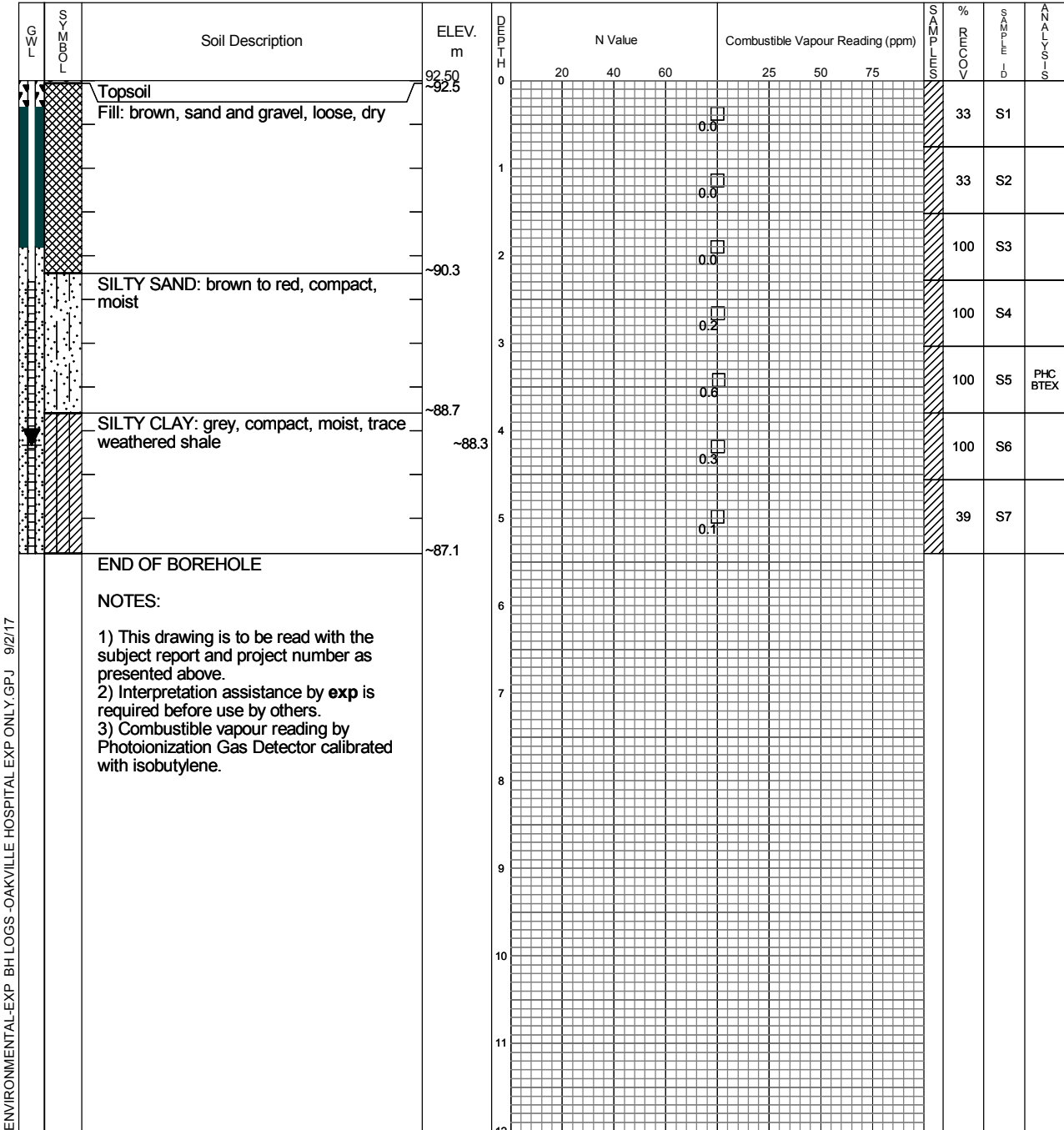
Date Drilled: September 27, 2016

**Chemical Analysis**

BTEX	Benzene, Toluene, Ethylbenzene and Xylenes	*	Duplicate Sample
ING	Metals and Inorganics	PCB	Polychlorinated Biphenyls
MET	Metals	PHC	Petroleum Hydrocarbons (F1-F4)
PAH	Polycyclic Aromatic Hydrocarbons	VOC	Volatile Organic Compounds
PEST	Organochlorine Pesticides		

Drill Type: Geoprobe 7822DT

Datum: Relative



ENVIRONMENTAL-EXP BH LOGS -OAKVILLE HOSPITAL EXP ONLY.GPJ 9/2/17

Time	Water Level (m)	Depth to Cave (m)
September 29, 2016	4.2 m	
November 22, 2016	4.2 m	

# Log of Borehole BH/MW16-203A

Project No. BRM-00235695-AO

Drawing No. B6

Project: Phase II ESA

Sheet No. 1 of 1

Location: Former Oakville Hospital, 327 Reynolds St. Oakville, ON

Please refer to Borehole Location Plan

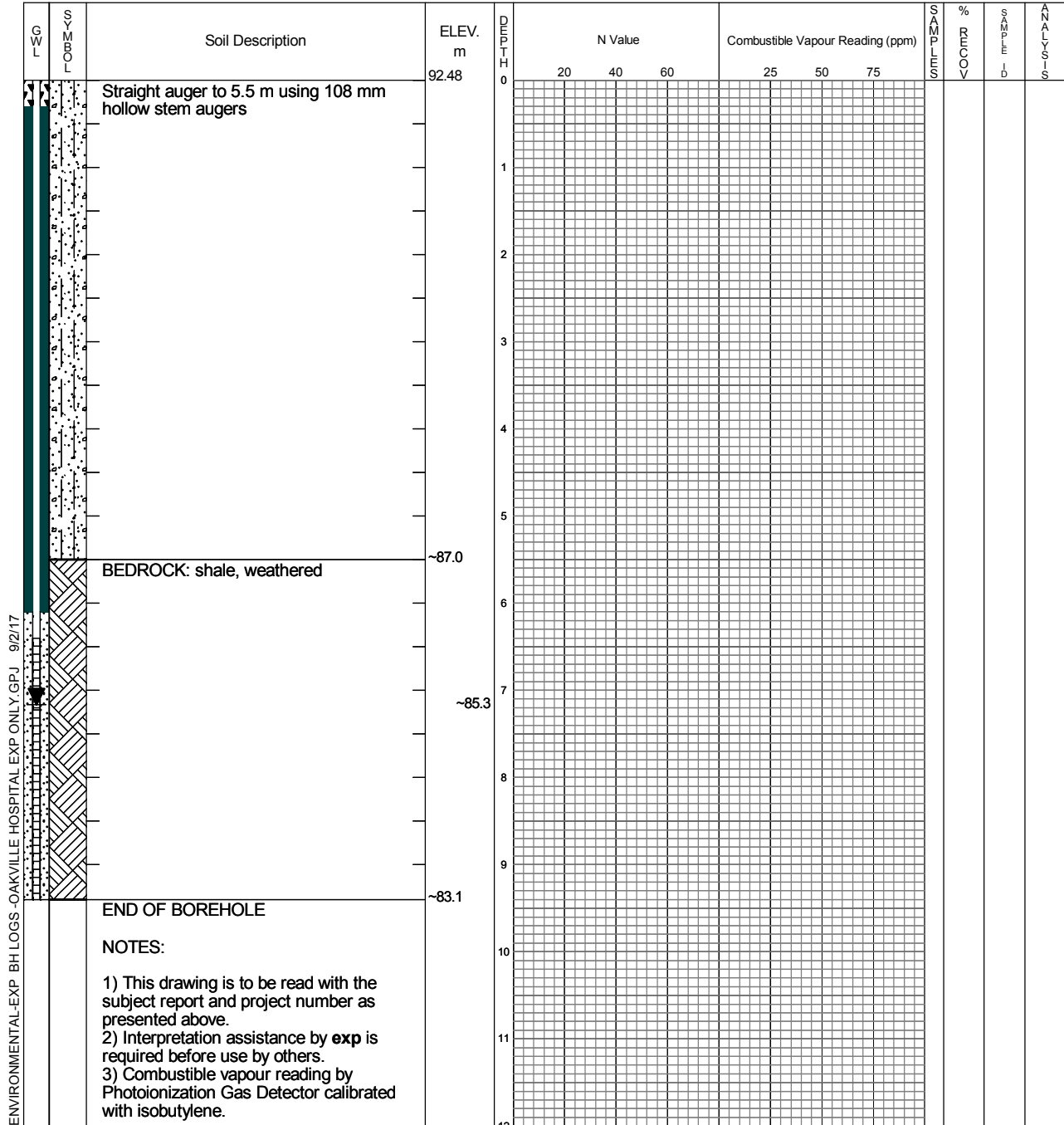
Date Drilled: October 5, 2016

**Chemical Analysis**

BTEX	Benzene, Toluene, Ethylbenzene and Xylenes	*	Duplicate Sample
ING	Metals and Inorganics	PCB	Polychlorinated Biphenyls
MET	Metals	PHC	Petroleum Hydrocarbons (F1-F4)
PAH	Polycyclic Aromatic Hydrocarbons	VOC	Volatile Organic Compounds
PEST	Organochlorine Pesticides		

Drill Type: Truckmount CME 55

Datum: Relative



Time	Water Level (m)	Depth to Cave (m)
October 12, 2016	6.6 m	
November 22, 2016	7.2 m	

# Log of Borehole BH/MW16-210

Project No. BRM-00235695-AO

Drawing No. B13

Project: Phase II ESA

Sheet No. 1 of 1

Location: Former Oakville Hospital, 327 Reynolds St. Oakville, ON

Please refer to Borehole Location Plan

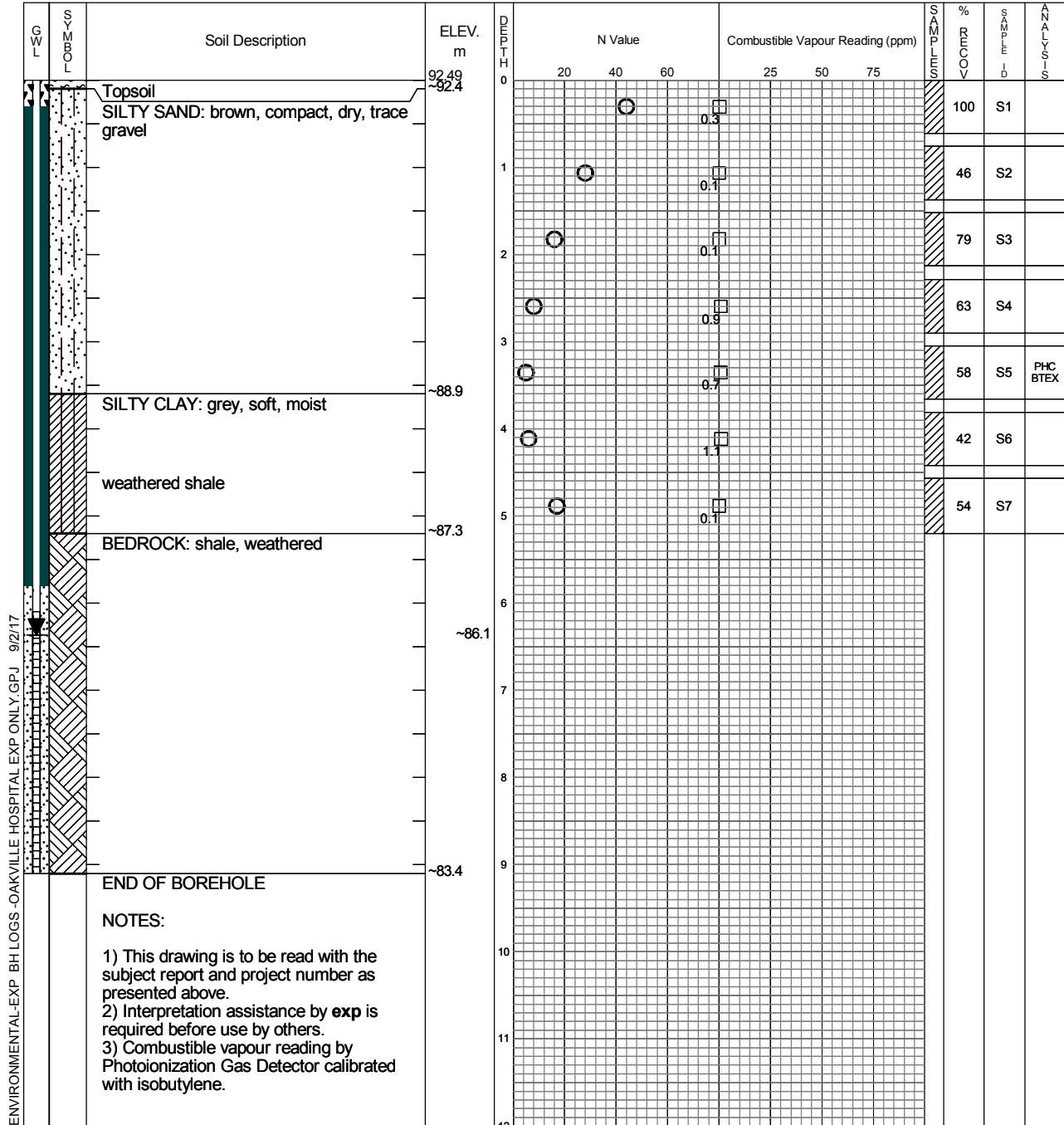
Date Drilled: October 7, 2016

**Chemical Analysis**

BTEX	Benzene, Toluene, Ethylbenzene and Xylenes	* Duplicate Sample
ING	Metals and Inorganics	PCB Polychlorinated Biphenyls
MET	Metals	PHC Petroleum Hydrocarbons (F1-F4)
PAH	Polycyclic Aromatic Hydrocarbons	VOC Volatile Organic Compounds
PEST	Organochlorine Pesticides	

Drill Type: Truckmount CME 55

Datum: Relative



 exp Services Inc.  
 Brampton, Ontario  
 Telephone: 905-793-9800  
 Facsimile: 905-793-0641

Time	Water Level (m)	Depth to Cave (m)
October 12, 2016	6.4 m	

# Log of Borehole BH/MW16-211

Project No. BRM-00235695-AO

Drawing No. B14

Project: Phase II ESA

Sheet No. 1 of 1

Location: Former Oakville Hospital, 327 Reynolds St. Oakville, ON

Please refer to Borehole Location Plan

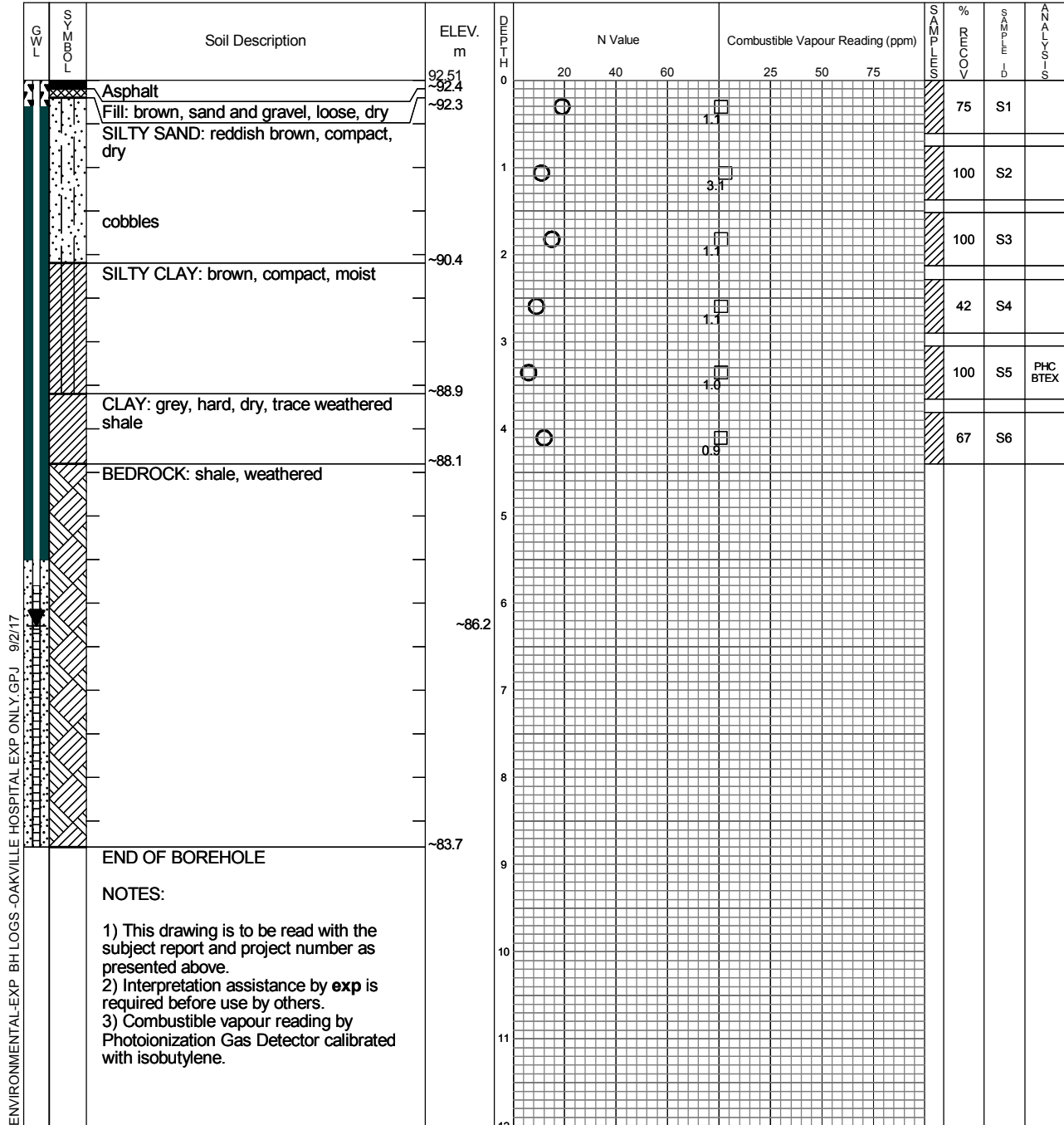
Date Drilled: October 6, 2016

**Chemical Analysis**

BTEX	Benzene, Toluene, Ethylbenzene and Xylenes	* Duplicate Sample
ING	Metals and Inorganics	PCB Polychlorinated Biphenyls
MET	Metals	PHC Petroleum Hydrocarbons (F1-F4)
PAH	Polycyclic Aromatic Hydrocarbons	VOC Volatile Organic Compounds
PEST	Organochlorine Pesticides	

Drill Type: Truckmount CME 55

Datum: Relative



ENVIRONMENTAL-EXP BH LOGS -OAKVILLE HOSPITAL EXP ONLY.GPJ 9/2/17

Time	Water Level (m)	Depth to Cave (m)
October 12, 2016	6.2 m	
November 22, 2016	6.3 m	

# Log of Borehole BH/MW16-212

Project No. BRM-00235695-AO

Drawing No. B15

Project: Phase II ESA

Sheet No. 1 of 1

Location: Former Oakville Hospital, 327 Reynolds St. Oakville, ON

Please refer to Borehole Location Plan

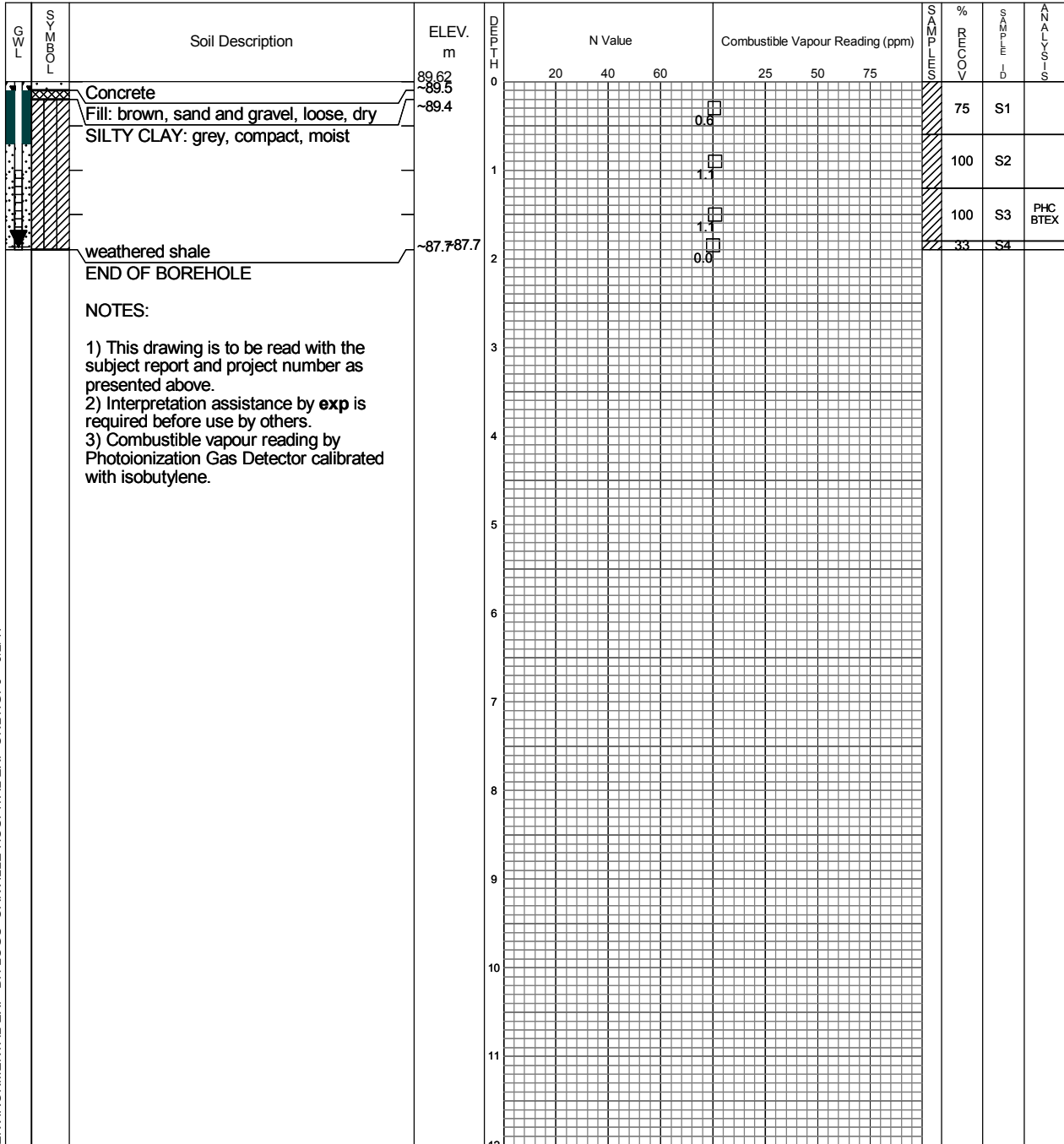
Date Drilled: October 11, 2016

**Chemical Analysis**


Drill Type: Pionjar

BTEX	Benzene, Toluene, Ethylbenzene and Xylenes	*	Duplicate Sample
ING	Metals and Inorganics	PCB	Polychlorinated Biphenyls
MET	Metals	PHC	Petroleum Hydrocarbons (F1-F4)
PAH	Polycyclic Aromatic Hydrocarbons	VOC	Volatile Organic Compounds
PEST	Organochlorine Pesticides		

Datum: Relative



ENVIRONMENTAL-EXP BH LOGS -OAKVILLE HOSPITAL EXP ONLY.GPJ 9/2/17

 exp Services Inc.  
 Brampton, Ontario  
 Telephone: 905-793-9800  
 Facsimile: 905-793-0641

Time	Water Level (m)	Depth to Cave (m)
October 13, 2016	1.9 m	
November 22, 2016	1.9 m	

# Log of Borehole BH/MW16-213

Project No. BRM-00235695-AO

Drawing No. B16

Project: Phase II ESA

Sheet No. 1 of 1

Location: Former Oakville Hospital, 327 Reynolds St. Oakville, ON

Please refer to Borehole Location Plan

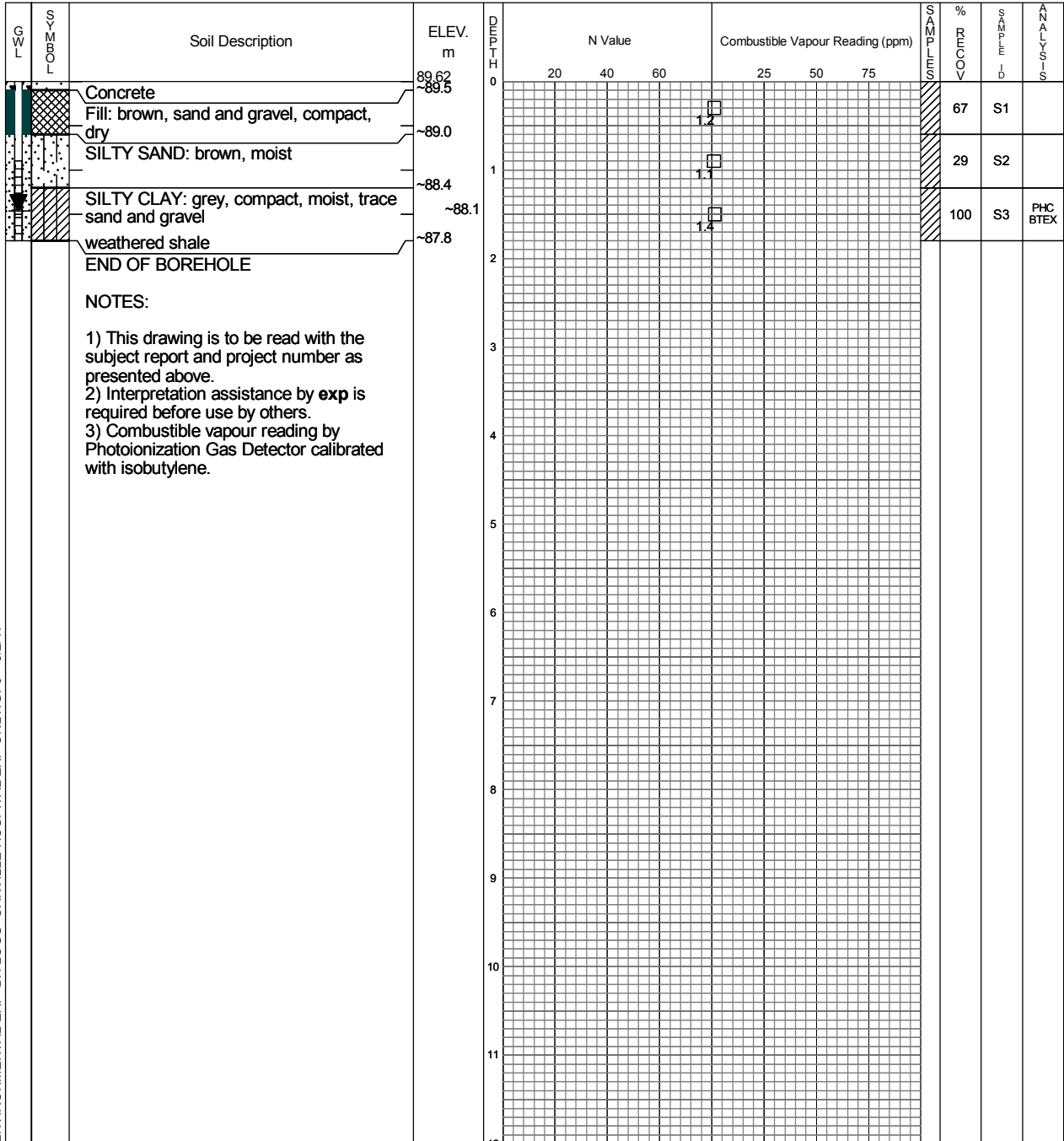
Date Drilled: October 11, 2016

**Chemical Analysis**


Drill Type: Pionjar

BTEX	Benzene, Toluene, Ethylbenzene and Xylenes	*	Duplicate Sample
ING	Metals and Inorganics	PCB	Polychlorinated Biphenyls
MET	Metals	PHC	Petroleum Hydrocarbons (F1-F4)
PAH	Polycyclic Aromatic Hydrocarbons	VOC	Volatile Organic Compounds
PEST	Organochlorine Pesticides		

Datum: Relative



ENVIRONMENTAL-EXP BH LOGS -OAKVILLE HOSPITAL EXP ONLY.GPJ 9/2/17

 exp Services Inc.  
 Brampton, Ontario  
 Telephone: 905-793-9800  
 Facsimile: 905-793-0641

Time	Water Level (m)	Depth to Cave (m)
October 13, 2016	1.5 m	
November 22, 2016	1.5 m	



# Log of Borehole BH/MW16-214

Project No. BRM-00235695-AO

Drawing No. B17

Project: Phase II ESA

Sheet No. 1 of 1

Location: Former Oakville Hospital, 327 Reynolds St. Oakville, ON

Please refer to Borehole Location Plan

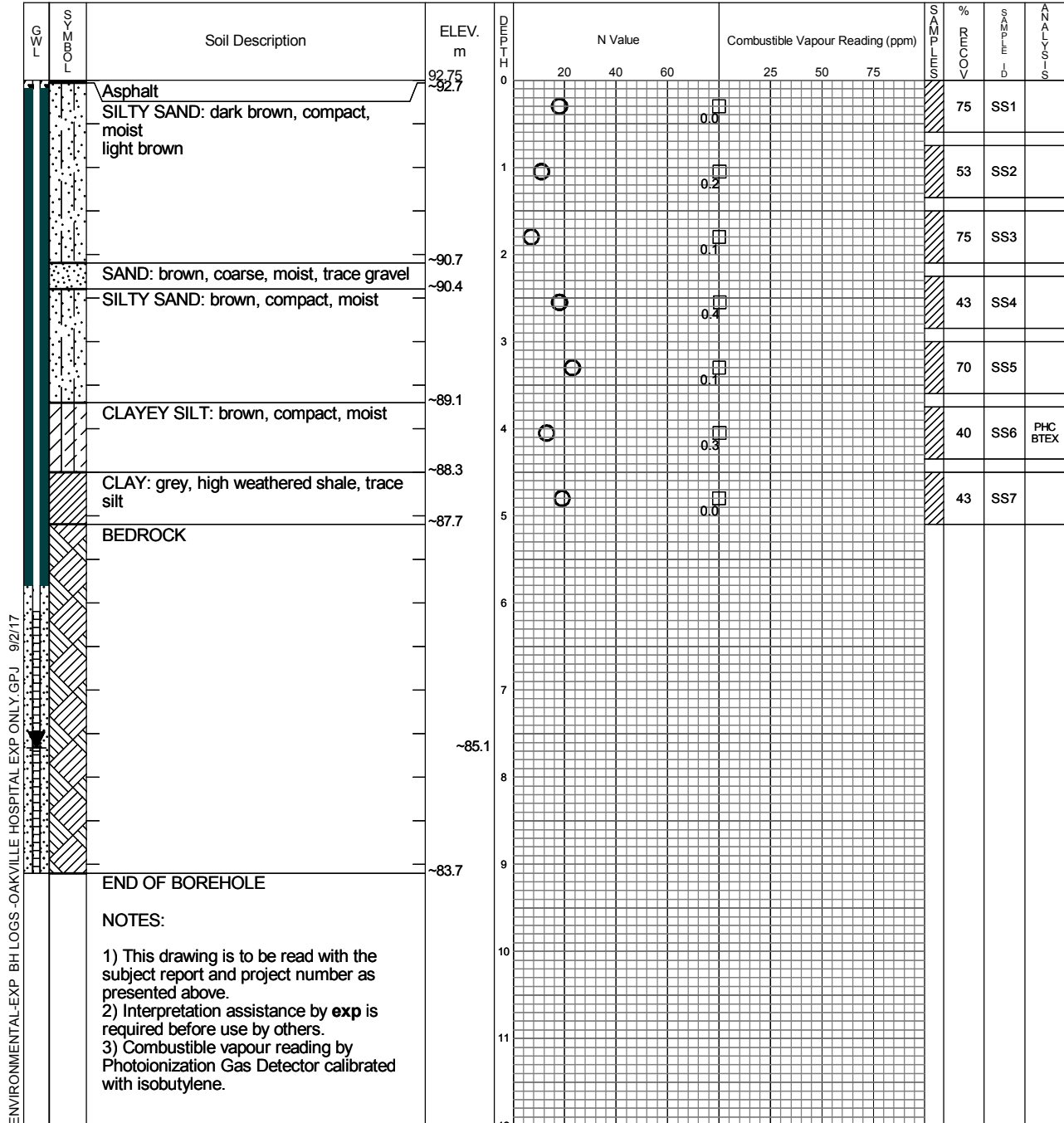
Date Drilled: November 8, 2016

**Chemical Analysis**

BTEX	Benzene, Toluene, Ethylbenzene and Xylenes	*	Duplicate Sample
ING	Metals and Inorganics	PCB	Polychlorinated Biphenyls
MET	Metals	PHC	Petroleum Hydrocarbons (F1-F4)
PAH	Polycyclic Aromatic Hydrocarbons	VOC	Volatile Organic Compounds
PEST	Organochlorine Pesticides		

Drill Type: Truckmount CME 75

Datum: Relative



ENVIRONMENTAL-EXP BH LOGS -OAKVILLE HOSPITAL EXP ONLY.GPJ 9/2/17

 exp Services Inc.  
 Brampton, Ontario  
 Telephone: 905-793-9800  
 Facsimile: 905-793-0641

Time	Water Level (m)	Depth to Cave (m)
November 10, 2016	6.9 m	
November 22, 2016	7.7 m	

# Log of Borehole BH/MW16-215

Project No. BRM-00235695-AO

Drawing No. B18

Project: Phase II ESA

Sheet No. 1 of 1

Location: Former Oakville Hospital, 327 Reynolds St. Oakville, ON

Please refer to Borehole Location Plan

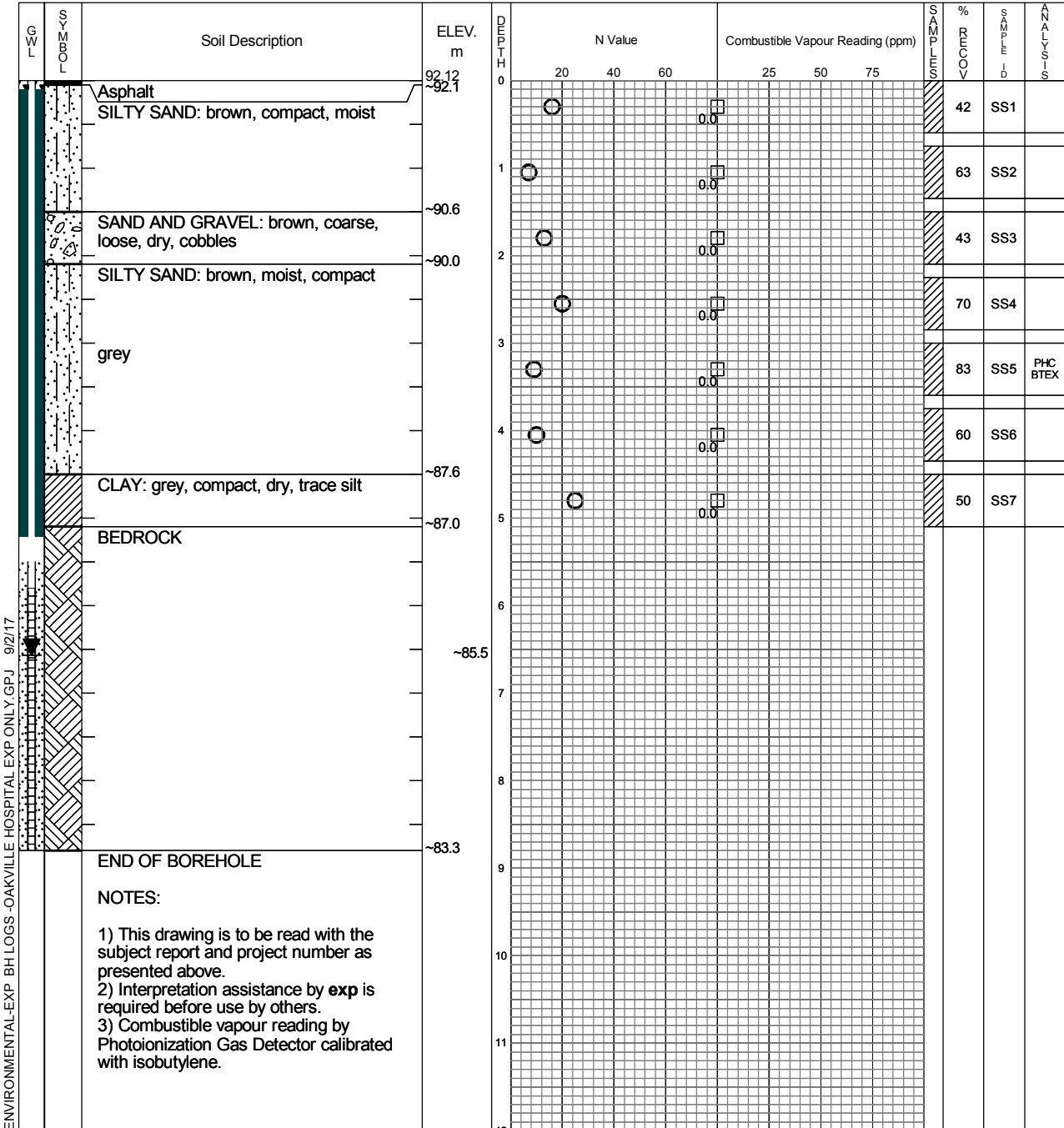
Date Drilled: November 9, 2016

**Chemical Analysis**

BTEX	Benzene, Toluene, Ethylbenzene and Xylenes	*	Duplicate Sample
ING	Metals and Inorganics	PCB	Polychlorinated Biphenyls
MET	Metals	PHC	Petroleum Hydrocarbons (F1-F4)
PAH	Polycyclic Aromatic Hydrocarbons	VOC	Volatile Organic Compounds
PEST	Organochlorine Pesticides		

Drill Type: Truckmount CME 75

Datum: Relative



 exp Services Inc.  
 Brampton, Ontario  
 Telephone: 905-793-9800  
 Facsimile: 905-793-0641

Time	Water Level (m)	Depth to Cave (m)
November 10, 2016	6.3 m	
November 22, 2016	6.6 m	

# Log of Borehole BH/MW16-216

Project No. BRM-00235695-AO

Drawing No. B19

Project: Phase II ESA

Sheet No. 1 of 1

Location: Former Oakville Hospital, 327 Reynolds St. Oakville, ON

Please refer to Borehole Location Plan

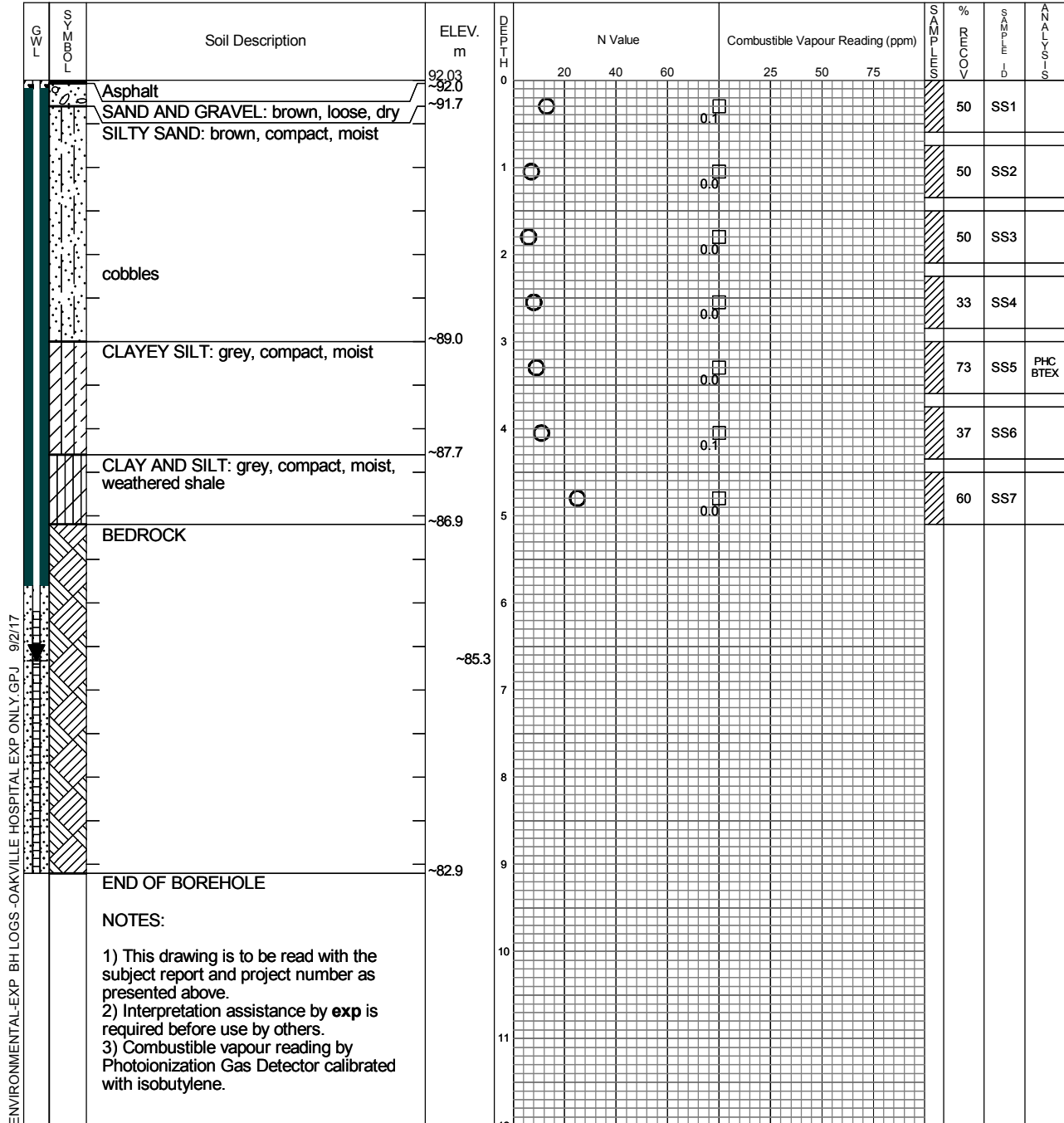
Date Drilled: November 10, 2016

**Chemical Analysis**

BTEX	Benzene, Toluene, Ethylbenzene and Xylenes	*	Duplicate Sample
ING	Metals and Inorganics	PCB	Polychlorinated Biphenyls
MET	Metals	PHC	Petroleum Hydrocarbons (F1-F4)
PAH	Polycyclic Aromatic Hydrocarbons	VOC	Volatile Organic Compounds
PEST	Organochlorine Pesticides		

Drill Type: Truckmount CME 75

Datum: Relative



Time	Water Level (m)	Depth to Cave (m)
November 11, 2016	5.3 m	
November 22, 2016	6.7 m	

# Log of Borehole BH/MW16-217

Project No. BRM-00235695-AO

Drawing No. B20

Project: Phase II ESA

Sheet No. 1 of 1

Location: Former Oakville Hospital, 327 Reynolds St. Oakville, ON

Please refer to Borehole Location Plan

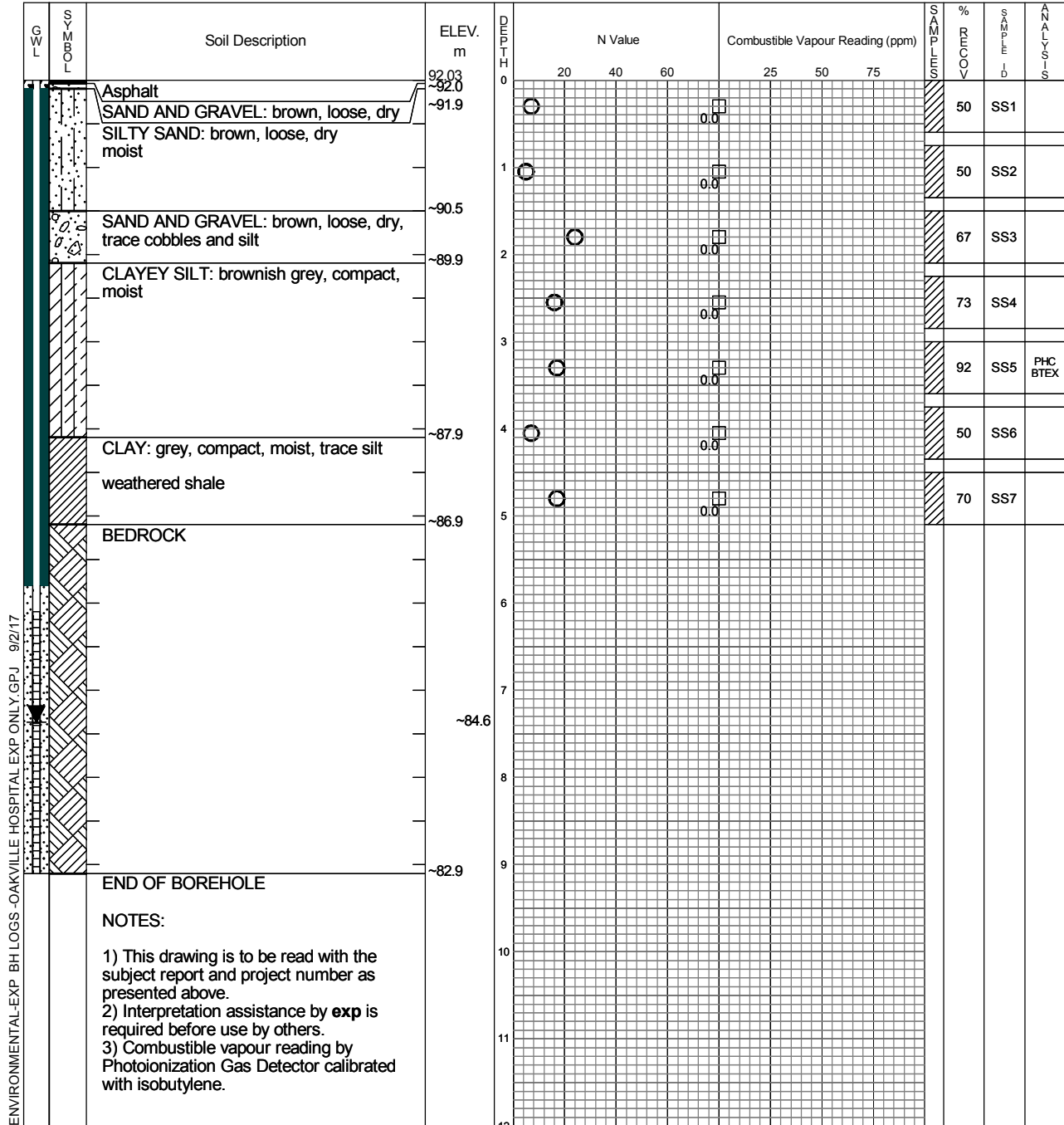
Date Drilled: November 10, 2016

**Chemical Analysis**

BTEX	Benzene, Toluene, Ethylbenzene and Xylenes	*	Duplicate Sample
ING	Metals and Inorganics	PCB	Polychlorinated Biphenyls
MET	Metals	PHC	Petroleum Hydrocarbons (F1-F4)
PAH	Polycyclic Aromatic Hydrocarbons	VOC	Volatile Organic Compounds
PEST	Organochlorine Pesticides		

Drill Type: Truckmount CME 75

Datum: Relative



ENVIRONMENTAL-EXP BH LOGS -OAKVILLE HOSPITAL EXP ONLY.GPJ 9/2/17



exp Services Inc.  
 Brampton, Ontario  
 Telephone: 905-793-9800  
 Facsimile: 905-793-0641

Time	Water Level (m)	Depth to Cave (m)
November 11, 2016	5.9 m	
November 22, 2016	7.4 m	

# Log of Borehole BH/MW16-218

Project No. BRM-00235695-AO

Drawing No. B21

Project: Phase II ESA

Sheet No. 1 of 1

Location: Former Oakville Hospital, 327 Reynolds St. Oakville, ON

Please refer to Borehole Location Plan

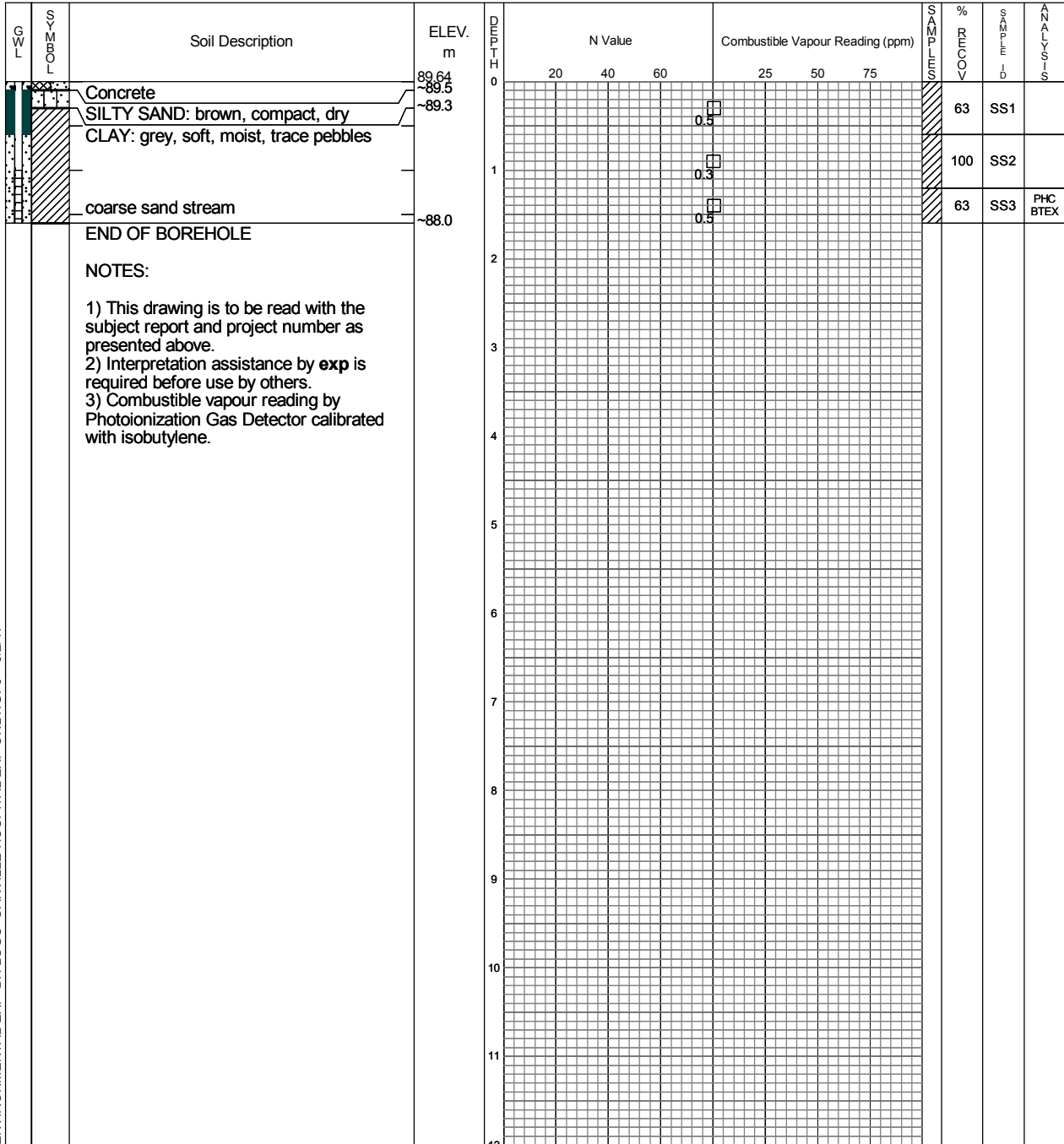
Date Drilled: November 8, 2016

**Chemical Analysis**

BTEX	Benzene, Toluene, Ethylbenzene and Xylenes	* Duplicate Sample
ING	Metals and Inorganics	PCB Polychlorinated Biphenyls
MET	Metals	PHC Petroleum Hydrocarbons (F1-F4)
PAH	Polycyclic Aromatic Hydrocarbons	VOC Volatile Organic Compounds
PEST	Organochlorine Pesticides	

Drill Type: Truckmount CME 75

Datum: Relative



ENVIRONMENTAL-EXP BH LOGS -OAKVILLE HOSPITAL EXP ONLY.GPJ 9/2/17

 exp Services Inc.  
Brampton, Ontario  
Telephone: 905-793-9800  
Facsimile: 905-793-0641

Time	Water Level (m)	Depth to Cave (m)

# Log of Borehole BH/MW16-219

Project No. BRM-00235695-AO

Drawing No. B22

Project: Phase II ESA

Sheet No. 1 of 1

Location: Former Oakville Hospital, 327 Reynolds St. Oakville, ON

Please refer to Borehole Location Plan

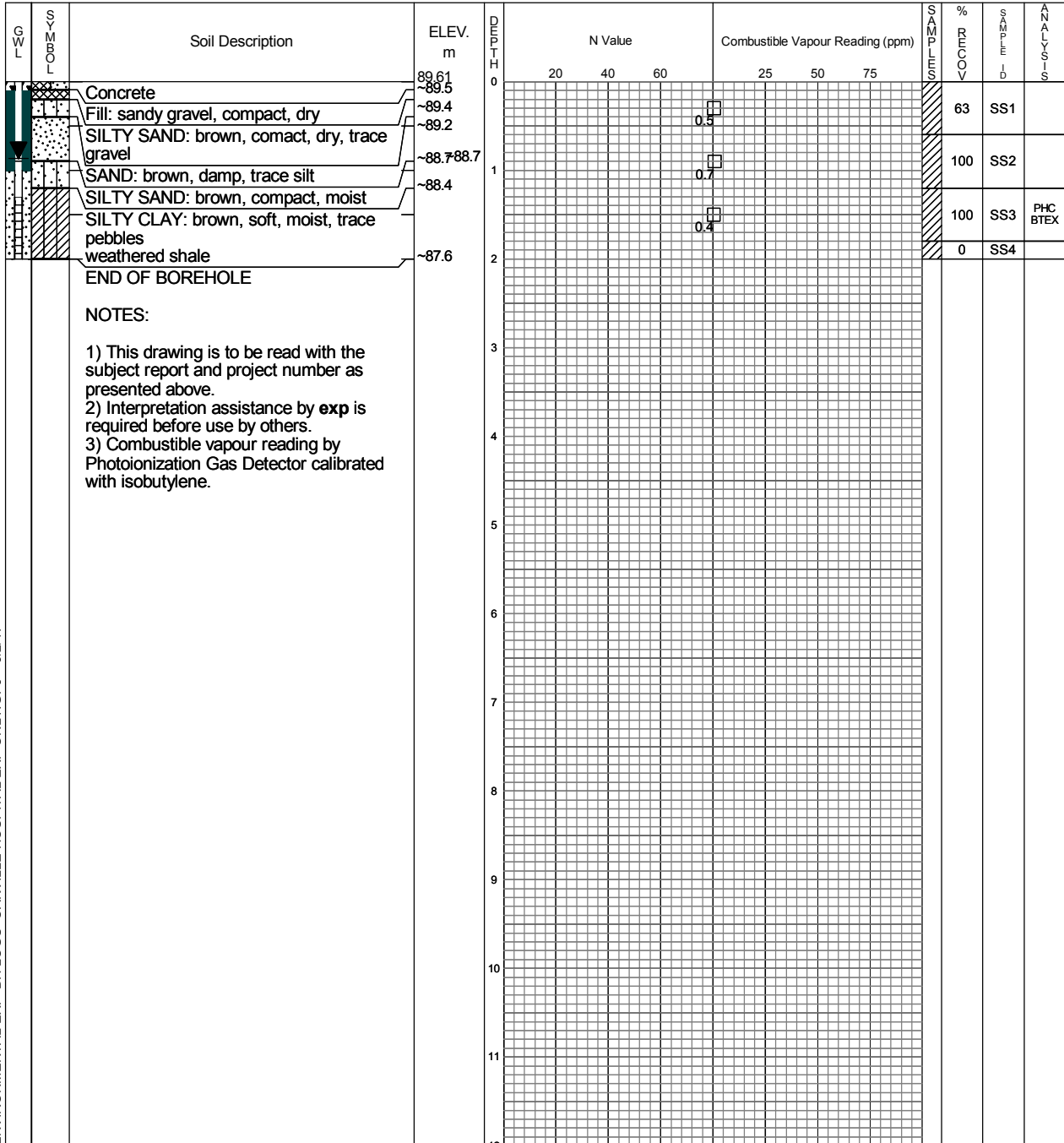
Date Drilled: November 8, 2016

**Chemical Analysis**

Drill Type: Truckmount CME 75

BTEX	Benzene, Toluene, Ethylbenzene and Xylenes	*	Duplicate Sample
ING	Metals and Inorganics	PCB	Polychlorinated Biphenyls
MET	Metals	PHC	Petroleum Hydrocarbons (F1-F4)
PAH	Polycyclic Aromatic Hydrocarbons	VOC	Volatile Organic Compounds
PEST	Organochlorine Pesticides		

Datum: Relative



ENVIRONMENTAL-EXP BH LOGS -OAKVILLE HOSPITAL EXP ONLY.GPJ 9/2/17

Time	Water Level (m)	Depth to Cave (m)
November 10, 2016	0.9 m	
November 22, 2016	0.9 m	

# Log of Borehole BH/MW16-220

Project No. BRM-00235695-AO

Drawing No. B23

Project: Phase II ESA

Sheet No. 1 of 1

Location: Former Oakville Hospital, 327 Reynolds St. Oakville, ON

Please refer to Borehole Location Plan

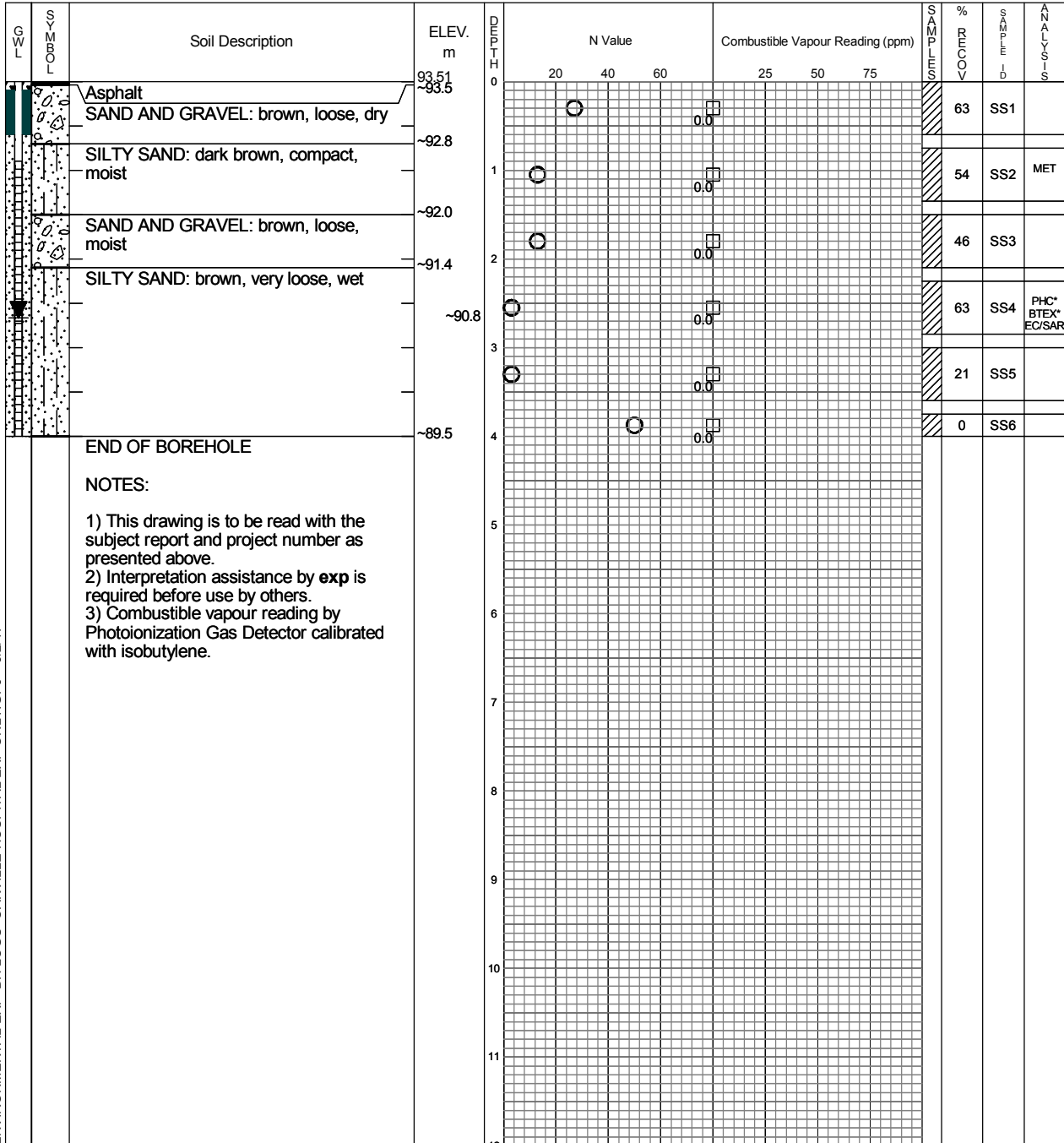
Date Drilled: November 11, 2016

**Chemical Analysis**

BTEX	Benzene, Toluene, Ethylbenzene and Xylenes	* Duplicate Sample
ING	Metals and Inorganics	PCB Polychlorinated Biphenyls
MET	Metals	PHC Petroleum Hydrocarbons (F1-F4)
PAH	Polycyclic Aromatic Hydrocarbons	VOC Volatile Organic Compounds
PEST	Organochlorine Pesticides	

Drill Type: Truckmount CME 75

Datum: Relative



ENVIRONMENTAL-EXP BH LOGS -OAKVILLE HOSPITAL EXP ONLY.GPJ 9/2/17

Time	Water Level (m)	Depth to Cave (m)
November 14, 2016	3.1 m	
November 22, 2016	2.7 m	

# Log of Borehole BH/MW16-221

Project No. BRM-00235695-AO

Drawing No. B24

Project: Phase II ESA

Sheet No. 1 of 1

Location: Former Oakville Hospital, 327 Reynolds St. Oakville, ON

Please refer to Borehole Location Plan

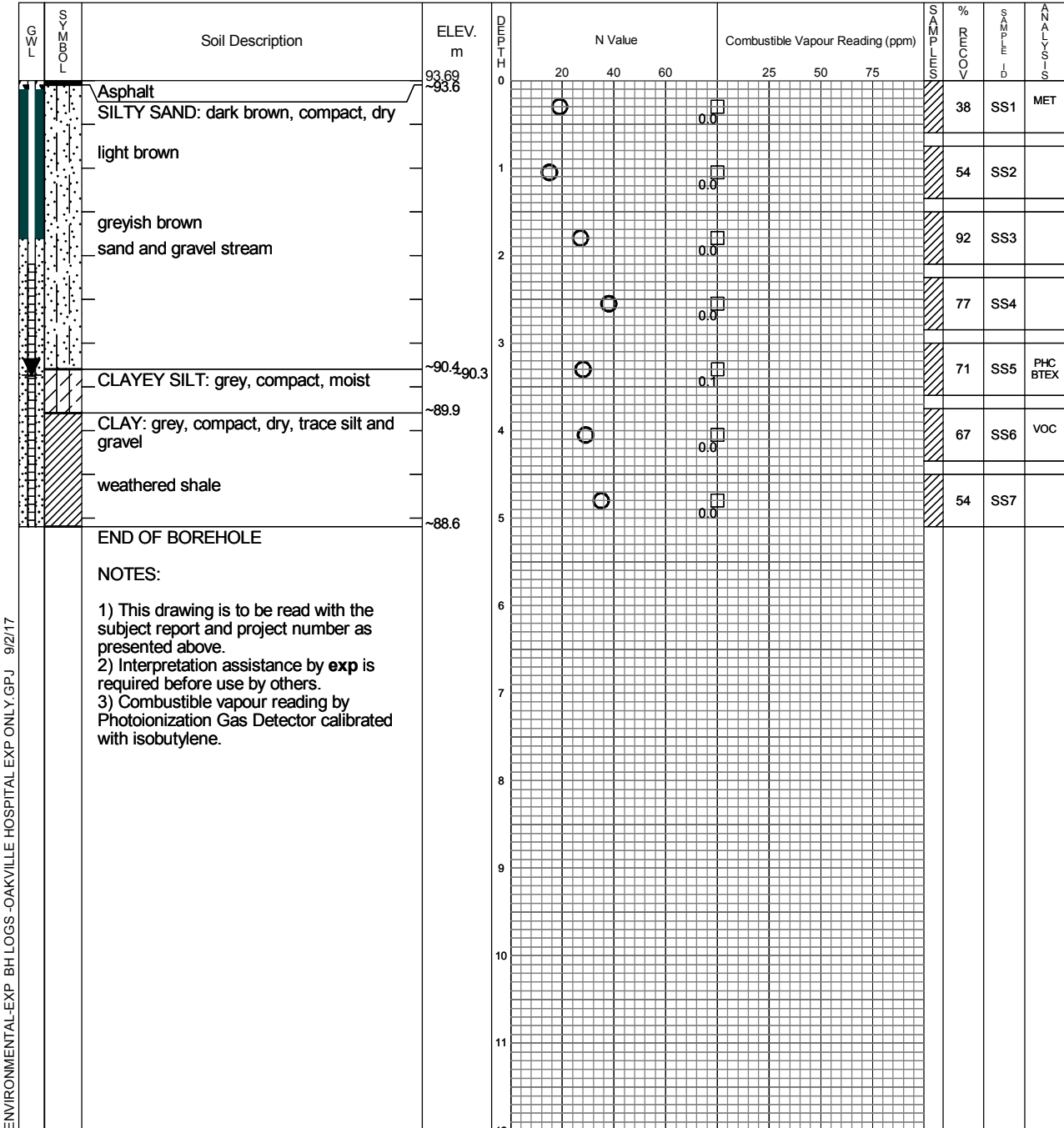
Date Drilled: November 11, 2016

**Chemical Analysis**


BTEX	Benzene, Toluene, Ethylbenzene and Xylenes	*	Duplicate Sample
ING	Metals and Inorganics	PCB	Polychlorinated Biphenyls
MET	Metals	PHC	Petroleum Hydrocarbons (F1-F4)
PAH	Polycyclic Aromatic Hydrocarbons	VOC	Volatile Organic Compounds
PEST	Organochlorine Pesticides		

Drill Type: Truckmount CME 75

Datum: Relative



ENVIRONMENTAL-EXP BH LOGS -OAKVILLE HOSPITAL EXP ONLY.GPJ 9/2/17

 exp Services Inc.  
 Brampton, Ontario  
 Telephone: 905-793-9800  
 Facsimile: 905-793-0641

Time	Water Level (m)	Depth to Cave (m)
November 14, 2016	4.1 m	
November 22, 2016	3.4 m	



# Log of Borehole BH/MW16-222

Project No. BRM-00235695-AO

Drawing No. B25

Project: Phase II ESA

Sheet No. 1 of 1

Location: Former Oakville Hospital, 327 Reynolds St. Oakville, ON

Please refer to Borehole Location Plan

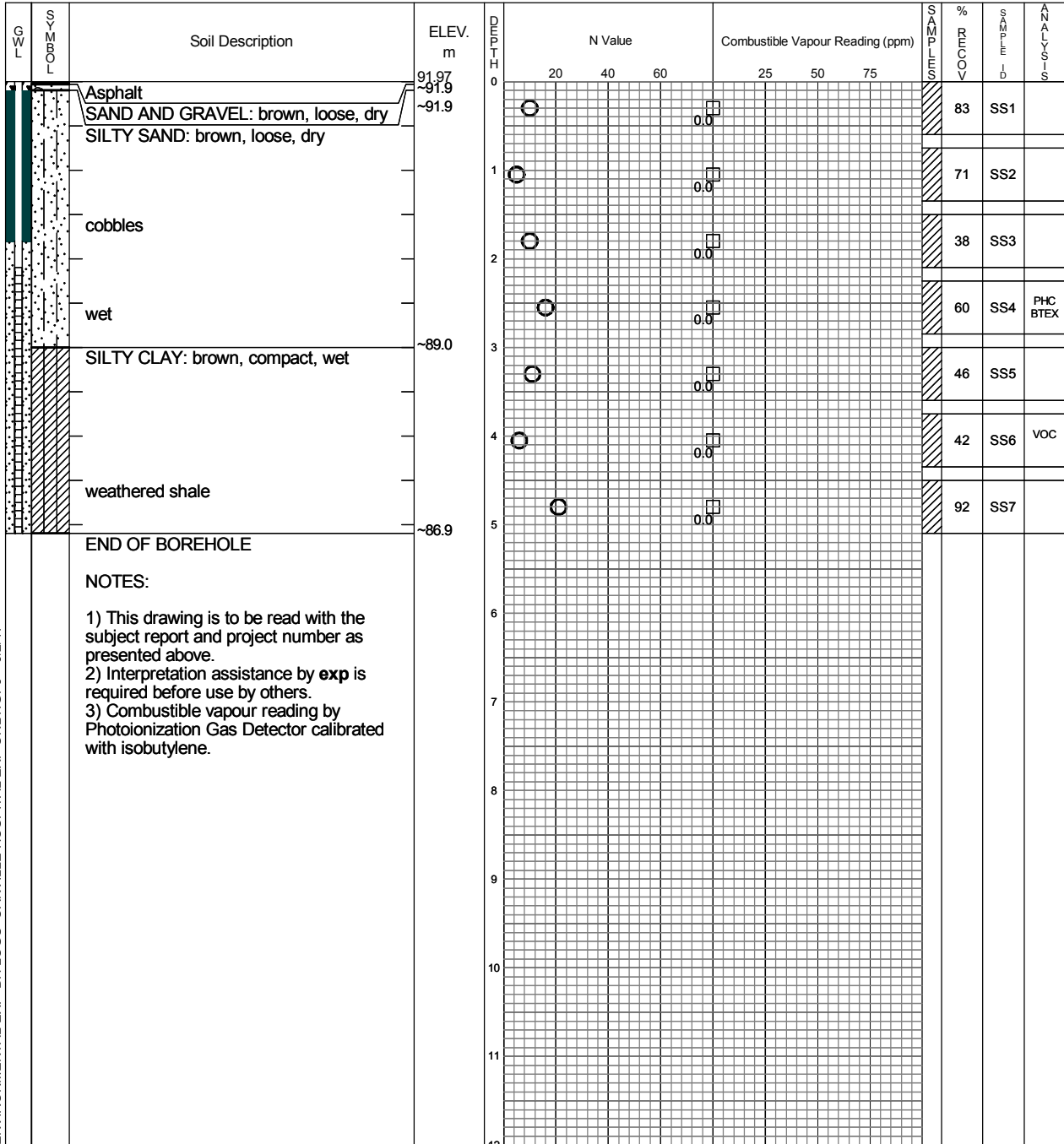
Date Drilled: November 11, 2016

**Chemical Analysis**


BTEX	Benzene, Toluene, Ethylbenzene and Xylenes	* Duplicate Sample
ING	Metals and Inorganics	PCB Polychlorinated Biphenyls
MET	Metals	PHC Petroleum Hydrocarbons (F1-F4)
PAH	Polycyclic Aromatic Hydrocarbons	VOC Volatile Organic Compounds
PEST	Organochlorine Pesticides	

Drill Type: Truckmount CME 75

Datum: Relative



ENVIRONMENTAL-EXP BH LOGS -OAKVILLE HOSPITAL EXP ONLY.GPJ 9/2/17

 exp Services Inc.  
 Brampton, Ontario  
 Telephone: 905-793-9800  
 Facsimile: 905-793-0641

Time	Water Level (m)	Depth to Cave (m)

# Log of Borehole BH16-204

Project No. BRM-00235695-AO

Drawing No. B7

Project: Phase II ESA

Sheet No. 1 of 1

Location: Former Oakville Hospital, 327 Reynolds St. Oakville, ON

Please refer to Borehole Location Plan

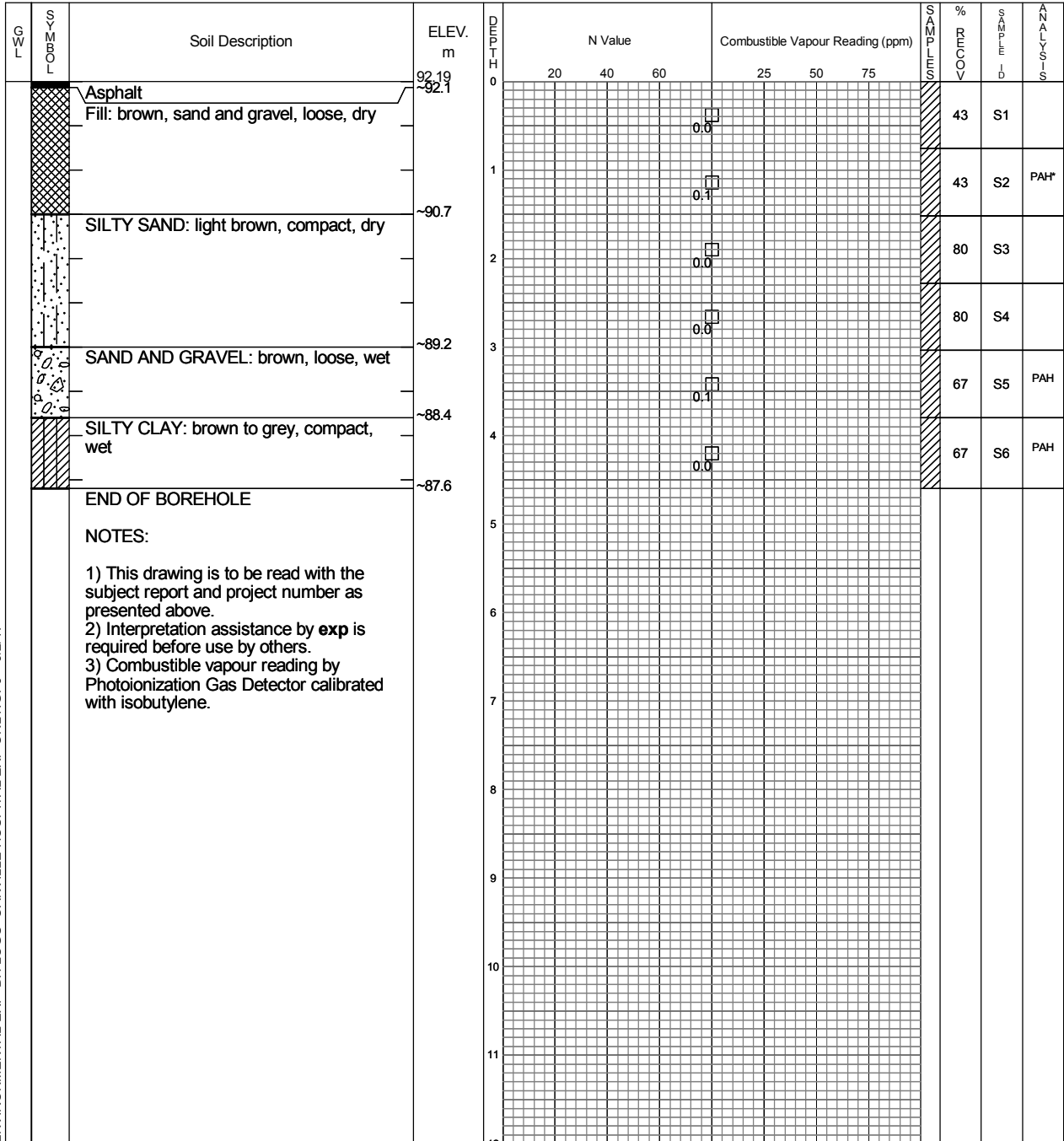
Date Drilled: September 28, 2016

**Chemical Analysis**

BTEX	Benzene, Toluene, Ethylbenzene and Xylenes	* Duplicate Sample
ING	Metals and Inorganics	PCB Polychlorinated Biphenyls
MET	Metals	PHC Petroleum Hydrocarbons (F1-F4)
PAH	Polycyclic Aromatic Hydrocarbons	VOC Volatile Organic Compounds
PEST	Organochlorine Pesticides	

Drill Type: Geoprobe 7822DT

Datum: Relative



ENVIRONMENTAL-EXP BH LOGS -OAKVILLE HOSPITAL EXP ONLY.GPJ 9/2/17

Time	Water Level (m)	Depth to Cave (m)

# Log of Borehole BH16-205

Project No. BRM-00235695-AO

Drawing No. B8

Project: Phase II ESA

Sheet No. 1 of 1

Location: Former Oakville Hospital, 327 Reynolds St. Oakville, ON

Please refer to Borehole Location Plan

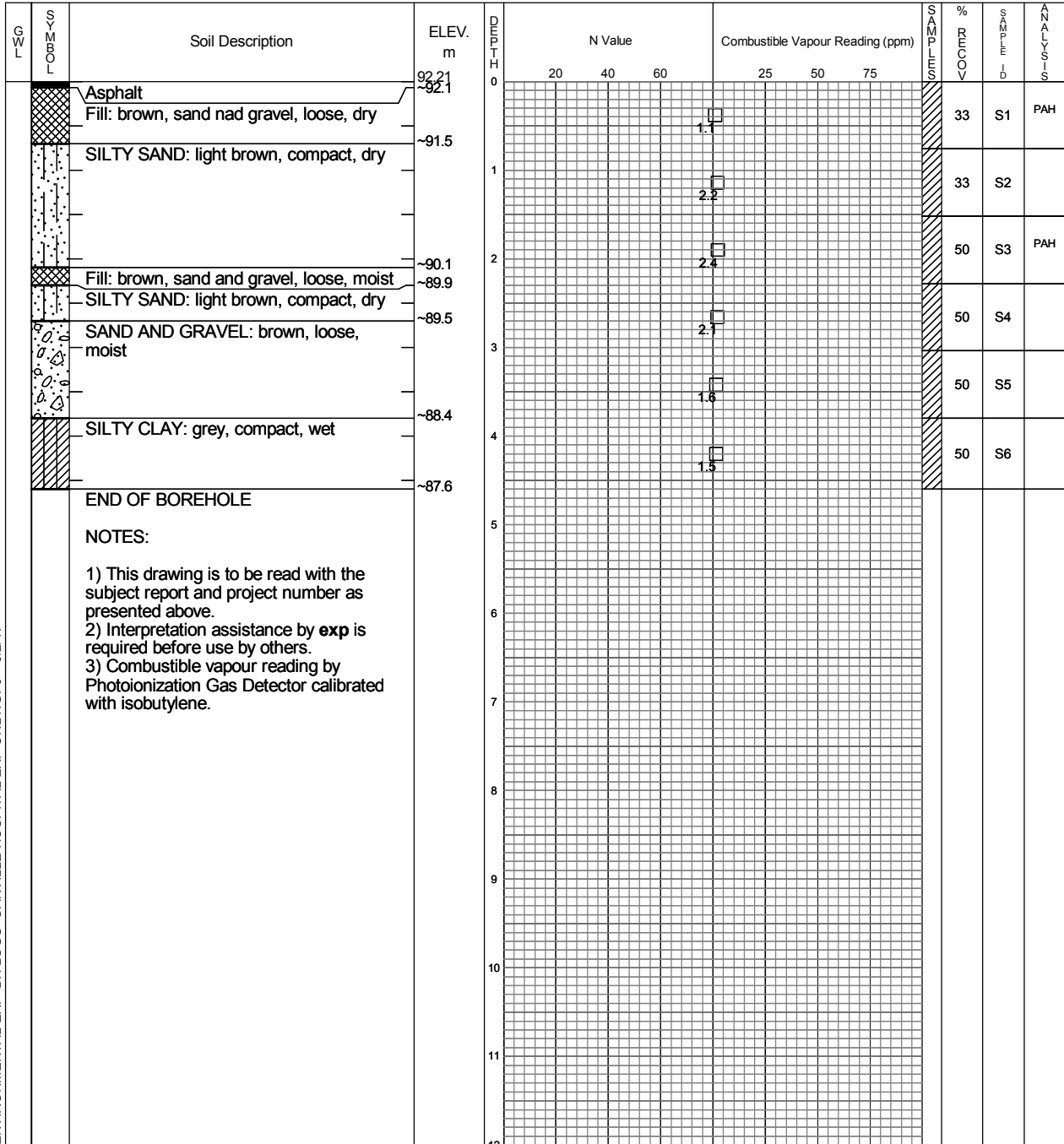
Date Drilled: September 28, 2016

**Chemical Analysis**

BTEX	Benzene, Toluene, Ethylbenzene and Xylenes	* Duplicate Sample
ING	Metals and Inorganics	PCB Polychlorinated Biphenyls
MET	Metals	PHC Petroleum Hydrocarbons (F1-F4)
PAH	Polycyclic Aromatic Hydrocarbons	VOC Volatile Organic Compounds
PEST	Organochlorine Pesticides	

Drill Type: Geoprobe 7822DT

Datum: Relative



ENVIRONMENTAL-EXP BH LOGS -OAKVILLE HOSPITAL EXP ONLY.GPJ 9/2/17

**NOTES:**

- 1) This drawing is to be read with the subject report and project number as presented above.
- 2) Interpretation assistance by **exp** is required before use by others.
- 3) Combustible vapour reading by Photoionization Gas Detector calibrated with isobutylene.



exp Services Inc.  
 Brampton, Ontario  
 Telephone: 905-793-9800  
 Facsimile: 905-793-0641

Time	Water Level (m)	Depth to Cave (m)

# Log of Borehole BH16-206

Project No. BRM-00235695-AO

Drawing No. B9

Project: Phase II ESA

Sheet No. 1 of 1

Location: Former Oakville Hospital, 327 Reynolds St. Oakville, ON

Please refer to Borehole Location Plan

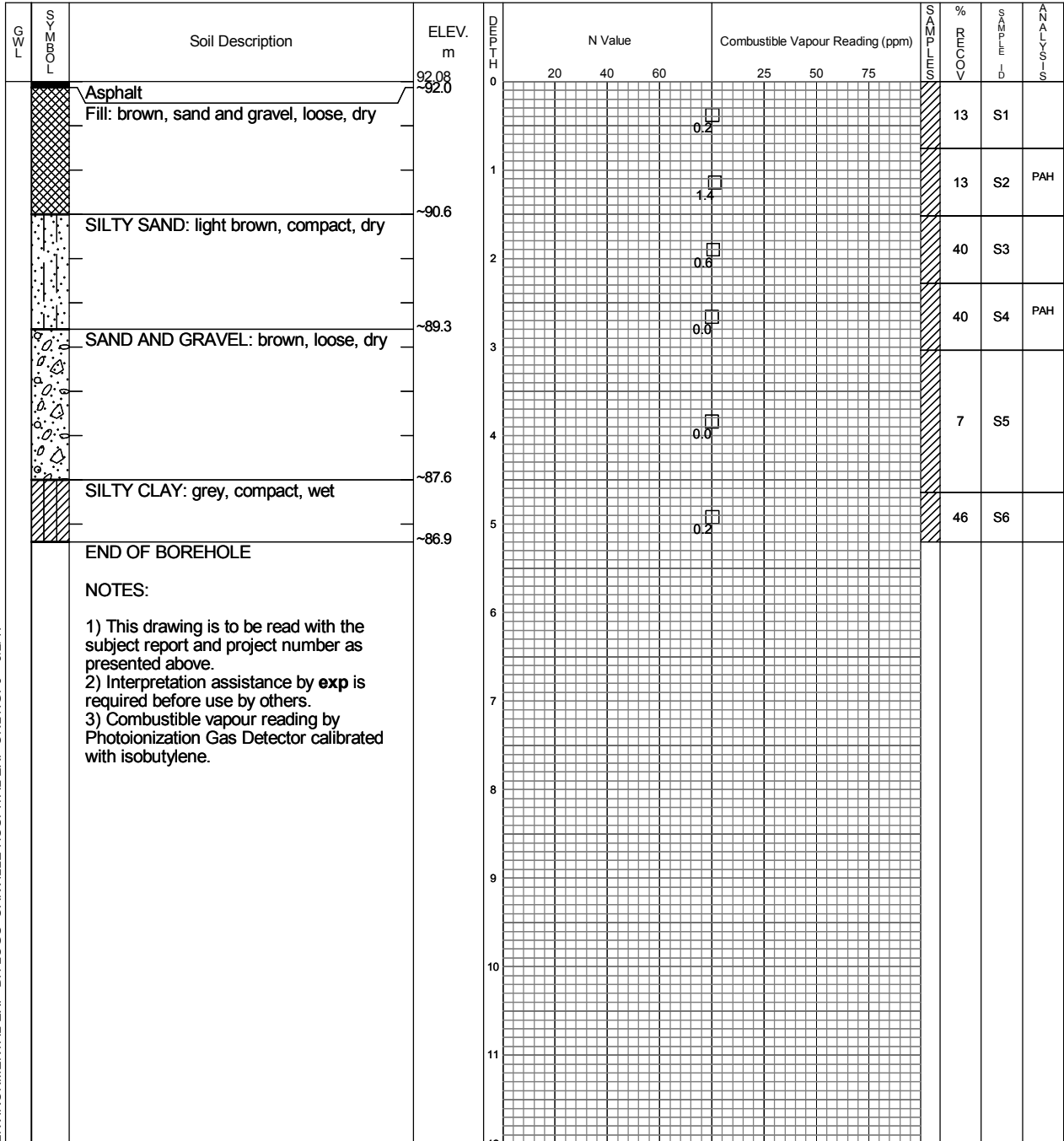
Date Drilled: September 28, 2016

**Chemical Analysis**

BTEX	Benzene, Toluene, Ethylbenzene and Xylenes	*	Duplicate Sample
ING	Metals and Inorganics	PCB	Polychlorinated Biphenyls
MET	Metals	PHC	Petroleum Hydrocarbons (F1-F4)
PAH	Polycyclic Aromatic Hydrocarbons	VOC	Volatile Organic Compounds
PEST	Organochlorine Pesticides		

Drill Type: Geoprobe 7822DT

Datum: Relative



ENVIRONMENTAL-EXP BH LOGS -OAKVILLE HOSPITAL EXP ONLY.GPJ 9/2/17

Time	Water Level (m)	Depth to Cave (m)

# Log of Borehole BH16-207

Project No. BRM-00235695-AO

Drawing No. B10

Project: Phase II ESA

Sheet No. 1 of 1

Location: Former Oakville Hospital, 327 Reynolds St. Oakville, ON

Please refer to Borehole Location Plan

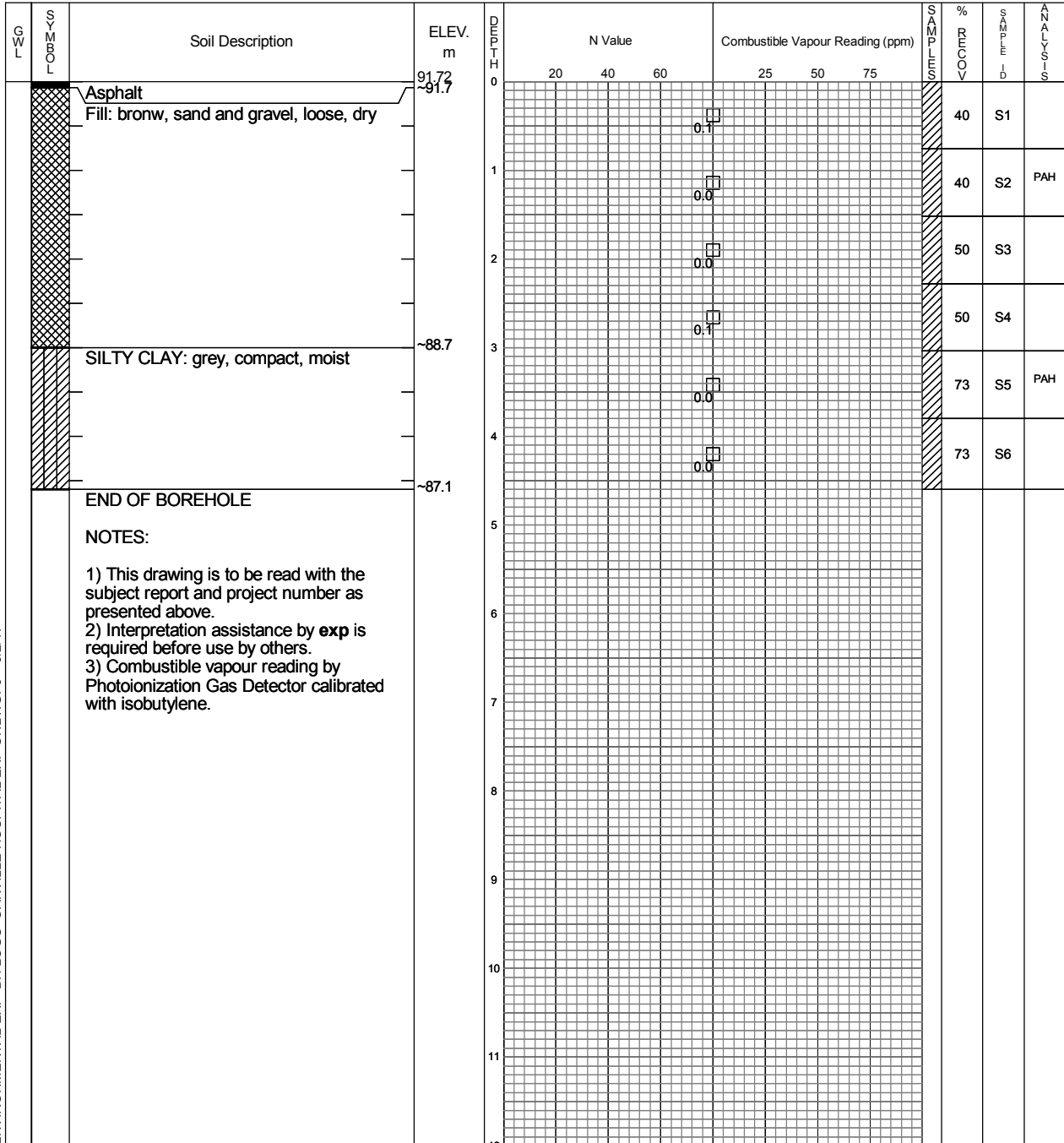
Date Drilled: September 28, 2016

**Chemical Analysis**

BTEX	Benzene, Toluene, Ethylbenzene and Xylenes	* Duplicate Sample
ING	Metals and Inorganics	PCB Polychlorinated Biphenyls
MET	Metals	PHC Petroleum Hydrocarbons (F1-F4)
PAH	Polycyclic Aromatic Hydrocarbons	VOC Volatile Organic Compounds
PEST	Organochlorine Pesticides	

Drill Type: Geoprobe 7822DT

Datum: Relative



ENVIRONMENTAL-EXP BH LOGS -OAKVILLE HOSPITAL EXP ONLY.GPJ 9/2/17

Time	Water Level (m)	Depth to Cave (m)

# Log of Borehole BH16-208

Project No. BRM-00235695-AO

Drawing No. B11

Project: Phase II ESA

Sheet No. 1 of 1

Location: Former Oakville Hospital, 327 Reynolds St. Oakville, ON

Please refer to Borehole Location Plan

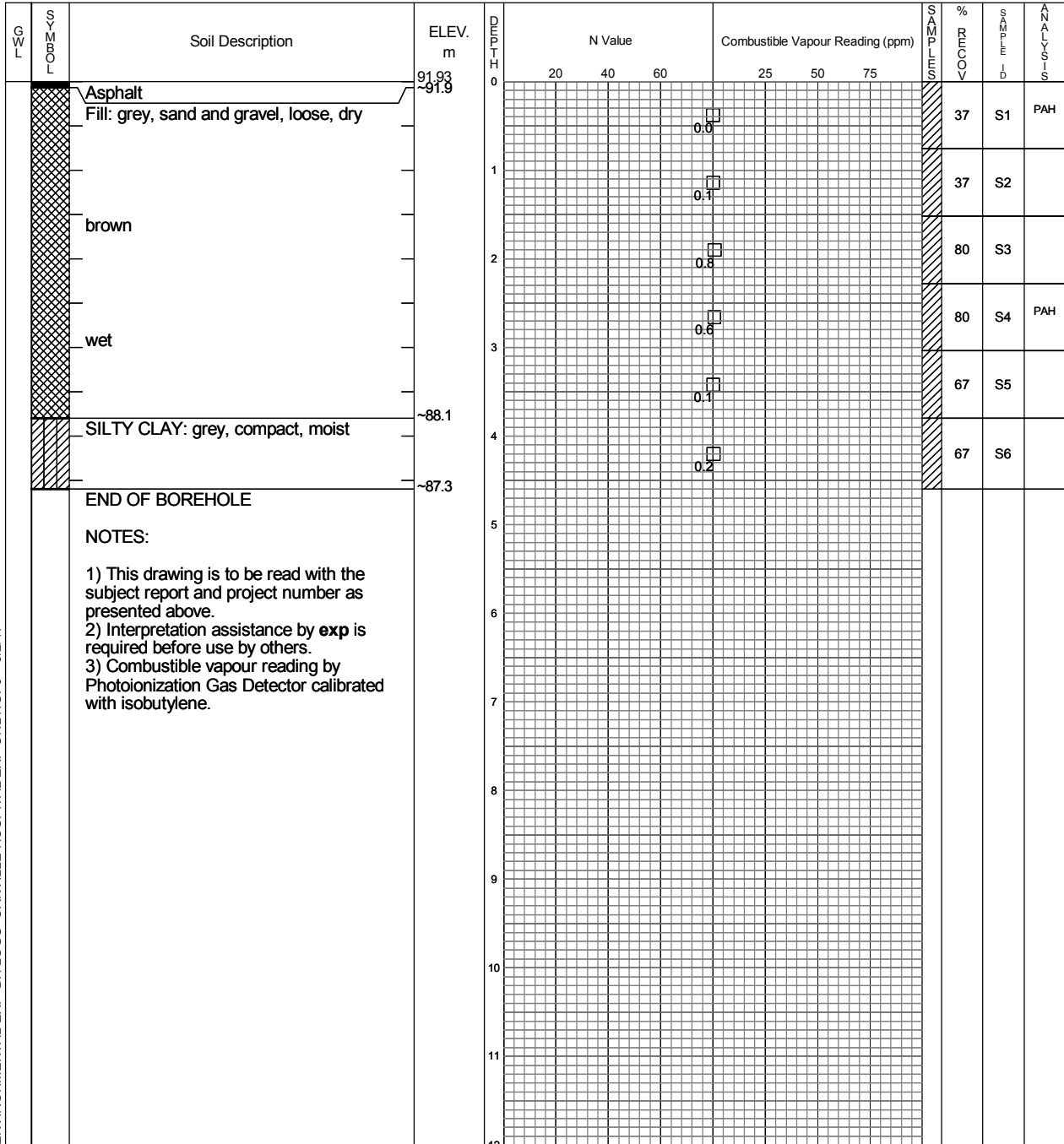
Date Drilled: September 28, 2016

**Chemical Analysis**

BTEX	Benzene, Toluene, Ethylbenzene and Xylenes	*	Duplicate Sample
ING	Metals and Inorganics	PCB	Polychlorinated Biphenyls
MET	Metals	PHC	Petroleum Hydrocarbons (F1-F4)
PAH	Polycyclic Aromatic Hydrocarbons	VOC	Volatile Organic Compounds
PEST	Organochlorine Pesticides		

Drill Type: Geoprobe 7822DT

Datum: Relative



ENVIRONMENTAL-EXP BH LOGS -OAKVILLE HOSPITAL EXP ONLY.GPJ 9/2/17

 exp Services Inc.  
 Brampton, Ontario  
 Telephone: 905-793-9800  
 Facsimile: 905-793-0641

Time	Water Level (m)	Depth to Cave (m)

# Log of Borehole BH16-209

Project No. BRM-00235695-AO

Drawing No. B12

Project: Phase II ESA

Sheet No. 1 of 1

Location: Former Oakville Hospital, 327 Reynolds St. Oakville, ON

Please refer to Borehole Location Plan

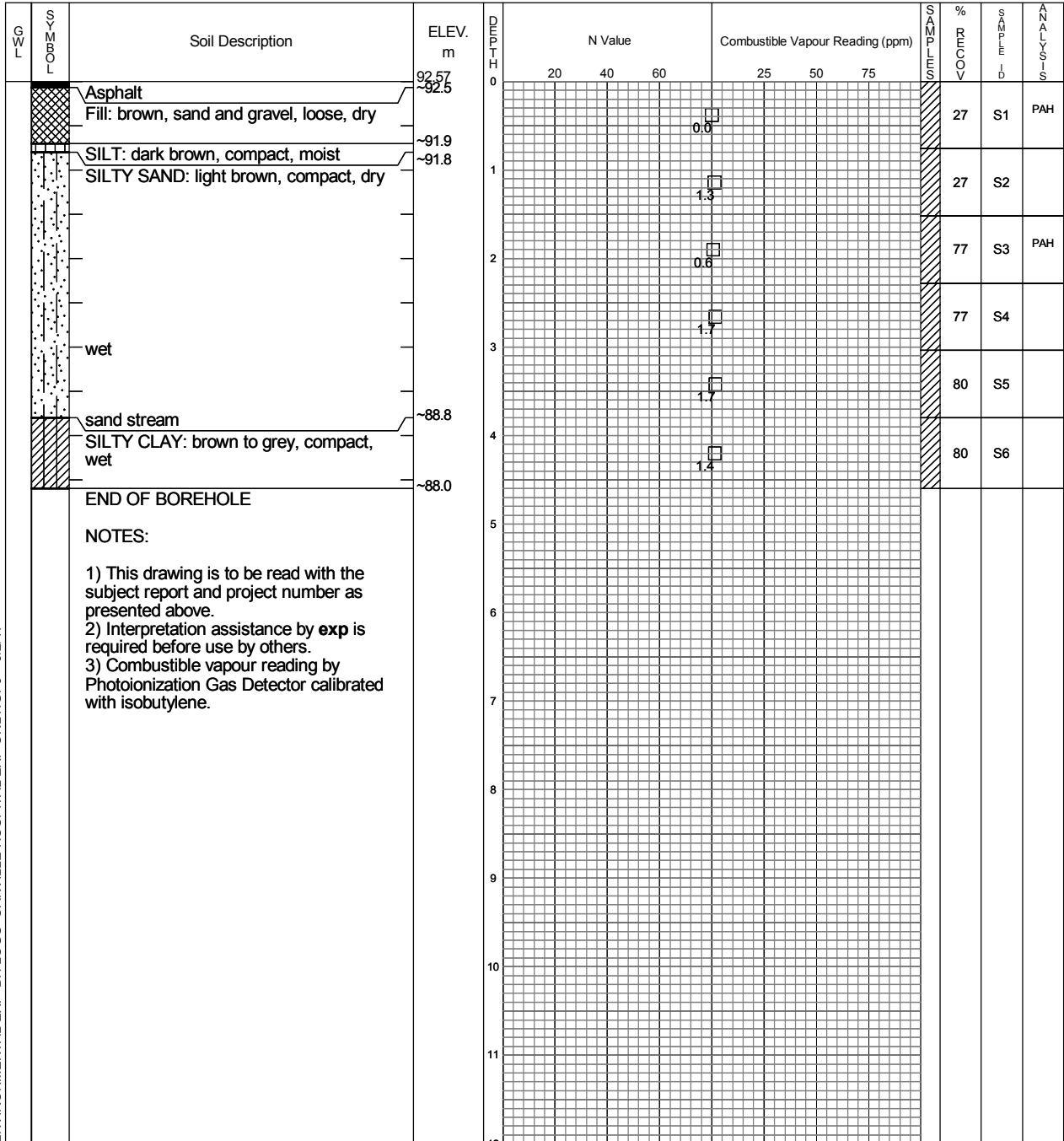
Date Drilled: September 28, 2016

**Chemical Analysis**

BTEX	Benzene, Toluene, Ethylbenzene and Xylenes	* Duplicate Sample
ING	Metals and Inorganics	PCB Polychlorinated Biphenyls
MET	Metals	PHC Petroleum Hydrocarbons (F1-F4)
PAH	Polycyclic Aromatic Hydrocarbons	VOC Volatile Organic Compounds
PEST	Organochlorine Pesticides	

Drill Type: Geoprobe 7822DT

Datum: Relative



ENVIRONMENTAL-EXP BH LOGS -OAKVILLE HOSPITAL EXP ONLY.GPJ 9/2/17



exp Services Inc.  
 Brampton, Ontario  
 Telephone: 905-793-9800  
 Facsimile: 905-793-0641

Time	Water Level (m)	Depth to Cave (m)

# Log of Borehole TP-2

Project No. BRM-00235695-AO

Drawing No. B26

Project: Phase II ESA

Sheet No. 1 of 1

Location: Former Oakville Hospital, 327 Reynolds St. Oakville, ON

Please refer to Test Pit Location Plan

Date Drilled: November 4, 2016

**Chemical Analysis**

BTEX	Benzene, Toluene, Ethylbenzene and Xylenes	*	Duplicate Sample
ING	Metals and Inorganics	PCB	Polychlorinated Biphenyls
MET	Metals	PHC	Petroleum Hydrocarbons (F1-F4)
PAH	Polycyclic Aromatic Hydrocarbons	VOC	Volatile Organic Compounds
PEST	Organochlorine Pesticides		

Drill Type: C328 Excavator

Datum: Relative

W L	SYMBOL	Soil Description	ELEV. m	DEPTH	N Value			Combustible Vapour Reading (ppm)			SOIL ANALYSIS	% VOLATILES	ANALYSIS
					20	40	60	25	50	75			
		Asphalt		0									
		SAND AND GRAVEL: brown, silty, loose, dry		0.5							G	SS1	PAH MET
				1.0							G	SS2	
		SILTY SAND: brown, wet		1.5							G	SS3	
				2.0							G	SS4	
		END OF TESTPIT		3.0									
		NOTES: 1) This drawing is to be read with the subject report and project number as presented above. 2) Interpretation assistance by exp is required before use by others. 3) Combustible vapour reading by Photoionization Gas Detector calibrated with isobutylene.		4.0									
				5.0									
				6.0									
				7.0									
				8.0									
				9.0									
				10.0									
				11.0									
				12.0									

ENVIRONMENTAL-EXP BH LOGS -OAKVILLE HOSPITAL EXP ONLY.GPJ 9/2/17

 exp Services Inc.  
Brampton, Ontario  
Telephone: 905-793-9800  
Facsimile: 905-793-0641

Time	Water Level (m)	Depth to Cave (m)



# Log of Borehole TP-4

Project No. BRM-00235695-AO

Drawing No. B27

Project: Phase II ESA

Sheet No. 1 of 1

Location: Former Oakville Hospital, 327 Reynolds St. Oakville, ON

Please refer to Test Pit Location Plan

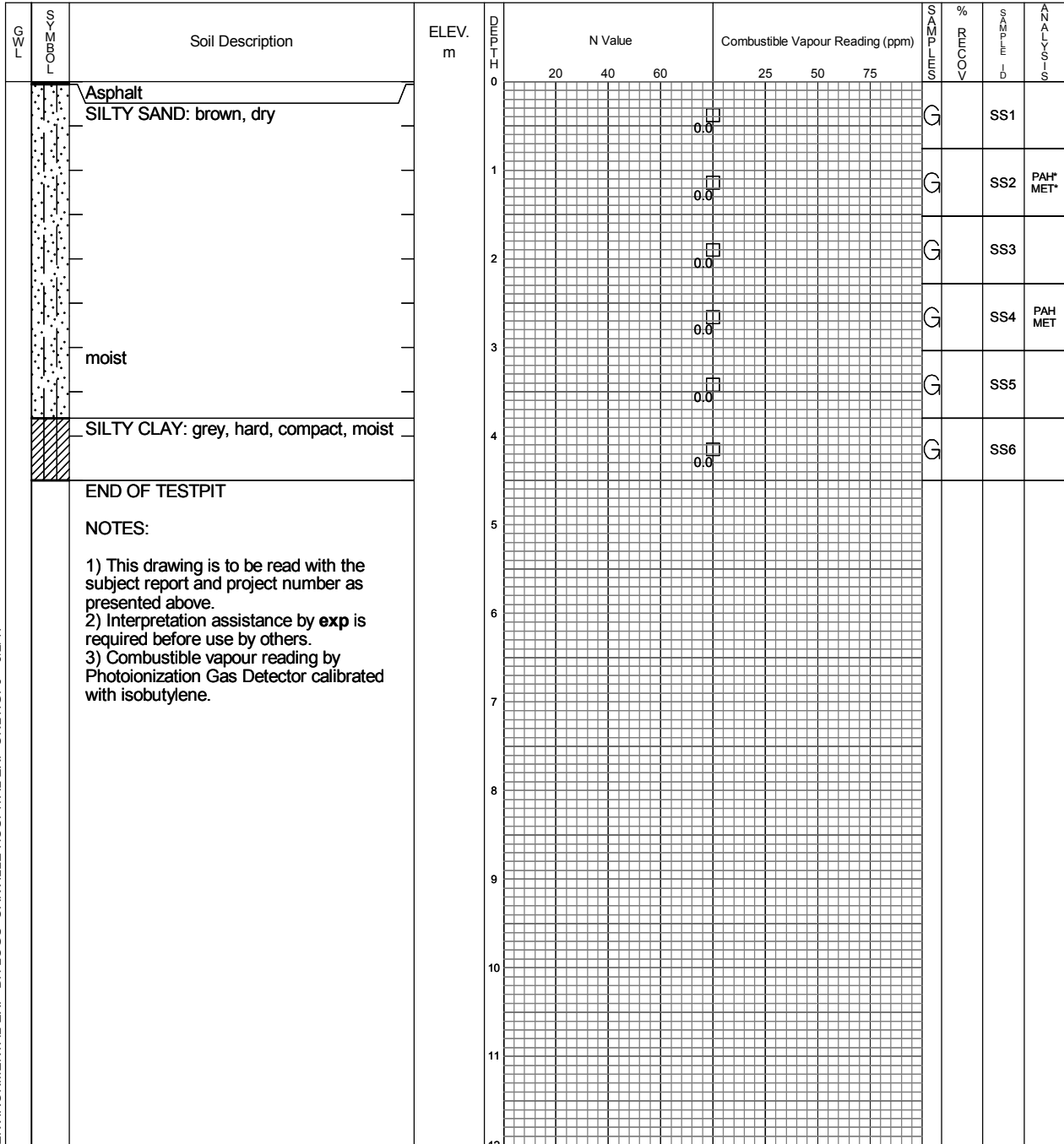
Date Drilled: November 3, 2016

**Chemical Analysis**

BTEX	Benzene, Toluene, Ethylbenzene and Xylenes	*	Duplicate Sample
ING	Metals and Inorganics	PCB	Polychlorinated Biphenyls
MET	Metals	PHC	Petroleum Hydrocarbons (F1-F4)
PAH	Polycyclic Aromatic Hydrocarbons	VOC	Volatile Organic Compounds
PEST	Organochlorine Pesticides		

Drill Type: C328 Excavator

Datum: Relative



ENVIRONMENTAL-EXP BH LOGS -OAKVILLE HOSPITAL EXP ONLY.GPJ 9/2/17



exp Services Inc.  
 Brampton, Ontario  
 Telephone: 905-793-9800  
 Facsimile: 905-793-0641

Time	Water Level (m)	Depth to Cave (m)

# Log of Borehole TP-5

Project No. BRM-00235695-AO

Drawing No. B28

Project: Phase II ESA

Sheet No. 1 of 1

Location: Former Oakville Hospital, 327 Reynolds St. Oakville, ON

Please refer to Test Pit Location Plan

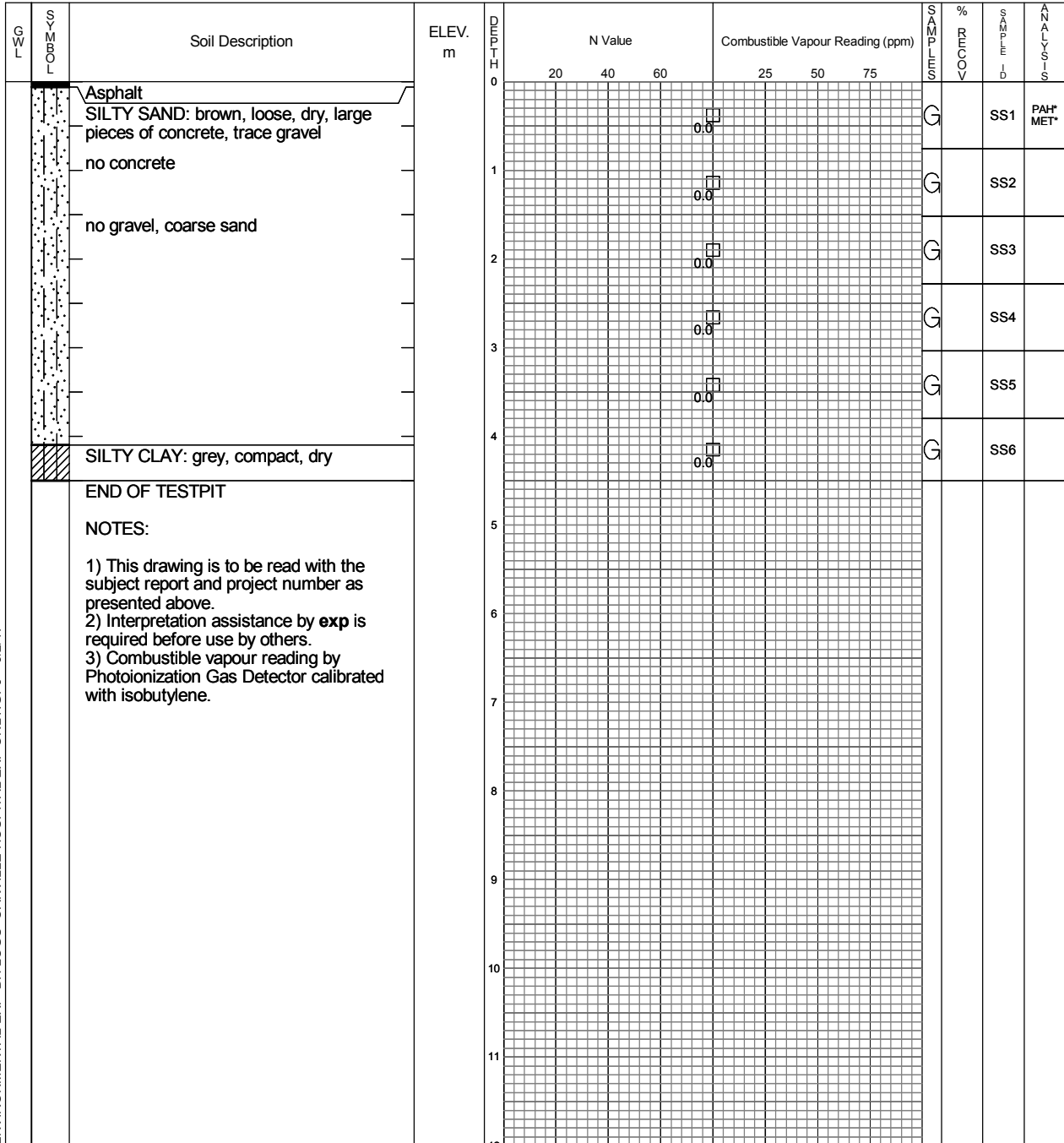
Date Drilled: November 3, 2016

**Chemical Analysis**

Drill Type: C328 Excavator

BTEX	Benzene, Toluene, Ethylbenzene and Xylenes	*	Duplicate Sample
ING	Metals and Inorganics	PCB	Polychlorinated Biphenyls
MET	Metals	PHC	Petroleum Hydrocarbons (F1-F4)
PAH	Polycyclic Aromatic Hydrocarbons	VOC	Volatile Organic Compounds
PEST	Organochlorine Pesticides		

Datum: Relative



ENVIRONMENTAL-EXP BH LOGS -OAKVILLE HOSPITAL EXP ONLY.GPJ 9/2/17

 exp Services Inc.  
Brampton, Ontario  
Telephone: 905-793-9800  
Facsimile: 905-793-0641

Time	Water Level (m)	Depth to Cave (m)

# Log of Borehole TP-6

Project No. BRM-00235695-AO

Drawing No. B29

Project: Phase II ESA

Sheet No. 1 of 1

Location: Former Oakville Hospital, 327 Reynolds St. Oakville, ON

Please refer to Test Pit Location Plan

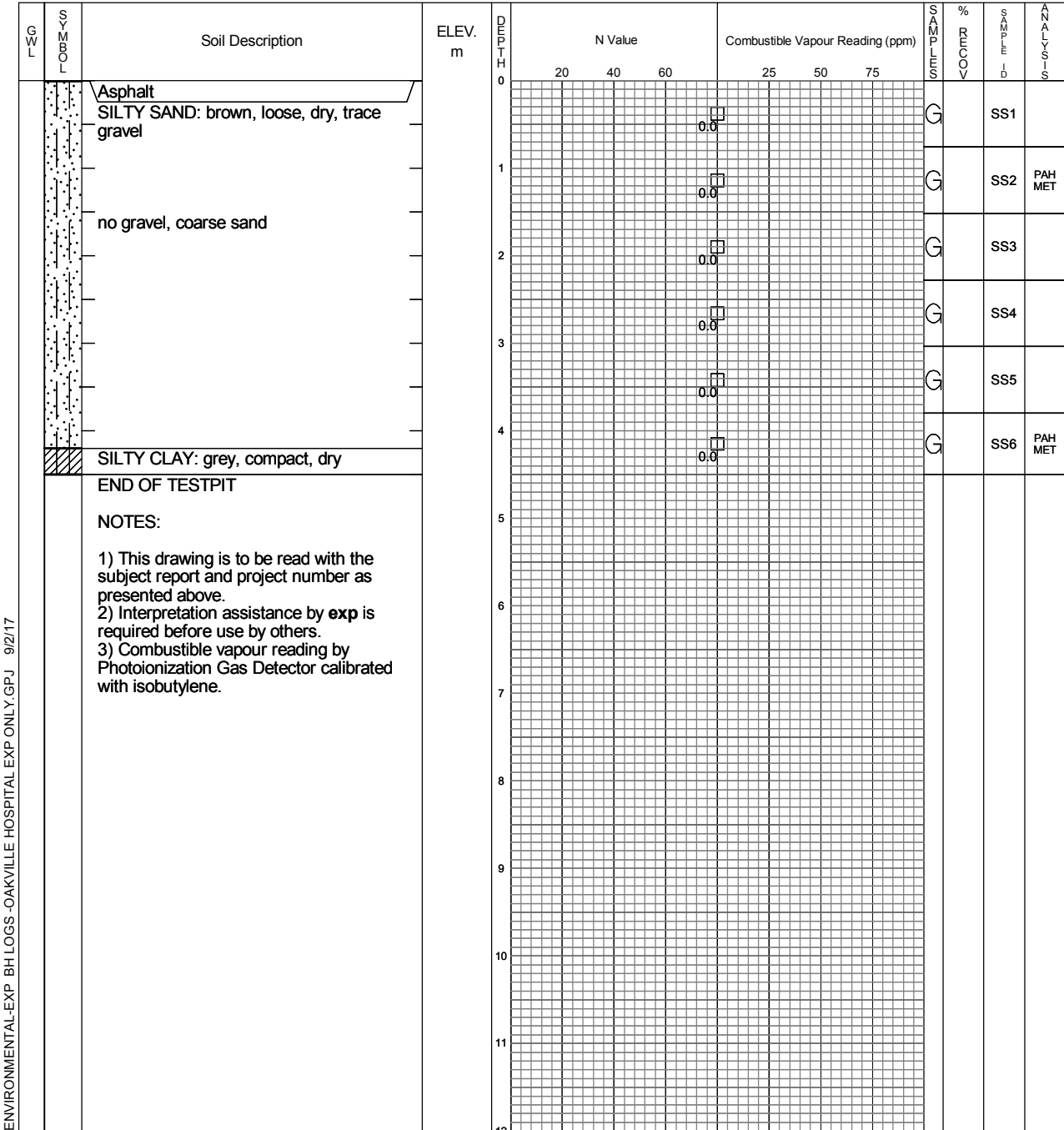
Date Drilled: November 3, 2016

**Chemical Analysis**


Drill Type: C328 Excavator

BTEX	Benzene, Toluene, Ethylbenzene and Xylenes	*	Duplicate Sample
ING	Metals and Inorganics	PCB	Polychlorinated Biphenyls
MET	Metals	PHC	Petroleum Hydrocarbons (F1-F4)
PAH	Polycyclic Aromatic Hydrocarbons	VOC	Volatile Organic Compounds
PEST	Organochlorine Pesticides		

Datum: Relative



ENVIRONMENTAL-EXP BH LOGS -OAKVILLE HOSPITAL EXP ONLY.GPJ 9/2/17

 exp Services Inc.  
Brampton, Ontario  
Telephone: 905-793-9800  
Facsimile: 905-793-0641

Time	Water Level (m)	Depth to Cave (m)

# Log of Borehole TP-7

Project No. BRM-00235695-AO

Drawing No. B30

Project: Phase II ESA

Sheet No. 1 of 1

Location: Former Oakville Hospital, 327 Reynolds St. Oakville, ON

Please refer to Test Pit Location Plan

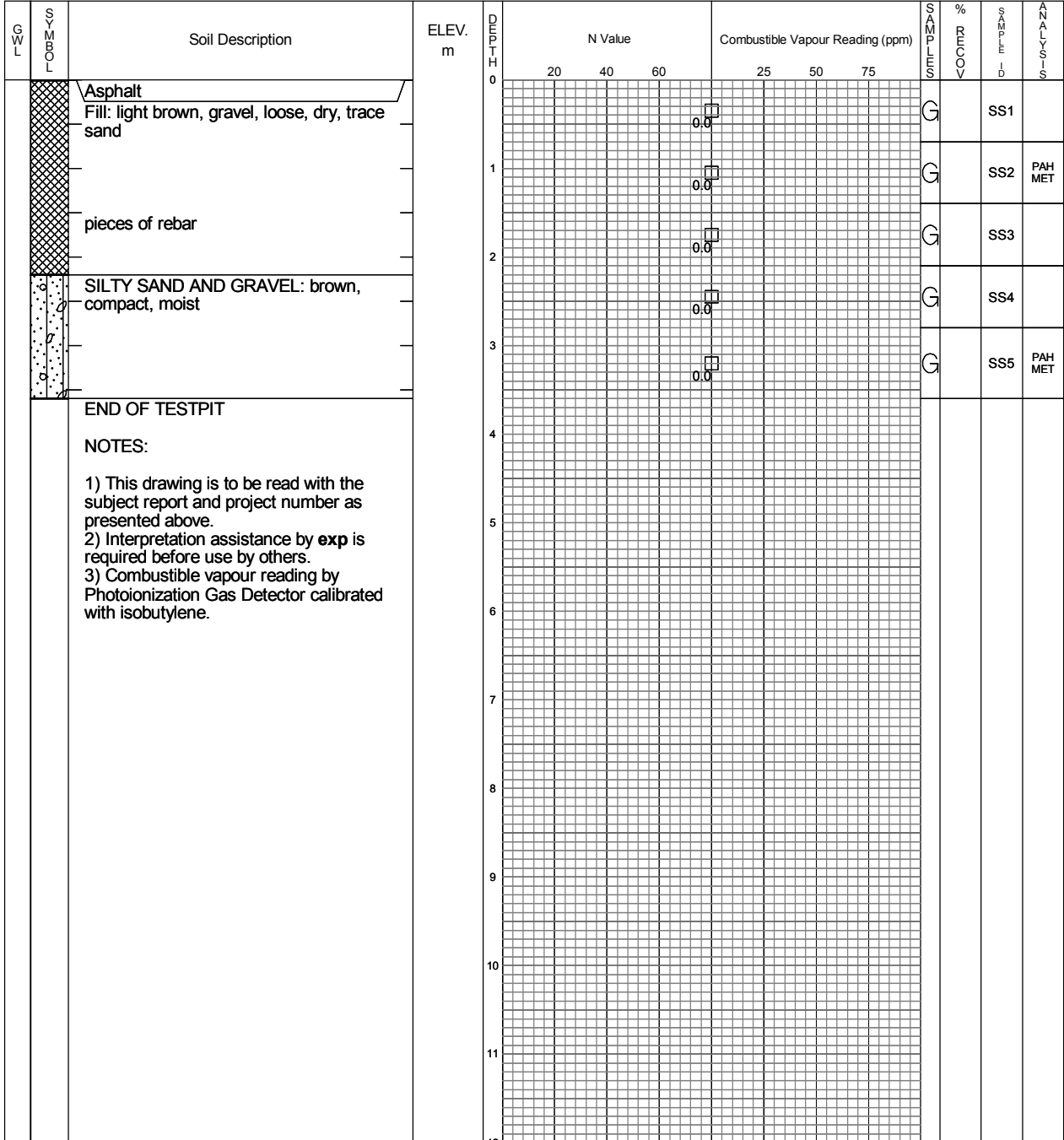
Date Drilled: November 3, 2016

**Chemical Analysis**

Drill Type: C328 Excavator

BTEX	Benzene, Toluene, Ethylbenzene and Xylenes	*	Duplicate Sample
ING	Metals and Inorganics	PCB	Polychlorinated Biphenyls
MET	Metals	PHC	Petroleum Hydrocarbons (F1-F4)
PAH	Polycyclic Aromatic Hydrocarbons	VOC	Volatile Organic Compounds
PEST	Organochlorine Pesticides		

Datum: Relative



ENVIRONMENTAL-EXP BH LOGS -OAKVILLE HOSPITAL EXP ONLY.GPJ 9/2/17

Time	Water Level (m)	Depth to Cave (m)

# Log of Borehole TP-8

Project No. BRM-00235695-AO

Drawing No. B31

Project: Phase II ESA

Sheet No. 1 of 1

Location: Former Oakville Hospital, 327 Reynolds St. Oakville, ON

Please refer to Test Pit Location Plan

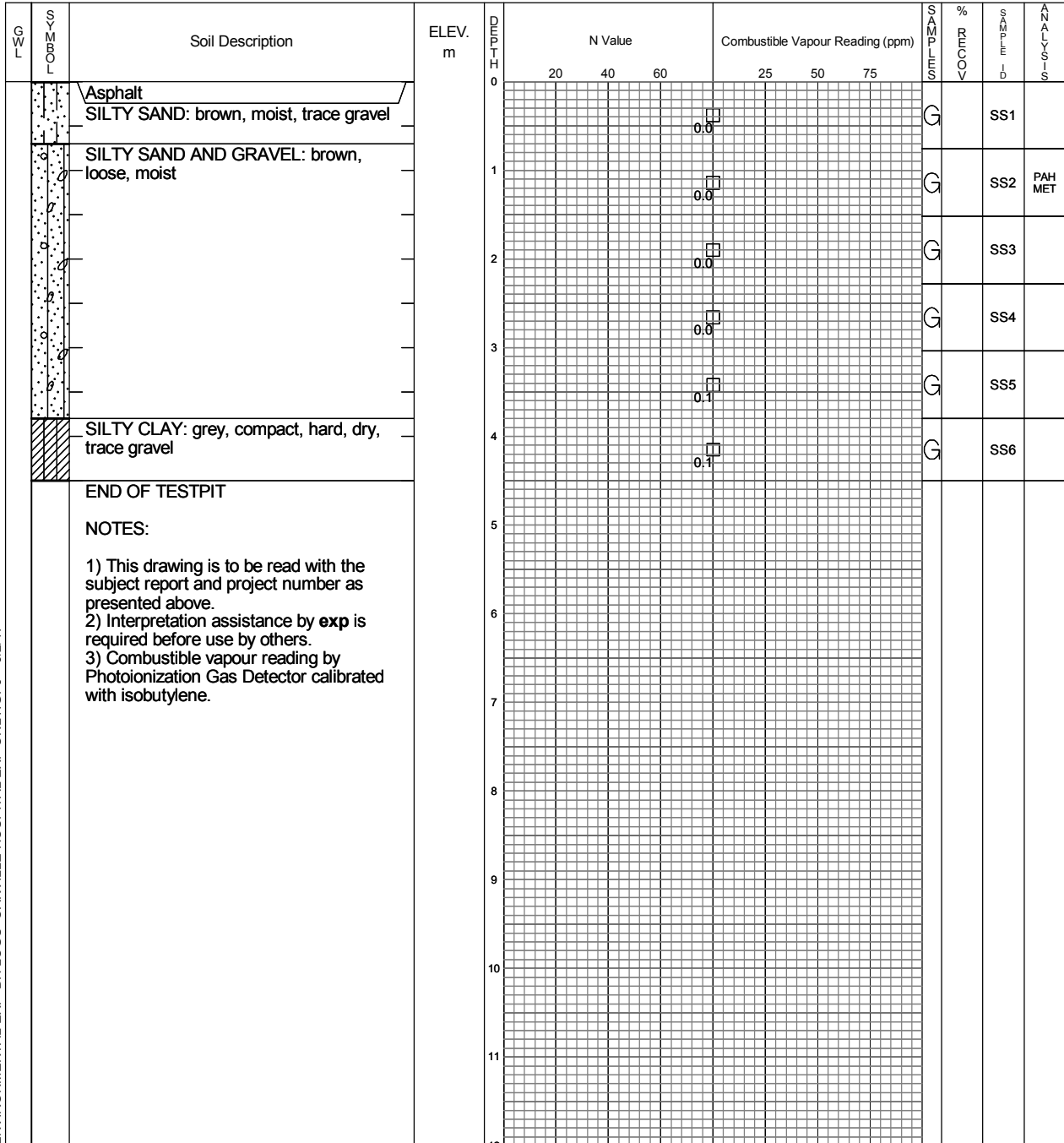
Date Drilled: November 3, 2016

**Chemical Analysis**


Drill Type: C328 Excavator

BTEX	Benzene, Toluene, Ethylbenzene and Xylenes	*	Duplicate Sample
ING	Metals and Inorganics	PCB	Polychlorinated Biphenyls
MET	Metals	PHC	Petroleum Hydrocarbons (F1-F4)
PAH	Polycyclic Aromatic Hydrocarbons	VOC	Volatile Organic Compounds
PEST	Organochlorine Pesticides		

Datum: Relative



ENVIRONMENTAL-EXP BH LOGS -OAKVILLE HOSPITAL EXP ONLY.GPJ 9/2/17

 exp Services Inc.  
Brampton, Ontario  
Telephone: 905-793-9800  
Facsimile: 905-793-0641

Time	Water Level (m)	Depth to Cave (m)

# Log of Borehole TP-9

Project No. BRM-00235695-AO

Drawing No. B32

Project: Phase II ESA

Sheet No. 1 of 1

Location: Former Oakville Hospital, 327 Reynolds St. Oakville, ON

Please refer to Test Pit Location Plan

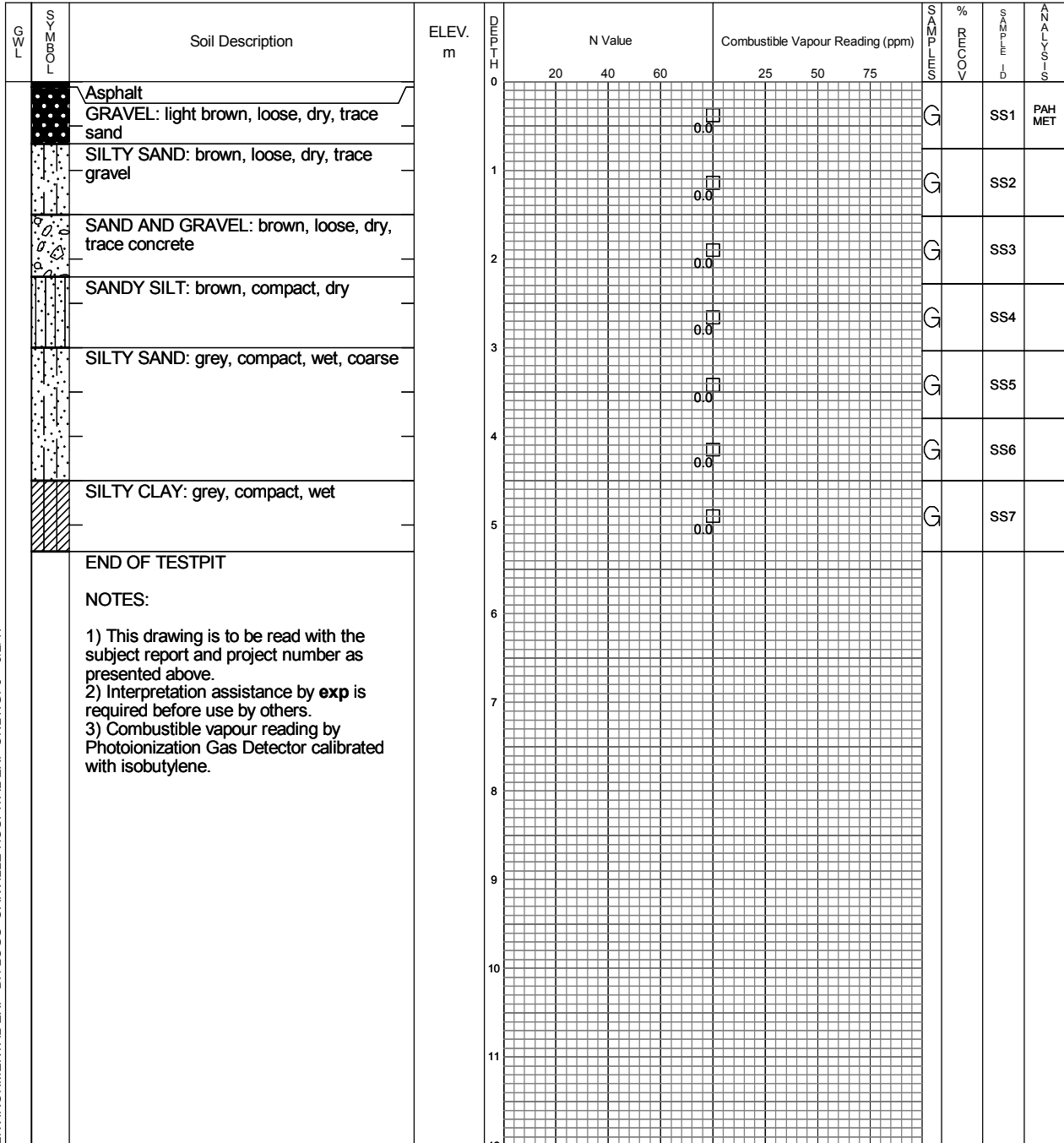
Date Drilled: November 3, 2016

**Chemical Analysis**

BTEX	Benzene, Toluene, Ethylbenzene and Xylenes	*	Duplicate Sample
ING	Metals and Inorganics	PCB	Polychlorinated Biphenyls
MET	Metals	PHC	Petroleum Hydrocarbons (F1-F4)
PAH	Polycyclic Aromatic Hydrocarbons	VOC	Volatile Organic Compounds
PEST	Organochlorine Pesticides		

Drill Type: C328 Excavator

Datum: Relative



ENVIRONMENTAL-EXP BH LOGS -OAKVILLE HOSPITAL EXP ONLY.GPJ 9/2/17



exp Services Inc.  
 Brampton, Ontario  
 Telephone: 905-793-9800  
 Facsimile: 905-793-0641

Time	Water Level (m)	Depth to Cave (m)

# Log of Borehole TP-10

Project No. BRM-00235695-AO

Drawing No. B33

Project: Phase II ESA

Sheet No. 1 of 1

Location: Former Oakville Hospital, 327 Reynolds St. Oakville, ON

Please refer to Test Pit Location Plan

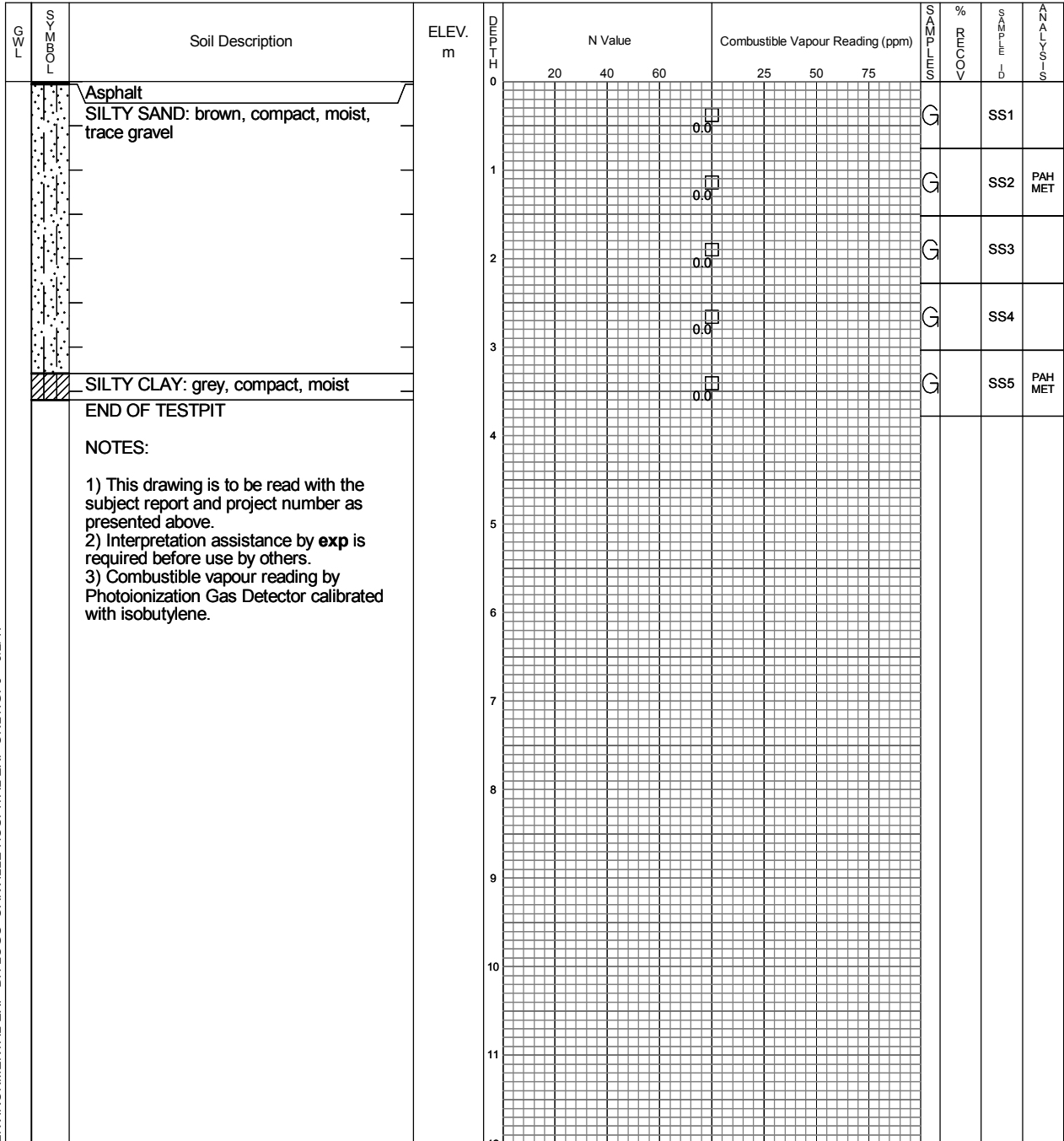
Date Drilled: November 3, 2016

**Chemical Analysis**


BTEX	Benzene, Toluene, Ethylbenzene and Xylenes	*	Duplicate Sample
ING	Metals and Inorganics	PCB	Polychlorinated Biphenyls
MET	Metals	PHC	Petroleum Hydrocarbons (F1-F4)
PAH	Polycyclic Aromatic Hydrocarbons	VOC	Volatile Organic Compounds
PEST	Organochlorine Pesticides		

Drill Type: C328 Excavator

Datum: Relative



ENVIRONMENTAL-EXP BH LOGS -OAKVILLE HOSPITAL EXP ONLY.GPJ 9/2/17

 exp Services Inc.  
 Brampton, Ontario  
 Telephone: 905-793-9800  
 Facsimile: 905-793-0641

Time	Water Level (m)	Depth to Cave (m)

## **Appendix D: Analytical tables- Soil and Groundwater**



Table D.1

**Table D.1 - SOIL ANALYTICAL RESULTS- Petroleum Hydrocarbons (PHCs)**

BRM-00235695-A0, Former Oakville Hospital

Sample ID	MOE (2011) Table 2: Full Depth Background SCS in a Potable Groundwater Condition Residential/Parkland/Institutional Land Use (coarse textured soil)	Reporting Detection Limit (RDL)*	BH16-1 S3	BH16-1 S4A	BH16-2 S3B	BH16-3 S3B
Lab ID			CAT997	CAT998	CAU000	CAU006
Sampling Date			15-Mar-16	15-Mar-16	15-Mar-16	16-Mar-16
Sample Depth (m)			3.1-4.6	4.6-5.2	3.8-4.6	3.8-4.6
Consultant			WSP	WSP	WSP	WSP
Laboratory			Maxxam	Maxxam	Maxxam	Maxxam
Benzene	0.17	0.020	<0.020	<0.020	<0.020	<0.020
Toluene	6	0.020	<0.020	<0.020	<0.020	<0.020
Ethylbenzene	1.6	0.020	<0.020	<0.020	<0.020	<0.020
m/p xylenes	NV	0.040	<0.040	<0.040	<0.040	<0.040
o xylene	NV	0.020	<0.020	<0.020	<0.020	<0.020
Total Xylenes	25	0.040	<0.040	<0.040	<0.040	<0.040
F1 (C6-C10)	65	10	<10	<10	<10	<10
F1 (C6-C10) - BTEX	65	10	<10	<10	<10	<10
F2 (C10-C16)	150	10	<10	36	<10	<10
F3 (C16-C34)	1300	50	<50	<50	<50	<50
F4 (C34-C50)	5600	50	<50	<50	<50	<50
Reached Baseline at C50	NV		Yes	Yes	Yes	Yes
Gravimetric Heavy Hydrocarbons	5600	-	-	-	-	-

All soil concentrations reported in µg/g.

\* Maximum RDL below MOE (2011) SCS

'&lt;' = Parameter below detection limit, as indicated

'NV' = No value

**Bold** Concentration exceeds MOE (2011) Table 2 SCS (coarse).

Table D.1

**Table D.1 - SOIL ANALYTICAL RESULTS- Petroleum Hydrocarbons (F***BRM-00235695-A0, Former Oakville Hospital*

Sample ID	MOE (2011) Table 2: Full Depth Background SCS in a Potable Groundwater Condition Residential/Parkland/Institutional Land Use (coarse textured soil)	BH16-4 S3B	BH16-5 S3B	BH16-5B-S5	BH16-55B-S5 (duplicate of BH16-5B-S5)	BH16-11 S3A	BH16-13 S3A
Lab ID		CAT994	CAT992	DFE693	DFE694	CAU002	CAU017
Sampling Date		14-Mar-16	14-Mar-16	4-Oct-16	4-Oct-16	15-Mar-16	16-Mar-16
Sample Depth (m)		3.1-3.7	3.1-3.7	3.1-3.7	3.1-3.7	3.1-3.8	3.1-3.8
Consultant		WSP	WSP	exp	exp	WSP	WSP
Laboratory		Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam
Benzene	0.17	-	-	<0.020	<0.020	-	<0.020
Toluene	6	-	-	<0.020	<0.020	-	<0.020
Ethylbenzene	1.6	-	-	<0.020	<0.020	-	<0.020
m/p xylenes	NV	-	-	<0.040	<0.040	-	<0.040
o xylene	NV	-	-	<0.020	<0.020	-	<0.020
Total Xylenes	25	-	-	<0.040	<0.040	-	<0.040
F1 (C6-C10)	65	<10	<10	<10	<10	<10	<10
F1 (C6-C10) - BTEX	65	<10	<10	<10	<10	<10	<10
F2 (C10-C16)	150	<10	<10	<10	<10	<10	<10
F3 (C16-C34)	1300	<50	<50	<50	<50	<50	<50
F4 (C34-C50)	5600	<50	<50	<50	<50	<50	<50
Reached Baseline at C50	NV	Yes	Yes	Yes	Yes	Yes	Yes
Gravimetric Heavy Hydrocarbons	5600	-	-	-	-	-	-

All soil concentrations reported in µg/g.

\* Maximum RDL below MOE (2011) SCS

'&lt;' = Parameter below detection limit, as indicated

'NV'= No value

**Concentration exceeds MOE (2011) Table 2 SCS (coa**

Table D.1

**Table D.1 - SOIL ANALYTICAL RESULTS- Petroleum Hydrocarbons (F***BRM-00235695-A0, Former Oakville Hospital*

Sample ID	MOE (2011) Table 2: Full Depth Background SCS in a Potable Groundwater Condition Residential/Parkland/Institutional Land Use (coarse textured soil)	BH16-15 S2A	BH16-20 S1A	BH16-201-5	BH16-202-5	BH16-2022-5 (duplicate of BH16-202-5)	BH16-203-5
Lab ID		CAU018	CCV037	DDS245	DDS246	DDS247	DDS248
Sampling Date		16-Mar-16	1-Apr-16	26-Sep-16	26-Sep-16	26-Sep-16	26-Sep-16
Sample Depth (m)		1.5-2.3	0.3-0.6	3.1-3.7	3.1-3.8	3.1-3.8	3.1-3.8
Consultant		WSP	WSP	exp	exp	exp	exp
Laboratory		Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam
Benzene	0.17	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Toluene	6	0.035	<0.020	<0.020	<0.020	<0.020	<0.020
Ethylbenzene	1.6	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
m/p xylenes	NV	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
o xylene	NV	0.028	<0.040	<0.020	<0.020	<0.020	<0.020
Total Xylenes	25	<0.040	<10	<0.040	<0.040	<0.040	<0.040
F1 (C6-C10)	65	<10	<10	<10	<10	<10	<10
F1 (C6-C10) - BTEX	65	<10	<10	<10	<10	<10	<10
F2 (C10-C16)	150	<10	<10	<10	<10	<10	<10
F3 (C16-C34)	1300	<50	<50	120	110	<50	<50
F4 (C34-C50)	5600	<50	<50	350	260	<50	<50
Reached Baseline at C50	NV	Yes	Yes	No	No	Yes	Yes
Gravimetric Heavy Hydrocarbons	5600	-	-	750	890	-	-

All soil concentrations reported in µg/g.

\* Maximum RDL below MOE (2011) SCS

'&lt;' = Parameter below detection limit, as indicated

'NV'= No value

**Concentration exceeds MOE (2011) Table 2 SCS (coa**

Table D.1

**Table D.1 - SOIL ANALYTICAL RESULTS- Petroleum Hydrocarbons (F***BRM-00235695-A0, Former Oakville Hospital*

Sample ID	MOE (2011) Table 2: Full Depth Background SCS in a Potable Groundwater Condition Residential/Parkland/Institutional Land Use (coarse textured soil)	BH16-210-S5	BH16-211-S5	BH16-212-S3	BH16-213-S3	BH16-214-SS6	BH16-215-SS5
Lab ID		DFE691	DFE692	DFW775	DFW776	DKU852	DKU855
Sampling Date		6-Oct-16	6-Oct-16	11-Oct-16	11-Oct-16	08-Nov-16	08-Nov-16
Sample Depth (m)		3.1-3.7	3.1-3.7	1.2-1.8	1.2-1.8	3.8 - 4.4	3.1 - 3.7
Consultant		exp	exp	exp	exp	exp	exp
Laboratory		Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam
Benzene	0.17	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Toluene	6	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Ethylbenzene	1.6	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
m/p xylenes	NV	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
o xylene	NV	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Total Xylenes	25	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
F1 (C6-C10)	65	<10	<10	<10	<10	<10	<10
F1 (C6-C10) - BTEX	65	<10	<10	<10	<10	<10	<10
F2 (C10-C16)	150	<10	<10	17	13	<10	<10
F3 (C16-C34)	1300	<50	<50	<50	81	<50	<50
F4 (C34-C50)	5600	<50	<50	<50	<50	<50	<50
Reached Baseline at C50	NV	Yes	Yes	Yes	Yes	Yes	Yes
Gravimetric Heavy Hydrocarbons	5600			-	-	-	-

All soil concentrations reported in µg/g.

\* Maximum RDL below MOE (2011) SCS

'&lt;' = Parameter below detection limit, as indicated

'NV' = No value

**Bold** Concentration exceeds MOE (2011) Table 2 SCS (coa

Table D.1

**Table D.1 - SOIL ANALYTICAL RESULTS- Petroleum Hydrocarbons (F**

BRM-00235695-A0, Former Oakville Hospital

Sample ID	MOE (2011) Table 2: Full Depth Background SCS in a Potable Groundwater Condition Residential/Parkland/Institutional Land Use (coarse textured soil)	BH16-216-SS5	BH16-217-SS5	BH16-257-SS5 (Dup of BH16-217-SS5)	BH16-218-SS3	BH16-219-SS3
Lab ID		DKU856	DKU857	DKU858	DKU853	DKU854
Sampling Date		08-Nov-16	08-Nov-16	08-Nov-16	08-Nov-16	08-Nov-16
Sample Depth (m)		3.1 - 3.7	3.1 - 3.7	3.1 - 3.7	1.2 - 1.7	1.2 - 1.8
Consultant		exp	exp	exp	exp	exp
Laboratory		Maxxam	Maxxam	Maxxam	Maxxam	Maxxam
Benzene	0.17	<0.020	<0.020	<0.020	<0.020	<0.020
Toluene	6	<0.020	<0.020	<0.020	<0.020	<0.020
Ethylbenzene	1.6	<0.020	<0.020	<0.020	<0.020	<0.020
m/p xylenes	NV	<0.040	<0.040	<0.040	<0.040	<0.040
o xylene	NV	<0.020	<0.020	<0.020	<0.020	<0.020
Total Xylenes	25	<0.040	<0.040	<0.040	<0.040	<0.040
F1 (C6-C10)	65	<10	<10	<10	<10	<10
F1 (C6-C10) - BTEX	65	<10	<10	<10	<10	<10
F2 (C10-C16)	150	<10	<10	<10	<10	<10
F3 (C16-C34)	1300	<50	<50	<50	<50	<50
F4 (C34-C50)	5600	<50	<50	<50	<50	<50
Reached Baseline at C50	NV	Yes	Yes	Yes	Yes	Yes
Gravimetric Heavy Hydrocarbons	5600	-	-	-	-	-

All soil concentrations reported in µg/g.

\* Maximum RDL below MOE (2011) SCS

'&lt;' = Parameter below detection limit, as indicated

'NV' = No value

**Bold** Concentration exceeds MOE (2011) Table 2 SCS (coa

Table D.1

**Table D.1 - SOIL ANALYTICAL RESULTS- Petroleum Hydrocarbons (F**

BRM-00235695-A0, Former Oakville Hospital

Sample ID	MOE (2011) Table 2: Full Depth Background SCS in a Potable Groundwater Condition Residential/Parkland/Institutional Land Use (coarse textured soil)	BH16-220-SS4	BH16-250-SS4 (Dup of BH16-220-SS4)	BH16-221-SS5	BH16-222-SS4	TP9-SS1
Lab ID		DLA169	DLA170	DLA165	DLA167	DJU094
Sampling Date		11-Nov-16	11-Nov-16	11-Nov-16	11-Nov-16	03-Nov-16
Sample Depth (m)		2.3 - 2.9	2.3 - 2.9	3.1 - 3.7	2.3 - 2.9	0 - 0.8
Consultant		exp	exp	exp	exp	exp
Laboratory		Maxxam	Maxxam	Maxxam	Maxxam	Maxxam
Benzene	0.17	<0.020	<0.020	<0.020	<0.020	<0.020
Toluene	6	<0.020	<0.020	<0.020	<0.020	<0.020
Ethylbenzene	1.6	<0.020	<0.020	<0.020	<0.020	<0.020
m/p xylenes	NV	<0.040	<0.040	<0.040	<0.040	<0.040
o xylene	NV	<0.020	<0.020	<0.020	<0.020	<0.020
Total Xylenes	25	<0.040	<0.040	<0.040	<0.040	<0.040
F1 (C6-C10)	65	<10	<10	<10	<10	<10
F1 (C6-C10) - BTEX	65	<10	<10	<10	<10	<10
F2 (C10-C16)	150	<10	<10	<10	<10	<10
F3 (C16-C34)	1300	88	110	<50	<50	<50
F4 (C34-C50)	5600	160	340	<50	<50	<50
Reached Baseline at C50	NV	No	No	Yes	Yes	Yes
Gravimetric Heavy Hydrocarbons	5600	1100	1000	-	-	-

All soil concentrations reported in µg/g.

\* Maximum RDL below MOE (2011) SCS

'&lt;' = Parameter below detection limit, as indicated

'NV'= No value

**Bold** Concentration exceeds MOE (2011) Table 2 SCS (coa

**Table D.2 - SOIL ANALYTICAL RESULTS- Volatile Organic Compounds (VOCs)**

BRM-00235695-A0, Former Oakville Hospital

Sample ID	MOE (2011) Table 2: Full Depth Background SCS in a Potable Groundwater Condition Residential/Parkland/Institutional Land Use (coarse textured soil)	Reporting Detection Limit (RDL)*	BH16-2 S3A	QA/QC#2 (dup of BH16-2 S3A)	BH16-4 S3B	BH16-5 S3B	QA/QC#1 (dup of BH16-5 S3B)	BH16-9 S3A
			CAT999	CAU021	CAT994	CAT992	CAU020	CAU012
Lab ID			15-Mar-16	15-Mar-2016	14-Mar-16	14-Mar-16	14-Mar-2016	16-Mar-16
Sampling Date			3.1-3.8	3.1-3.8	3.0-3.7	3.1-3.7	3.1-3.7	3.1-3.8
Sample Depth (m)			WSP	WSP	WSP	WSP	WSP	WSP
Consultant			Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam
Laboratory								
Acetone	28	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Benzene	0.17	0.02	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Bromodichloromethane	1.9	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Bromoform	0.26	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Bromomethane	0.05	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Carbon Tetrachloride	0.12	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chlorobenzene	2.7	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chloroform	0.17	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Dibromochloromethane	2.9	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,2-Dichlorobenzene	1.7	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,3-Dichlorobenzene	6	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,4-Dichlorobenzene	0.097	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Dichlorodifluoromethane	25	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1-Dichloroethane	0.6	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,2-Dichloroethane	0.05	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1-Dichloroethylene	0.05	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
cis-1,2-Dichloroethylene	2.5	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
trans-1,2-Dichloroethylene	0.75	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,2-Dichloropropane	0.085	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
cis-1,3-Dichloropropene	NV	0.03	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
trans-1,3-Dichloropropene	NV	0.04	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
Ethylbenzene	1.6	0.02	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Ethylene Dibromide (1,2-Dibromoethane)	0.05	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Hexane (n)	34	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Methylene chloride (Dichloromethane)	0.96	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Methyl ethyl ketone (2-Butanone)	44	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Methyl Isobutyl Ketone	4.3	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Methyl t-butyl ether (MTBE)	1.4	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Styrene	2.2	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1,1,2-Tetrachloroethane	0.05	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1,2,2-Tetrachloroethane	0.05	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Tetrachloroethylene	2.3	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Toluene	6	0.02	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
1,1,1-Trichloroethane	3.4	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1,2-Trichloroethane	0.05	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Trichloroethylene	0.52	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Trichlorofluoromethane	5.8	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Vinyl Chloride	0.022	0.02	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
m-Xylene + p-Xylene	NV	0.02	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
o-Xylene	NV	0.02	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Xylenes (total)	25	0.02	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
1,3-Dichloropropene (cis + trans)	0.05	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050

All soil concentrations reported in µg/g.

\* Maximum RDL below MOE (2011) SCS

'<' = Parameter below detection limit, as indicated

'NV' = No value

<b>Bold</b>	Concentration exceeds MOE (2011) Table 2 SCS (coarse).
	Non-detect but detection limit exceeds the MOE (2011) SCS.

**Table D.2 - SOIL ANALYTICAL RESULTS- Volatile Organic Compound**

BRM-00235695-A0, Former Oakville Hospital

Sample ID	MOE (2011) Table 2: Full Depth Background SCS in a Potable Groundwater Condition Residential/Parkland/Institutional Land Use (coarse textured soil)	BH16-11 S3A	BH16-15 S3A	BH16-102 S2B	QA/QC 16-3 (dup of BH16-102 S2B)	BH16-221-SS6	BH16-222-SS6
Lab ID		CAU002	CAU019	CNS289	CNS291	DLA166	DLA168
Sampling Date		15-Mar-16	16-Mar-16	10-Jun-16	10-Jun-16	11-Nov-16	11-Nov-16
Sample Depth (m)		3.1-3.8	3.1-3.8	2.1-2.4	2.1-2.4	3.8 - 4.4	4.6 - 5.2
Consultant		WSP	WSP	WSP	WSP	exp	exp
Laboratory		Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam
Acetone	28	<0.50	<0.50	<0.020	<0.020	<0.50	<0.50
Benzene	0.17	<0.020	<0.020	<0.050	<0.050	<0.020	<0.020
Bromodichloromethane	1.9	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Bromoform	0.26	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Bromomethane	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Carbon Tetrachloride	0.12	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chlorobenzene	2.7	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chloroform	0.17	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Dibromochloromethane	2.9	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,2-Dichlorobenzene	1.7	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,3-Dichlorobenzene	6	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,4-Dichlorobenzene	0.097	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Dichlorodifluoromethane	25	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1-Dichloroethane	0.6	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,2-Dichloroethane	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1-Dichloroethylene	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
cis-1,2-Dichloroethylene	2.5	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
trans-1,2-Dichloroethylene	0.75	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,2-Dichloropropane	0.085	<0.050	<0.050	<0.030	<0.030	<0.050	<0.050
cis-1,3-Dichloropropene	NV	<0.030	<0.030	<0.040	<0.040	<0.030	<0.030
trans-1,3-Dichloropropene	NV	<0.040	<0.040	<0.020	<0.020	<0.040	<0.040
Ethylbenzene	1.6	<0.020	<0.020	<0.050	<0.050	<0.020	<0.020
Ethylene Dibromide (1,2-Dibromoethane)	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Hexane (n)	34	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Methylene chloride (Dichloromethane)	0.96	<0.050	<0.050	<0.50	<0.50	<0.050	<0.050
Methyl ethyl ketone (2-Butanone)	44	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Methyl Isobutyl Ketone	4.3	<0.50	<0.50	<0.050	<0.050	<0.50	<0.50
Methyl t-butyl ether (MTBE)	1.4	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Styrene	2.2	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1,1,2-Tetrachloroethane	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1,2,2-Tetrachloroethane	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Tetrachloroethylene	2.3	<0.050	<0.050	<0.020	<0.020	<0.050	<0.050
Toluene	6	<0.020	<0.020	<0.050	<0.050	<0.020	<0.020
1,1,1-Trichloroethane	3.4	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1,2-Trichloroethane	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Trichloroethylene	0.52	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Trichlorofluoromethane	5.8	<0.050	<0.050	<0.020	<0.020	<0.050	<0.050
Vinyl Chloride	0.022	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
m-Xylene + p-Xylene	NV	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
o-Xylene	NV	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Xylenes (total)	25	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
1,3-Dichloropropene (cis + trans)	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050

All soil concentrations reported in µg/g.

\* Maximum RDL below MOE (2011) SCS

'<' = Parameter below detection limit, as indicated

'NV' = No value

<b>Bold</b>	Concentration exceeds MOE (2011) Table 2 SCS (coars
	Non-detect but detection limit exceeds the MOE (2011)



**Table D.3 - SOIL ANALYTICAL RESULTS- Polycyclic Aromatic Hydrocarbons (PAHs)**

BRM-00235695-A0, Former Oakville Hospital

Sample ID	MOE (2011) Table 2: Full Depth Background SCS in a Potable Groundwater Condition Residential/Parkland/Institutional Land Use (coarse textured soil)	Reporting Detection Limit (RDL)*	BH16-3 S2B	BH16-4 S2	BH16-9 S2B	BH16-11 S1B	BH16-13 S1B	BH16-16 S2B	BH16-104 S4A	BH16-105 S1B
Lab ID			CAU005	CAT993	CAU011	CAU001	CAU015	CAU014	CNS284	CNS285
Sampling Date			16-Mar-16	14-Mar-16	16-Mar-16	15-Mar-16	16-Mar-16	16-Mar-16	9-Jun-16	9-Jun-16
Sample Depth (m)			2.3-3.1	1.2-2.4	2.3-3.1	0.3-1.5	0.7-1.5	2.3-3.1	4.6-5.2	0.8-1.5
Consultant			WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP
Laboratory			Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam
Acenaphthene	29	0.005	<0.0050	<0.0050	<0.0050	<0.0050	0.15	<0.0050	<0.0050	0.062
Acenaphthylene	0.17	0.005	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.0050	<0.0050	<0.0050
Anthracene	0.74	0.005	<0.0050	<0.0050	<0.0050	<0.0050	0.34	<0.0050	<0.0050	0.16
Benzo(a)anthracene	0.63	0.005	0.0056	<0.0050	<0.0050	0.006	<b>0.73</b>	<0.0050	<0.0050	0.5
Benzo(a)pyrene	0.3	0.005	0.0066	<0.0050	<0.0050	0.0073	<b>0.6</b>	<0.0050	<0.0050	<b>0.41</b>
Benzo(b/j)fluoranthene	0.78	0.005	0.0091	<0.0050	<0.0050	0.0097	<b>0.85</b>	<0.0050	<0.0050	0.58
Benzo(ghi)perylene	7.8	0.005	0.0054	<0.0050	<0.0050	0.006	0.35	<0.0050	<0.0050	0.23
Benzo(k)fluoranthene	0.78	0.005	<0.0050	<0.0050	<0.0050	<0.0050	0.32	<0.0050	<0.0050	0.18
Chrysene	7.8	0.005	0.0064	<0.0050	<0.0050	0.0086	0.63	<0.0050	<0.0050	0.41
Dibenzo(a,h)anthracene	0.1	0.005	<0.0050	<0.0050	<0.0050	<0.0050	0.097	<0.0050	<0.0050	0.062
Fluoranthene	0.69	0.005	0.013	<0.0050	<0.0050	0.014	<b>1.9</b>	<0.0050	<0.0050	<b>1.2</b>
Fluorene	69	0.005	<0.0050	<0.0050	<0.0050	<0.0050	0.13	<0.0050	<0.0050	0.058
Indeno(1,2,3-cd)pyrene	0.48	0.005	0.0052	<0.0050	<0.0050	0.0059	0.41	<0.0050	<0.0050	0.28
1-Methylnaphthalene	3.4	0.005	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.0050	<0.0050	0.0057
2-Methylnaphthalene	3.4	0.005	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.0050	<0.0050	0.0051
Naphthalene	0.75	0.005	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.0050	<0.0050	0.0084
Phenanthrene	7.8	0.005	0.0057	<0.0050	<0.0050	0.01	1.1	<0.0050	<0.0050	0.67
Pyrene	78	0.005	0.011	<0.0050	<0.0050	0.012	1.4	<0.0050	<0.0050	0.87
Methylnaphthalene, 2-(1-)	0.99	0.0071	<0.0071	<0.0071	<0.0071	<0.0071	<0.071	<0.0071	<0.0071	0.011

All soil concentrations reported in µg/g.

\* Maximum RDL below MOE (2011) SCS

'<' = Parameter below detection limit, as indicated

'NV'= No value

**Concentration exceeds MOE (2011) Table 2 SCS (coarse).**

**Table D.3 - SOIL ANALYTICAL RESULTS- Polycyclic Aromatic Hydr**

BRM-00235695-A0, Former Oakville Hospital

Sample ID	MOE (2011) Table 2: Full Depth Background SCS in a Potable Groundwater Condition Residential/Parkland/Institutional Land Use (coarse textured soil)	BH16-105 S2B	BH16-106 S1	BH16-107 S1	BH16-107 S2B	BH16-108 S1B	BH16-110 S1	BH16-112 S1	BH16-204-S2	BH16-204-S2 (Dup of BH16-204 S2)
Lab ID		CPA347	CNS286	CNS287	CPA348	CNS288	CPA349	CPA350	DDX054	DDX055
Sampling Date		9-Jun-16	10-Jun-16	10-Jun-16	10-Jun-16	9-Jun-16	10-Jun-16	10-Jun-16	18-Sep-16	18-Sep-16
Sample Depth (m)		2.3-3.1	0-1.5	0-1.5	2.1-3.1	0.9-1.5	0-1.5	0-1.5	0.8-1.5	0.8-1.5
Consultant		WSP	WSP	WSP	WSP	WSP	WSP	WSP	exp	exp
Laboratory		Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam
Acenaphthene	29	<0.0050	0.0095	0.065	<0.0050	<0.0050	0.19	0.018	0.41	0.31
Acenaphthylene	0.17	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0057	<0.0050	0.0051	0.03
Anthracene	0.74	<0.0050	0.025	0.2	<0.0050	<0.0050	0.47	0.052	0.54	0.59
Benzo(a)anthracene	0.63	<0.0050	0.11	0.6	<0.0050	<0.0050	<b>1.6</b>	0.2	<b>1.8</b>	<b>2</b>
Benzo(a)pyrene	0.3	<0.0050	0.1	<b>0.49</b>	<0.0050	<0.0050	<b>1.4</b>	0.12	<b>1.4</b>	<b>1.7</b>
Benzo(b/j)fluoranthene	0.78	<0.0050	0.15	0.69	<0.0050	<0.0050	<b>1.5</b>	0.15	<b>2</b>	<b>2.3</b>
Benzo(ghi)perylene	7.8	<0.0050	0.061	0.27	<0.0050	<0.0050	0.61	0.056	0.75	0.92
Benzo(k)fluoranthene	0.78	<0.0050	0.045	0.21	<0.0050	<0.0050	0.59	0.052	0.65	<b>0.9</b>
Chrysene	7.8	<0.0050	0.1	0.52	<0.0050	<0.0050	1.3	0.16	1.6	1.8
Dibenzo(a,h)anthracene	0.1	<0.0050	0.016	0.074	<0.0050	<0.0050	<b>0.16</b>	0.016	<b>0.2</b>	<b>0.23</b>
Fluoranthene	0.69	<0.0050	0.26	<b>1.5</b>	<0.0050	0.0071	<b>4.2</b>	0.41	<b>4.7</b>	<b>4.8</b>
Fluorene	69	<0.0050	0.0083	0.055	<0.0050	<0.0050	0.18	0.017	0.39	0.37
Indeno(1,2,3-cd)pyrene	0.48	<0.0050	0.072	0.33	<0.0050	<0.0050	<b>0.83</b>	0.049	<b>0.95</b>	<b>1.1</b>
1-Methylnaphthalene	3.4	<0.0050	<0.0050	0.0058	<0.0050	<0.0050	0.014	<0.0050	<0.0050	0.046
2-Methylnaphthalene	3.4	<0.0050	<0.0050	0.0066	<0.0050	<0.0050	0.014	<0.0050	<0.0050	0.074
Naphthalene	0.75	<0.0050	<0.0050	0.018	<0.0050	<0.0050	0.022	<0.0050	<0.0050	0.089
Phenanthrene	7.8	<0.0050	0.11	0.77	<0.0050	<0.0050	2.1	0.21	3.7	3.2
Pyrene	78	<0.0050	0.19	1.1	<0.0050	0.0052	3.1	0.31	3.1	3.3
Methylnaphthalene, 2-(1-)	0.99	<0.0071	<0.0071	0.012	<0.0071	<0.0071	0.028	<0.0071	<0.0071	0.12

All soil concentrations reported in µg/g.

\* Maximum RDL below MOE (2011) SCS

'<' = Parameter below detection limit, as indicated

'NV'= No value

**Bold** Concentration exceeds MOE (2011) Table 2 SCS (coa

**Table D.3 - SOIL ANALYTICAL RESULTS- Polycyclic Aromatic Hydr**  
 BRM-00235695-A0, Former Oakville Hospital

Sample ID	MOE (2011) Table 2: Full Depth Background SCS in a Potable Groundwater Condition Residential/Parkland/Institutional Land Use (coarse textured soil)	BH16-204-S5	BH16-204-S6	BH16-205-S1	BH16-205-S3	BH16-206-S2	BH16-206-S4	BH16-207-S2	BH16-207-S5	BH16-208-S1	
Lab ID		DDX056	DDX057	DDX058	DDX059	DDX061	DDX062	DDX067	DDX068	DDX064	
Sampling Date		18-Sep-16	18-Sep-16	18-Sep-16	18-Sep-16	18-Sep-16	18-Sep-16	18-Sep-16	28-Sep-16	28-Sep-16	28-Sep-16
Sample Depth (m)		3.1-3.8	3.8-4.6	0-0.8	1.5-2.3	0.8-1.5	2.3-3.05	0.8-1.5	3.1-3.8	0-0.8	
Consultant		exp	exp	exp	exp	exp	exp	exp	exp	exp	
Laboratory		Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam
Acenaphthene	29	<0.0050	<0.0050	<0.50	<0.050	0.5	<0.0050	<0.0050	<0.0050	0.039	
Acenaphthylene	0.17	<0.0050	<0.0050	<0.50	0.075	0.055	<0.0050	<0.0050	<0.0050	0.013	
Anthracene	0.74	<0.0050	<0.0050	<0.50	<0.050	<b>1.7</b>	<0.0050	<0.0050	<0.0050	0.11	
Benzo(a)anthracene	0.63	<0.0050	<0.0050	<0.50	<0.050	<b>5.1</b>	<0.0050	<0.0050	<0.0050	0.5	
Benzo(a)pyrene	0.3	<0.0050	<0.0050	<0.50	<0.050	<b>4.1</b>	<0.0050	<0.0050	<0.0050	<b>0.35</b>	
Benzo(b/j)fluoranthene	0.78	<0.0050	<0.0050	<0.50	<0.050	<b>4.8</b>	<0.0050	<0.0050	<0.0050	0.41	
Benzo(ghi)perylene	7.8	<0.0050	<0.0050	<0.50	<0.050	2	<0.0050	<0.0050	<0.0050	0.21	
Benzo(k)fluoranthene	0.78	<0.0050	<0.0050	<0.50	<0.050	<b>1.6</b>	<0.0050	<0.0050	<0.0050	0.14	
Chrysene	7.8	<0.0050	<0.0050	<0.50	<0.050	4.1	<0.0050	<0.0050	<0.0050	0.33	
Dibenzo(a,h)anthracene	0.1	<0.0050	<0.0050	<0.50	<0.050	<b>0.54</b>	<0.0050	<0.0050	<0.0050	0.047	
Fluoranthene	0.69	<0.0050	<0.0050	<0.50	<0.050	<b>11</b>	<0.0050	<0.0050	<0.0050	<b>1</b>	
Fluorene	69	<0.0050	<0.0050	<0.50	0.1	0.45	<0.0050	<0.0050	<0.0050	0.029	
Indeno(1,2,3-cd)pyrene	0.48	<0.0050	<0.0050	<0.50	<0.050	<b>2.4</b>	<0.0050	<0.0050	<0.0050	0.26	
1-Methylnaphthalene	3.4	<0.0050	<0.0050	<0.50	0.082	0.08	<0.0050	<0.0050	<0.0050	0.0065	
2-Methylnaphthalene	3.4	<0.0050	<0.0050	<0.50	0.17	0.1	<0.0050	<0.0050	<0.0050	0.0079	
Naphthalene	0.75	<0.0050	<0.0050	<0.50	0.17	0.14	<0.0050	<0.0050	<0.0050	0.018	
Phenanthrene	7.8	<0.0050	<0.0050	<0.50	<0.050	5.4	<0.0050	<0.0050	<0.0050	0.37	
Pyrene	78	<0.0050	<0.0050	<0.50	<0.050	8	<0.0050	<0.0050	<0.0050	0.81	
Methylnaphthalene, 2-(1-)	0.99	<0.0071	<0.0071	<0.71	0.25	0.18	<0.0071	<0.0071	<0.0071	0.014	

All soil concentrations reported in µg/g.

\* Maximum RDL below MOE (2011) SCS

'<' = Parameter below detection limit, as indicated

'NV'= No value

**Bold** Concentration exceeds MOE (2011) Table 2 SCS (coa

**Table D.3 - SOIL ANALYTICAL RESULTS- Polycyclic Aromatic Hydr**

BRM-00235695-A0, Former Oakville Hospital

Sample ID	MOE (2011) Table 2: Full Depth Background SCS in a Potable Groundwater Condition Residential/Parkland/Institutional Land Use (coarse textured soil)	BH16-208-S4	BH16-209-S1	BH16-209-S3
Lab ID		DDX064	DDX069	DDX070
Sampling Date		28-Sep-16	28-Sep-16	28-Sep-16
Sample Depth (m)		2.3-3.1	0-0.8	1.5-2.3
Consultant		<b>exp</b>	<b>exp</b>	<b>exp</b>
Laboratory		Maxxam	Maxxam	Maxxam
Acenaphthene	29	<0.0050	<0.50	<0.0050
Acenaphthylene	0.17	<0.0050	<0.50	<0.0050
Anthracene	0.74	<0.0050	<0.50	<0.0050
Benzo(a)anthracene	0.63	<0.0050	<0.50	<0.0050
Benzo(a)pyrene	0.3	<0.0050	<b>0.53</b>	<0.0050
Benzo(b/j)fluoranthene	0.78	<0.0050	0.66	<0.0050
Benzo(ghi)perylene	7.8	<0.0050	<0.50	<0.0050
Benzo(k)fluoranthene	0.78	<0.0050	<0.50	<0.0050
Chrysene	7.8	<0.0050	0.5	<0.0050
Dibenzo(a,h)anthracene	0.1	<0.0050	<0.50	<0.0050
Fluoranthene	0.69	<0.0050	<b>1.1</b>	<0.0050
Fluorene	69	<0.0050	<0.50	<0.0050
Indeno(1,2,3-cd)pyrene	0.48	<0.0050	<0.50	<0.0050
1-Methylnaphthalene	3.4	<0.0050	<0.50	<0.0050
2-Methylnaphthalene	3.4	<0.0050	<0.50	<0.0050
Naphthalene	0.75	<0.0050	<0.50	<0.0050
Phenanthrene	7.8	<0.0050	0.55	<0.0050
Pyrene	78	<0.0050	0.9	<0.0050
Methylnaphthalene, 2-(1-)	0.99	<0.71	<0.71	<0.0071

All soil concentrations reported in µg/g.

\* Maximum RDL below MOE (2011) SCS

'<' = Parameter below detection limit, as indicated

'NV' = No value

**Bold** Concentration exceeds MOE (2011) Table 2 SCS (coar

**Table D.4- SOIL ANALYTICAL RESULTS- Metals & Inorganics**

BRM-00235695-A0, Former Oakville Hospital

Sample ID	MOE (2011) Table 2: Full Depth Background SCS in a Potable Groundwater Condition Residential/Parkland/Institutional Land Use (coarse textured soil)	Reporting Detection Limit (RDL)*	BH16-5 S1B	BH16-5A S4A	BH16-6 S2A	BH16-7 S1B	BH16-7 S2B	BH16-8 S2B	BH16-9 S2A	BH16-9A S4A
Lab ID			CAT991	CNS275	CAT989	CAT995	CAT996	CAU007	CAU010	CNS276
Sampling Date			14-Mar-16	8-Jun-2016	14-Mar-16	14-Mar-16	14-Mar-16	16-Mar-16	16-Mar-16	8-Jun-2016
Sample Depth (m)			0.6-122	4.6-5.2	1.2-1.8	0.6-1.2	1.8-2.4	2.3 - 3.1	1.5-2.3	4.6-5.3
Consultant			WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP
Laboratory			Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam
Hot Water Ext. Boron (B)	1.5	0.05	0.18	-	<0.050	0.18	<0.050	0.11	0.073	-
Antimony (Sb)	7.5	0.2	<0.20	-	<0.20	<0.20	<0.20	<0.20	<0.20	-
Arsenic (As)	18	1	1.9	-	<1.0	1.6	1.3	3.6	<1.0	-
Barium (Ba)	390	0.5	29	-	10	18	7.1	60	11	-
Beryllium (Be)	4	0.2	<0.20	-	<0.20	0.2	<0.20	0.46	<0.20	-
Boron (B)	120	5	<5.0	-	<5.0	<5.0	<5.0	8.6	<5.0	-
Cadmium (Cd)	1.2	0.1	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10	-
Chromium (Cr)	160	1	6.3	-	4.9	7.5	3.6	16	4.6	-
Cobalt (Co)	22	0.1	3	-	2.2	2.2	1.4	9.3	2	-
Copper (Cu)	140	0.5	13	-	6.2	5.8	6.9	21	8.4	-
Lead (Pb)	120	1	4.8	-	2	4.5	2.4	7.5	3.1	-
Molybdenum (Mo)	6.9	0.5	<0.50	-	<0.50	<0.50	<0.50	<0.50	<0.50	-
Nickel (Ni)	100	0.5	6.1	-	4	4.4	3.1	19	4.3	-
Selenium (Se)	2.4	0.5	<0.50	-	<0.50	<0.50	<0.50	<0.50	<0.50	-
Silver (Ag)	20	0.2	<0.20	-	<0.20	<0.20	<0.20	<0.20	<0.20	-
Sodium (Na)	NV	50	430	-	380	900	520	1000	630	-
Thallium (Tl)	1	0.05	<0.050	-	<0.050	<0.050	<0.050	0.076	<0.050	-
Uranium (U)	23	0.05	0.28	-	0.19	0.25	0.2	0.57	0.21	-
Vanadium (V)	86	5	13	-	12	17	7.6	23	9.7	-
Zinc (Zn)	340	5	17	-	8.5	16	8.7	44	13	-
Mercury (Hg)	0.27	0.05	<0.050	-	<0.050	<0.050	<0.050	<0.050	<0.050	-
Conductivity (ms/cm)	0.7	0.002	<b>0.81</b>	0.6	0.48	<b>2.4</b>	<b>0.89</b>	<b>1.7</b>	<b>1.5</b>	0.24
Sodium Adsorption Ratio	5		<b>20</b>	0.83	<b>16</b>	<b>15</b>	<b>26</b>	<b>14</b>	<b>28</b>	0.49
Cyanide, Free	0.051	0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	<0.01	-
pH (pH Units)	NV	-	7.87	-	7.84	7.58	8.12	7.86	8.09	-
Chromium VI	8	-	-	-	-	-	-	-	-	-

All soil concentrations reported in µg/g.

\* Maximum RDL below MOE (2011) SCS

'<' = Parameter below detection limit, as indicated

'NV'= No value

**Bold**

Concentration exceeds MOE (2011) Table 2 SCS (coarse).

Non-detect but detection limit exceeds the MOE (2011) SCS.

**Table D.4- SOIL ANALYTICAL RESULTS- Metals & Inorganics**

BRM-00235695-A0, Former Oakville Hospital

Sample ID	MOE (2011) Table 2: Full Depth Background SCS in a Potable Groundwater Condition Residential/Parkland/Institutional Land Use (coarse textured soil)	BH16-10 S1B	BH16-12 S1B	BH16-13 S2A	BH16-14 S1B	QA/QC#6 (duplicate of 16-14 S1B)	BH16-14 S2B	BH16-14A S4B	BH16-15A S4A	BH16-16 S2A
Lab ID		CAT986	CAU003	CAU016	CAU008	CAU023	CAU009	CNS277	CNS278	CAU013
Sampling Date		14-Mar-16	15-Mar-16	16-Mar-16	16-Mar-16	16-Mar-2016	16-Mar-16	9-Jun-2016	8-Jun-2016	16-Mar-16
Sample Depth (m)		0.5-1.2	0.7-1.5	1.5-2.3	0.7-1.5	0.7-1.5	2.3 -3.1	5.2-5.8	4.6-5.3	1.5-2.3
Consultant		WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP
Laboratory		Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam
Hot Water Ext. Boron (B)	1.5	<0.050	0.067	0.1	0.093	0.068	0.095	-	-	0.13
Antimony (Sb)	7.5	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	-	-	<0.20
Arsenic (As)	18	1.6	<1.0	<1.0	1.9	2	5.1	-	-	<1.0
Barium (Ba)	390	7.1	7.1	8.7	25	14	55	-	-	9
Beryllium (Be)	4	<0.20	<0.20	<0.20	<0.20	<0.20	0.32	-	-	<0.20
Boron (B)	120	<5.0	<5.0	<5.0	<5.0	<5.0	5.7	-	-	<5.0
Cadmium (Cd)	1.2	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	-	-	<0.10
Chromium (Cr)	160	6	5.3	5.3	7.1	6.2	9.7	-	-	4.8
Cobalt (Co)	22	1.9	1.9	1.5	2.3	1.9	5.8	-	-	1.5
Copper (Cu)	140	8	8.1	6.2	8.1	7.8	17	-	-	11
Lead (Pb)	120	2.8	2.8	2.1	2.5	2.6	5.5	-	-	2.3
Molybdenum (Mo)	6.9	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-	-	<0.50
Nickel (Ni)	100	4.1	3.8	3.8	5.1	4.4	12	-	-	3.3
Selenium (Se)	2.4	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-	-	<0.50
Silver (Ag)	20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	-	-	<0.20
Sodium (Na)	NV	330	410	540	1800	1900	2200	-	-	520
Thallium (Tl)	1	<0.050	<0.050	<0.050	<0.050	<0.050	0.061	-	-	<0.050
Uranium (U)	23	0.26	0.22	0.28	0.3	0.24	0.31	-	-	0.25
Vanadium (V)	86	15	11	13	16	15	15	-	-	11
Zinc (Zn)	340	11	9.9	8.3	9.7	9.5	29	-	-	8.9
Mercury (Hg)	0.27	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	-	-	<0.050
Conductivity (ms/cm)	0.7	<b>0.88</b>	<b>0.78</b>	<b>1</b>	<b>5.8</b>	<b>4.9</b>	<b>5</b>	0.33	0.3	<b>1.8</b>
Sodium Adsorption Ratio	5	4.7	<b>18</b>	<b>20</b>	<b>80</b>	<b>73</b>	<b>53</b>	0.64	1.3	<b>41</b>
Cyanide, Free	0.051	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	-	<0.01
pH (pH Units)	NV	7.55	7.67	8.19	7.84	7.92	7.97	-	-	8.6
Chromium VI	8	-	-	-	-	-	-	-	-	-

All soil concentrations reported in µg/g.

\* Maximum RDL below MOE (2011) SCS

'<' = Parameter below detection limit, as indicated

'NV'= No value

**Bold** Concentration exceeds MOE (2011) Table 2 SCS (coarse textured soil)  
 Non-detect but detection limit exceeds the MOE (2011)

**Table D.4- SOIL ANALYTICAL RESULTS- Metals & Inorganics**

BRM-00235695-A0, Former Oakville Hospital

Sample ID	MOE (2011) Table 2: Full Depth Background SCS in a Potable Groundwater Condition Residential/Parkland/Institutional Land Use (coarse textured soil)	BH16-17 S1B	BH16-18 S2B	BH16-19 S1B	BH16-19 S2B	BH16-101 S3B	BH16-103 S2	BH16-103 S3	BH16-113 S3B
Lab ID		CAU004	CAT990	CAT987	CAT988	CNS279	CNS280	CNS281	CNS282
Sampling Date		15-Mar-16	14-Mar-16	14-Mar-16	14-Mar-16	10-Jun-2016	10-Jun-2016	10-Jun-2016	9-Jun-2016
Sample Depth (m)		0.3-1.5	1.8-2.4	0.3-1.2	1.8-2.4	4-4.3	1.5-3.1	3.1-4	4-4.6
Consultant		WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP
Laboratory		Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam
Hot Water Ext. Boron (B)	1.5	<0.050	<0.050	<0.050	<0.050	-	-	-	-
Antimony (Sb)	7.5	<0.20	<0.20	<0.20	<0.20	-	-	-	-
Arsenic (As)	18	1.2	1.5	1.4	<1.0	-	-	-	-
Barium (Ba)	390	5.6	11	9.8	6.9	-	-	-	-
Beryllium (Be)	4	<0.20	<0.20	<0.20	<0.20	-	-	-	-
Boron (B)	120	<5.0	<5.0	<5.0	<5.0	-	-	-	-
Cadmium (Cd)	1.2	<0.10	<0.10	<0.10	<0.10	-	-	-	-
Chromium (Cr)	160	8.1	5.7	7.9	5	-	-	-	-
Cobalt (Co)	22	2	2	1.8	1.8	-	-	-	-
Copper (Cu)	140	7.4	7.5	7.4	6.9	-	-	-	-
Lead (Pb)	120	2.6	2.7	2.8	2.5	-	-	-	-
Molybdenum (Mo)	6.9	<0.50	<0.50	<0.50	<0.50	-	-	-	-
Nickel (Ni)	100	3.6	3.5	4.3	3.3	-	-	-	-
Selenium (Se)	2.4	<0.50	<0.50	<0.50	<0.50	-	-	-	-
Silver (Ag)	20	<0.20	<0.20	<0.20	<0.20	-	-	-	-
Sodium (Na)	NV	230	580	1300	350	-	-	-	-
Thallium (Tl)	1	<0.050	<0.050	<0.050	<0.050	-	-	-	-
Uranium (U)	23	0.34	0.34	0.28	0.3	-	-	-	-
Vanadium (V)	86	27	16	20	13	-	-	-	-
Zinc (Zn)	340	10	11	11	10	-	-	-	-
Mercury (Hg)	0.27	<0.050	<0.050	<0.050	<0.050	-	-	-	-
Conductivity (ms/cm)	0.7	0.34	<b>1.6</b>	<b>3.1</b>	0.69	0.68	<b>1.3</b>	<b>0.99</b>	0.27
Sodium Adsorption Ratio	5	<b>6.2</b>	<b>31</b>	<b>65</b>	<b>13</b>	3.4	<b>35</b>	<b>11</b>	0.54
Cyanide, Free	0.051	<0.01	<0.01	<0.01	<0.01	-	-	-	-
pH (pH Units)	NV	8.01	7.88	7.83	8.05	-	-	-	-
Chromium VI	8	-	-	-	-	-	-	-	-

All soil concentrations reported in µg/g.

\* Maximum RDL below MOE (2011) SCS

'<' = Parameter below detection limit, as indicated

'NV'= No value

<b>Bold</b>	Concentration exceeds MOE (2011) Table 2 SCS (coarse textured soil)
	Non-detect but detection limit exceeds the MOE (2011) Table 2 SCS (coarse textured soil)

**Table D.4- SOIL ANALYTICAL RESULTS- Metals & Inorganics**

BRM-00235695-A0, Former Oakville Hospital

Sample ID	MOE (2011) Table 2: Full Depth Background SCS in a Potable Groundwater Condition Residential/Parkland/Institutional Land Use (coarse textured soil)	BH16-114 S3B	BH16-220-SS2	BH16-220-SS4	BH16-221-SS1	TP2-SS1	TP4-SS2	TP44-SS22 (Dup of TP4-SS2)
Lab ID		CNS283	DLA171	DLA169	DLA164	DJU098	DJU084	DJU085
Sampling Date		10-Jun-2016	11-Nov-16	11-Nov-16	11-Nov-16	4-Nov-16	3-Nov-16	3-Nov-16
Sample Depth (m)		3.7-4.6	0.8 - 1.4	2.3 - 2.9	0 - 0.6	0 - 0.8	0.8 - 1.5	0.8 - 1.5
Consultant		WSP	exp	exp	exp	exp	exp	exp
Laboratory		Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam
Hot Water Ext. Boron (B)	1.5	-	0.2	-	0.2	0.11	<0.050	<0.050
Antimony (Sb)	7.5	-	<0.20	-	<0.20	<0.20	<0.20	<0.20
Arsenic (As)	18	-	2.5	-	1.8	1.7	1.2	1.1
Barium (Ba)	390	-	30	-	16	11	7.2	5.5
Beryllium (Be)	4	-	0.27	-	0.22	<0.20	<0.20	<0.20
Boron (B)	120	-	<5.0	-	<5.0	<5.0	<5.0	<5.0
Cadmium (Cd)	1.2	-	0.11	-	<0.10	<0.10	<0.10	<0.10
Chromium (Cr)	160	-	10	-	7.8	7.1	7.5	5.6
Cobalt (Co)	22	-	4.3	-	2.4	2.5	2.2	2
Copper (Cu)	140	-	15	-	5.4	8.8	7.8	6.9
Lead (Pb)	120	-	46	-	7.9	4.2	2.9	2.6
Molybdenum (Mo)	6.9	-	<0.50	-	<0.50	<0.50	<0.50	<0.50
Nickel (Ni)	100	-	9.1	-	3.9	4.9	3.9	3.3
Selenium (Se)	2.4	-	<0.50	-	<0.50	<0.50	<0.50	<0.50
Silver (Ag)	20	-	<0.20	-	<0.20	<0.20	<0.20	<0.20
Sodium (Na)	NV	-	-	-	-	-	-	-
Thallium (Tl)	1	-	0.072	-	<0.050	<0.050	<0.050	<0.050
Uranium (U)	23	-	0.31	-	0.22	0.32	0.36	0.32
Vanadium (V)	86	-	23	-	17	18	21	17
Zinc (Zn)	340	-	35	-	17	14	11	9.8
Mercury (Hg)	0.27	-	<0.050	-	<0.050	<0.050	<0.050	<0.050
Conductivity (ms/cm)	0.7	0.36	-	<b>0.98</b>	-	-	-	-
Sodium Adsorption Ratio	5	0.38	-	<b>23</b>	-	-	-	-
Cyanide, Free	0.051	-	-	-	-	-	-	-
pH (pH Units)	NV	-	-	-	-	-	-	-
Chromium VI	8	-	<0.2	-	<0.2	<0.2	<0.2	<0.2

All soil concentrations reported in µg/g.

\* Maximum RDL below MOE (2011) SCS

'<' = Parameter below detection limit, as indicated

'NV'= No value

<b>Bold</b>	Concentration exceeds MOE (2011) Table 2 SCS (coarse textured soil)
	Non-detect but detection limit exceeds the MOE (2011) Table 2 SCS (coarse textured soil)



**Table D.4- SOIL ANALYTICAL RESULTS- Metals & Inorganics**

BRM-00235695-A0, Former Oakville Hospital

Sample ID	MOE (2011) Table 2: Full Depth Background SCS in a Potable Groundwater Condition Residential/Parkland/Institutional Land Use (coarse textured soil)	TP4-SS6	TP5-SS1	TP55-SS11 (Dup of TP5-SS1)	TP6-SS2	TP6-SS6	TP7-SS2	TP7-SS5
Lab ID		DJU086	DJU082	DJU083	DJU088	DJU087	DJU090	DJU089
Sampling Date		3-Nov-16	3-Nov-16	3-Nov-16	3-Nov-16	3-Nov-16	3-Nov-16	3-Nov-16
Sample Depth (m)		3.8 - 4.6	0 - 0.8	0 - 0.8	0.8 - 1.5	3.8 - 4.6	0.8 - 1.5	3.1 - 3.8
Consultant		exp	exp	exp	exp	exp	exp	exp
Laboratory		Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam
Hot Water Ext. Boron (B)	1.5	0.19	0.086	0.12	<0.050	0.099	0.17	0.059
Antimony (Sb)	7.5	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Arsenic (As)	18	4.5	1.5	1.7	2	2.3	2.1	<1.0
Barium (Ba)	390	39	14	12	9.6	43	14	7.9
Beryllium (Be)	4	0.69	<0.20	0.24	<0.20	0.39	0.33	<0.20
Boron (B)	120	11	<5.0	<5.0	<5.0	7.8	<5.0	<5.0
Cadmium (Cd)	1.2	<0.10	<0.10	<0.10	<0.10	0.11	0.12	<0.10
Chromium (Cr)	160	20	6.6	9.3	4.7	14	8.2	4.9
Cobalt (Co)	22	12	2.3	2.4	2.6	7	3.3	2
Copper (Cu)	140	28	8.7	7.9	7.5	22	15	10
Lead (Pb)	120	9.2	3.5	4	2.7	7.6	9	2.9
Molybdenum (Mo)	6.9	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Nickel (Ni)	100	27	4.7	4.9	4.4	15	6.9	4.4
Selenium (Se)	2.4	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Silver (Ag)	20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Sodium (Na)	NV	-	-	-	-	-	-	-
Thallium (Tl)	1	0.12	<0.050	<0.050	<0.050	0.081	0.068	<0.050
Uranium (U)	23	0.57	0.29	0.29	0.22	0.57	0.36	0.26
Vanadium (V)	86	27	15	19	9.7	21	17	11
Zinc (Zn)	340	64	13	12	10	45	38	12
Mercury (Hg)	0.27	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Conductivity (ms/cm)	0.7	-	-	-	-	-	-	-
Sodium Adsorption Ratio	5	-	-	-	-	-	-	-
Cyanide, Free	0.051	-	-	-	-	-	-	-
pH (pH Units)	NV	-	-	-	-	-	-	-
Chromium VI	8	<0.2	0.2	0.3	<0.2	<0.2	<0.2	<0.2

All soil concentrations reported in µg/g.

\* Maximum RDL below MOE (2011) SCS

'<' = Parameter below detection limit, as indicated

'NV' = No value

<b>Bold</b>	Concentration exceeds MOE (2011) Table 2 SCS (coarse textured soil)
	Non-detect but detection limit exceeds the MOE (2011) SCS

**Table D.4- SOIL ANALYTICAL RESULTS- Metals & Inorganics**

BRM-00235695-A0, Former Oakville Hospital

Sample ID	MOE (2011) Table 2: Full Depth Background SCS in a Potable Groundwater Condition Residential/Parkland/Institutional Land Use (coarse textured soil)	TP8-SS2	TP10-SS2	TP10-SS5	INC-SS1	INC-SS2	INC-SS3
Lab ID		DJU091	DJU092	DJU093	DJU095	DJU096	DJU097
Sampling Date		3-Nov-16	3-Nov-16	3-Nov-16	4-Nov-16	4-Nov-16	4-Nov-16
Sample Depth (m)		0.8 - 1.5	0.8 - 1.5	3.1 - 3.8	0 - 0.3	0 - 0.3	0 - 0.3
Consultant		exp	exp	exp	exp	exp	exp
Laboratory		Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam
Hot Water Ext. Boron (B)	1.5	0.11	0.14	0.14	0.29	0.24	0.59
Antimony (Sb)	7.5	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Arsenic (As)	18	<1.0	1.6	2.8	2.4	2.4	2.6
Barium (Ba)	390	21	17	65	31	35	28
Beryllium (Be)	4	0.23	<0.20	0.5	0.24	0.25	0.28
Boron (B)	120	<5.0	<5.0	11	<5.0	<5.0	<5.0
Cadmium (Cd)	1.2	<0.10	<0.10	<0.10	0.15	<0.10	0.2
Chromium (Cr)	160	8.5	7.7	18	9.4	11	11
Cobalt (Co)	22	3.2	3.2	10	2.9	4	4.1
Copper (Cu)	140	12	10	22	11	13	18
Lead (Pb)	120	4.8	4.9	8.1	18	10	23
Molybdenum (Mo)	6.9	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Nickel (Ni)	100	6.7	5.9	22	6.1	8.1	9.5
Selenium (Se)	2.4	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Silver (Ag)	20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Sodium (Na)	NV	-	-	-	-	-	-
Thallium (Tl)	1	<0.050	<0.050	0.096	0.063	0.054	0.072
Uranium (U)	23	0.34	0.33	0.71	0.47	0.33	0.4
Vanadium (V)	86	17	16	25	21	18	18
Zinc (Zn)	340	18	17	51	37	31	52
Mercury (Hg)	0.27	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Conductivity (ms/cm)	0.7	-	-	-	-	-	-
Sodium Adsorption Ratio	5	-	-	-	-	-	-
Cyanide, Free	0.051	-	-	-	-	-	-
pH (pH Units)	NV	-	-	-	-	-	-
Chromium VI	8	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

All soil concentrations reported in µg/g.

\* Maximum RDL below MOE (2011) SCS

'<' = Parameter below detection limit, as indicated

'NV' = No value

<b>Bold</b>	Concentration exceeds MOE (2011) Table 2 SCS (coarse textured soil)
	Non-detect but detection limit exceeds the MOE (2011) Table 2 SCS (coarse textured soil)

**Table D.5- SOIL ANALYTICAL RESULTS- PCBs**

BRM-00235695-A0, Former Oakville Hospital

Sample ID	MOE (2011) Table 2: Full Depth Background SCS in a Potable Groundwater Condition Residential/Parkland/Institutional Land Use (fine textured soil)	Reporting Detection Limit (RDL)*	BH16-4 S2	BH16-11 S1B	QA/QC#4 (duplicate of BH16-11 S1B)	BH16-12 S1B
Lab ID			CAT993	CAU001	CAU022	CAU003
Sampling Date			14-Mar-16	15-Mar-16	15-Mar-16	15-Mar-16
Sample Depth (m)			1.2-2.4	0.3-1.5	0.3-1.5	0.7-1.5
Consultant			WSP	WSP	WSP	WSP
Laboratory			Maxxam	Maxxam	Maxxam	Maxxam
PCBs	0.35	0.01	<0.010	<0.010	<0.010	<0.010

All soil concentrations reported in µg/g.

\* Maximum RDL below MOE (2011) SCS

'<' = Parameter below detection limit, as indicated

'NV' = No value

**Bold**

Concentration exceeds MOE (2011) Table 2 SCS (coarse).

Non-detect but detection limit exceeds the MOE (2011) SCS.

**Table D.6 - GROUNDWATER ANALYTICAL RESULTS - Petroleum Hydrocarbons (PHCs)**

BRM-00235695-A0, Former Oakville Hospital

Sample ID	MOE (2011) Table 2: Full Depth Background SCS in a Potable Groundwater Condition All Types of Land Use (coarse textured soil)	Reporting Detection Limit (RDL)*	BH 16-2	BH16-5	QA-QC#2 (Dup of BH16-5)	BH16-5A	MW16-5B	BH 16-9
Lab ID			CBJ330	CEL037	CEL040	COP143	DFW814	CBJ331
Sampling Date			22-Mar-16	13-Apr-16	13-Apr-16	21-Jun-16	13-October-2016	22-Mar-16
Well screen interval (m)			1.2 - 4.3	1.5 - 4.6	1.5 - 4.6	8.5 - 10.1	10.7 - 12.2	2.4 - 5.5
Consultant			WSP	WSP	WSP	WSP	<b>exp</b>	WSP
Laboratory			Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam
Benzene	5	<0.20	-	<0.20	<0.20	-	<0.20	-
Toluene	24	<0.20	-	<0.20	<0.20	-	<0.20	-
Ethylbenzene	2.4	<0.20	-	<0.20	<0.20	-	<0.20	-
m/p xylenes	NV	<0.40	-	<0.40	<0.40	-	<0.40	-
o xylene	NV	<0.20	-	<0.20	<0.20	-	<0.20	-
Total Xylenes	300	<0.40	-	<0.40	<0.40	-	<0.40	-
F1 (C6-C10)	750	<25	<25	<25	<25	<25	<25	<25
F1 (C6-C10) - BTEX	750	<25	<25	<25	<25	<25	<25	<25
F2 (C10-C16)	150	<100	<100	<100		<b>160</b>	<100	<100
F3 (C16-C34)	500	<200	<200	<200		<b>14000</b>	210	<200
F4 (C34-C50)	500	<200	<200	<200		<b>4200</b>	<200	<200
Reached Baseline at C50	NV		Yes	Yes		Yes	YES	Yes

All groundwater concentrations reported in µg/L.

\* Maximum RDL below MOE (2011) SCS

'<' = Parameter below detection limit, as indicated

'NV' = No value

**Bold** Concentration exceeds MOE (2011) Table 2 SCS (coarse).

**Table D.6 - GROUNDWATER ANALYTICAL RESULTS - Petroleum H**  
 BRM-00235695-A0, Former Oakville Hospital

Sample ID	MOE (2011) Table 2: Full Depth Background SCS in a Potable Groundwater Condition All Types of Land Use (coarse textured soil)	BH 16-11	BH 16-14	BH 16-15	BH 16-19	BH16-20	BH16-20	MW16-201
Lab ID		CBJ326	CBJ328	CBJ332	CBJ327	CEL039 / CF1477	CNY605	DED124
Sampling Date		21-Mar-16	21-Mar-16	22-Mar-16	21-Mar-16	13-Apr-16	16-Jun-16	29-Sep-16
Well screen interval (m)		1.8 - 4.9	2.1 - 5.2	2.1 - 5.2	1.8 - 3.4	0.3 - 0.6	0.3 - 0.6	5.2 - 8.2
Consultant		WSP	WSP	WSP	WSP	WSP	WSP	exp
Laboratory		Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam
Benzene	5	-	-	-	-	<0.20	-	0.29
Toluene	24	-	-	-	-	<0.20	-	<0.20
Ethylbenzene	2.4	-	-	-	-	<0.20	-	<0.20
m/p xylenes	NV	-	-	-	-	<0.40	-	<0.40
o xylene	NV	-	-	-	-	<0.20	-	<0.20
Total Xylenes	300	-	-	-	-	<0.40	-	<0.40
F1 (C6-C10)	750	<25	<25	<25	<25	<25	<25	<25
F1 (C6-C10) - BTEX	750	<25	<25	<25	<25	<25	<25	<25
F2 (C10-C16)	150	<100	<100	<100	<100	<100	<100	<100
F3 (C16-C34)	500	<200	<200	<200	<200	<200	<200	240
F4 (C34-C50)	500	<200	<200	<200	<200	<200	<200	<200
Reached Baseline at C50	NV	Yes	Yes	Yes	Yes	Yes	Yes	YES

All groundwater concentrations reported in µg/L.

\* Maximum RDL below MOE (2011) SCS

'<' = Parameter below detection limit, as indicated

'NV'= No value

**Concentration exceeds MOE (2011) Table 2 SCS (c**

**Table D.6 - GROUNDWATER ANALYTICAL RESULTS - Petroleum H**  
 BRM-00235695-A0, Former Oakville Hospital

Sample ID	MOE (2011) Table 2: Full Depth Background SCS in a Potable Groundwater Condition All Types of Land Use (coarse textured soil)	MW16-202	MW16-2022 (Dup of MW16-202)	MW16-203	MW16-203A	MW16-210	MW16-2101	MW16-211
Lab ID		DEB892	DED126	DEB893	DFW811	DFW809	DFW810	DFW808
Sampling Date		29-Sep-16	29-Sep-16	29-Sep-16	12-October-2016	12-October-2016	12-October-2016	12-October-2016
Well screen interval (m)		2.3 - 5.3	2.3 - 5.3	2.4 - 5.5	6.4 - 9.5	6.1 - 9.1	6.1 - 9.1	5.8 - 8.8
Consultant		exp	exp	exp	exp	exp	exp	exp
Laboratory		Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam
Benzene	5	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Toluene	24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Ethylbenzene	2.4	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
m/p xylenes	NV	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
o xylene	NV	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Total Xylenes	300	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
F1 (C6-C10)	750	<25	<25	<25	<25	<25	<25	<25
F1 (C6-C10) - BTEX	750	<25	<25	<25	<25	<25	<25	<25
F2 (C10-C16)	150	<100	<100	<100	<100	<100	<100	<100
F3 (C16-C34)	500	<200	<200	<200	<200	<b>3700</b>	<b>2500</b>	<200
F4 (C34-C50)	500	<200	<200	<200	<200	<b>1100</b>	<b>700</b>	<200
Reached Baseline at C50	NV	YES	YES	YES	YES	YES	YES	YES

All groundwater concentrations reported in µg/L.

\* Maximum RDL below MOE (2011) SCS

'<' = Parameter below detection limit, as indicated

'NV'= No value

**Concentration exceeds MOE (2011) Table 2 SCS (c**

**Table D.6 - GROUNDWATER ANALYTICAL RESULTS - Petroleum H**  
 BRM-00235695-A0, Former Oakville Hospital

Sample ID	MOE (2011) Table 2: Full Depth Background SCS in a Potable Groundwater Condition All Types of Land Use (coarse textured soil)	MW16-213	TRIP BLANK	MW16-214	MW16-215	MW16-215	MW16-255 (Dup of MW16-215)	MW16-255 (Dup of MW16-215)	MW16-216
Lab ID		DFW815	DFW816	DKU559	DKU560	DLA390	DKU561	DLA336	DLA332
Sampling Date		13-October-2016	13-October-2016	10-Nov-16	10-Nov-16	11-Nov-16	10-Nov-16	11-Nov-16	11-Nov-16
Well screen interval (m)		0.9 - 1.8	-	6.1 - 9.1	6.1 - 8.8	6.1 - 8.8	6.1 - 8.8	6.1 - 8.8	6.1 - 9.1
Consultant		exp	exp	exp	exp	exp	exp	exp	exp
Laboratory		Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam
Benzene	5	<0.20	<0.20	<0.20	<0.20	-	<0.20	-	<0.20
Toluene	24	<0.20	<0.20	<0.20	<0.20	-	<0.20	-	<0.20
Ethylbenzene	2.4	<0.20	<0.20	<0.20	<0.20	-	<0.20	-	<0.20
m/p xylenes	NV	<0.40	<0.40	<0.40	<0.40	-	<0.40	-	<0.40
o xylene	NV	<0.20	<0.20	<0.20	<0.20	-	<0.20	-	<0.20
Total Xylenes	300	<0.40	<0.40	<0.40	<0.40	-	<0.40	-	<0.40
F1 (C6-C10)	750	<25	<25	<25	<25	-	<25	-	<25
F1 (C6-C10) - BTEX	750	<25	<25	<25	<25	-	<25	-	<25
F2 (C10-C16)	150	<100	-	<100	-	<100	-	<100	<100
F3 (C16-C34)	500	<200	-	<200	-	<200	-	<200	<200
F4 (C34-C50)	500	<200	-	<200	-	<200	-	<200	<200
Reached Baseline at C50	NV	YES	-	YES	-	YES	-	YES	YES

All groundwater concentrations reported in µg/L.

\* Maximum RDL below MOE (2011) SCS

'<' = Parameter below detection limit, as indicated

'NV' = No value

**Concentration exceeds MOE (2011) Table 2 SCS (c)**

**Table D.6 - GROUNDWATER ANALYTICAL RESULTS - Petroleum H**  
 BRM-00235695-A0, Former Oakville Hospital

Sample ID	MOE (2011) Table 2: Full Depth Background SCS in a Potable Groundwater Condition All Types of Land Use (coarse textured soil)	MW16-256 (Dup of MW16-216)	MW16-217	MW16-219	MW16-220	MW16-221
Lab ID		DLA334	DLA333	DKU562	DLG425	DLG424
Sampling Date		11-Nov-16	11-Nov-16	10-Nov-16	14-Nov-16	14-Nov-16
Well screen interval (m)		6.1 - 9.1	6.1 - 9.1	0.6 - 1.2	0.9 - 3.9	2.1 - 5.2
Consultant		exp Maxxam	exp Maxxam	exp Maxxam	exp Maxxam	exp Maxxam
Laboratory						
Benzene	5	<0.20	<0.20	<0.20	<0.20	-
Toluene	24	<0.20	<0.20	<0.20	<0.20	-
Ethylbenzene	2.4	<0.20	<0.20	<0.20	<0.20	-
m/p xylenes	NV	<0.40	<0.40	<0.40	<0.40	-
o xylene	NV	<0.20	<0.20	<0.20	<0.20	-
Total Xylenes	300	<0.40	<0.40	<0.40	<0.40	-
F1 (C6-C10)	750	<25	<25	<25	<25	<25
F1 (C6-C10) - BTEX	750	<25	<25	<25	<25	<25
F2 (C10-C16)	150	<100	<100	<100	<100	<100
F3 (C16-C34)	500	<200	<200	<200	<200	<200
F4 (C34-C50)	500	<200	<200	<200	<200	<200
Reached Baseline at C50	NV	YES	YES	YES	YES	YES

All groundwater concentrations reported in µg/L.

\* Maximum RDL below MOE (2011) SCS

'<' = Parameter below detection limit, as indicated

'NV' = No value

**Concentration exceeds MOE (2011) Table 2 SCS (c**



**Table D.7 - GROUNDWATER ANALYTICAL RESULTS - Volatile Organic Compounds (VOCs)**

BRM-00235695-A0, Former Oakville Hospital

Sample ID	MOE (2011) Table 2: Full Depth Background SCS in a Potable Groundwater Condition All Types of Land Use (coarse textured soil)	Reporting Detection Limit (RDL)*	BH 16-2	QA/QC (Dup of BH16-2)	BH16-5	BH16-5A	QA/QC 16-2 (Dup of BH16-5A)	BH 16-9	BH 16-11
			CBJ330/CHH326	CBJ333/CHH329	CCV068/CHH331	COP143	COP144	CBJ331/CHH327	CBJ326/CHH323
			22-Mar-16	22-Mar-16	1-Apr-16	21-Jun-16	21-Jun-16	22-Mar-16	21-Mar-16
			1.2 - 4.3	1.5 - 4.6	1.5 - 4.6	9.8 - 11.3	10.7 - 12.2	2.4 - 5.5	1.8 - 4.9
			WSP	WSP	WSP	WSP	WSP	WSP	WSP
Laboratory			Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	
Acetone	2700	1	<10	<10	<10	<10	<10	<10	<10
Benzene	5	0.1	<0.20	<0.20	<0.20	0.42	0.41	<0.20	<0.20
Bromodichloromethane	16	0.1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Bromoform	25	0.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromomethane	0.89	0.2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Carbon Tetrachloride	0.79	0.1	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Chlorobenzene	30	0.1	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Chloroform	2.4	0.1	0.47	0.5	<0.20	<0.20	<0.20	<0.20	<0.20
Dibromochloromethane	25	0.1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,2-Dichlorobenzene	3	0.1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,3-Dichlorobenzene	59	0.1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,4-Dichlorobenzene	1	0.1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dichlorodifluoromethane	590	0.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane	5	0.1	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,2-Dichloroethane	1.6	0.2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1-Dichloroethylene	1.6	0.1	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
cis-1,2-Dichloroethylene	1.6	0.1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
trans-1,2-Dichloroethylene	1.6	0.1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,2-Dichloropropane	5	0.1	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
cis-1,3-Dichloropropene	NV	0.2	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
trans-1,3-Dichloropropene	NV	0.2	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
Ethylbenzene	2.4	0.1	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Ethylene Dibromide (1,2-Dibromoethane)	0.2	0.2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Hexane (n)	51	0.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Methylene chloride (Dichloromethane)	50	0.3	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Methyl ethyl ketone (2-Butanone)	1800	1	<10	<10	<10	<10	<10	<10	<10
Methyl Isobutyl Ketone	640	1	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Methyl t-butyl ether (MTBE)	15	0.2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Styrene	5.4	0.1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1,1,2-Tetrachloroethane	1.1	0.1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1,2,2-Tetrachloroethane	1	0.1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Tetrachloroethylene	1.6	0.1	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Toluene	24	0.2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,1,1-Trichloroethane	200	0.1	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,1,2-Trichloroethane	4.7	0.2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Trichloroethylene	1.6	0.1	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Trichlorofluoromethane	150	0.2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Vinyl Chloride	0.5	0.17	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
m-Xylene + p-Xylene	NV	0.1	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
o-Xylene	NV	0.1	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Xylenes (total)	300	0.1	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,3-Dichloropropene (cis + trans)	0.5	0.3	-	-	-	-	-	-	-

All groundwater concentrations reported in µg/L.

\* Maximum RDL below MOE (2011) SCS

'<' = Parameter below detection limit, as indicated

'NV' = No value

<b>Bold</b>	Concentration exceeds MOE (2011) Table 2 SCS (coarse)
	Non-detect but detection limit exceeds the MOE (2011) SCS.

**Table D.7 - GROUNDWATER ANALYTICAL RESULTS - Volatile Organic**  
 BRM-00235695-A0, Former Oakville Hospital

Sample ID	MOE (2011) Table 2: Full Depth Background SCS in a Potable Groundwater Condition All Types of Land Use (coarse textured soil)	BH 16-14	BH 16-15	BH 16-19	BH16-102	MW16-221
Lab ID		CBJ328/CHH325	CBJ332/CHH328	CBJ327/CHH324	CNV605	DLG424
Sampling Date		21-Mar-16	22-Mar-16	21-Mar-16	16-Jun-16	14-Nov-16
Well screen interval (m)		2.1 - 5.2	2.1 - 5.2	1.8 - 3.4	1.2 - 2.4	2.1 - 5.2
Consultant		WSP	WSP	WSP	WSP	exp
Laboratory	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	
Acetone	2700	<10	<10	15	<10	<10
Benzene	5	<0.20	<0.20	<0.20	<0.20	<0.20
Bromodichloromethane	16	<0.50	<0.50	<0.50	<0.50	<0.50
Bromoform	25	<1.0	<1.0	<1.0	<1.0	<1.0
Bromomethane	0.89	<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	30	<0.20	<0.20	<0.20	<0.20	<0.20
Chloroform	2.4	<0.20	<0.20	0.49	<0.20	<0.20
Dibromochloromethane	25	<0.50	<0.50	<0.50	<0.50	<0.50
1,2-Dichlorobenzene	3	<0.50	<0.50	<0.50	<0.50	<0.50
1,3-Dichlorobenzene	59	<0.50	<0.50	<0.50	<0.50	<0.50
1,4-Dichlorobenzene	1	<0.50	<0.50	<0.50	<0.50	<0.50
Dichlorodifluoromethane	590	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane	5	<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	5	<0.20	<0.20	<0.20	<0.20	<0.20
cis-1,3-Dichloropropene	NV	<0.30	<0.30	<0.30	<0.30	<0.30
trans-1,3-Dichloropropene	NV	<0.40	<0.40	<0.40	<0.40	<0.40
Ethylbenzene	2.4	<0.20	<0.20	<0.20	<0.20	<0.20
Ethylene Dibromide (1,2-Dibromoethane)	0.2	<0.20	<0.20	<0.20	<0.20	<0.20
Hexane (n)	51	<1.0	<1.0	<1.0	<1.0	<1.0
Methylene chloride (Dichloromethane)	50	<2.0	<2.0	<2.0	<2.0	<2.0
Methyl ethyl ketone (2-Butanone)	1800	<10	<10	<10	<10	<10
Methyl Isobutyl Ketone	640	<5.0	<5.0	<5.0	<5.0	<5.0
Methyl t-butyl ether (MTBE)	15	<0.50	<0.50	<0.50	<0.50	<0.50
Styrene	5.4	<0.50	<0.50	<0.50	<0.50	<0.50
1,1,1,2-Tetrachloroethane	1.1	<0.50	<0.50	<0.50	<0.50	<0.50
1,1,2,2-Tetrachloroethane	1	<0.50	<0.50	<0.50	<0.50	<0.50
Tetrachloroethylene	1.6	<0.20	<0.20	<0.20	<0.20	<0.20
Toluene	24	0.34	<0.20	<0.20	<0.20	<0.20
1,1,1-Trichloroethane	200	<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	1.6	<0.20	<0.20	<0.20	<0.20	<0.20
Trichlorofluoromethane	150	<0.50	<0.50	<0.50	<0.50	<0.50
Vinyl Chloride	0.5	<0.20	<0.20	<0.20	<0.20	<0.20
m-Xylene + p-Xylene	NV	0.26	<0.20	<0.20	<0.20	<0.20
o-Xylene	NV	<0.20	<0.20	<0.20	<0.20	<0.20
Xylenes (total)	300	0.26	<0.20	<0.20	<0.20	<0.20
1,3-Dichloropropene (cis + trans)	0.5	-	-	-	-	<0.50

All groundwater concentrations reported in µg/L.

\* Maximum RDL below MOE (2011) SCS

'<' = Parameter below detection limit, as indicated

'NV' = No value

<b>Bold</b>	Concentration exceeds MOE (2011) Table 2 SCS (coars
	Non-detect but detection limit exceeds the MOE (2011) :

**Table D.8- GROUNDWATER ANALYTICAL RESULTS- Metals & Inorganics**

BRM-00235695-A0, Former Oakville Hospital

Sample ID	MOE (2011) Table 2: Full Depth Background SCS in a Potable Groundwater Condition Residential/Parkland/Institutional Land Use (coarse textured soil)	Reporting Detection Limit (RDL)*	BH 16-2	BH16-5	BH16-5	BH16-5	BH16-5A	BH 16-9	BH16-9A	BH16-14	BH16-14
Lab ID			CBJ330	CCV068	CEL037	CLW961	CNY601	CBJ331	CNY602	CEL038	CLW962
Sampling Date			22-Mar-16	1-Apr-16	13-Apr-16	3-Jun-16	15-Jun-2016	22-Mar-16	16-Jun-2016	13-Apr-16	3-Jun-16
Well screen interval (m)										2.1 - 5.2	2.1 - 5.2
Consultant			WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP
Laboratory			Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam
Antimony			6		0.68	<2.5	-	<0.50	0.96	<2.5	-
Arsenic	25		<1.0	<5.0	-	<1.0	1.1	<5.0	-	<5.0	<1.0
Barium	1000		140	640	-	270	37	240	-	320	260
Beryllium	4		<0.50	<2.5	-	<0.50	<0.50	<2.5	-	<2.5	<0.50
Boron (Total)	5000		57	370	-	280	4900	140	-	110	140
Cadmium	2.7		<0.10	<0.50	-	0.23	<0.10	<0.50	-	<0.50	0.24
Chromium VI	25		<0.50	<0.50	<2.5	-	-	<0.50	-	-	-
Chromium (total)	50		<5.0	<25	-	<5.0	<5.0	<25	-	<25	<5.0
Cobalt	3.8	2.5	<0.50	<b>7.7</b>	-	<b>6.2</b>	<0.50	<2.5	-	<b>7.9</b>	<b>7.7</b>
Copper	87		1.1	<5.0	-	2.3	<1.0	7	-	<25	1.5
Lead	10		<0.50	<2.5	-	<0.50	<0.50	<2.5	-	<2.5	<0.50
Molybdenum	70		1.6	7.8	-	3.4	3.6	6.6	-	<2.5	1.3
Nickel	100		<1.0	12	-	9.9	<1.0	<5.0	-	21	15
Selenium	10		<2.0	<10	-	2.2	<2.0	<10	-	<10	<2.0
Silver	1.5		<0.10	<0.50	-	<0.10	<0.10	<0.50	-	<0.50	<0.10
Tellurium (Filtered)	NV	-	-	-	-	-	-	-	-	-	-
Thallium	2		<0.050	0.28	-	0.11	<0.050	<0.25	-	<0.25	0.14
Thorium (Filtered)	NV	-	-	-	-	-	-	-	-	-	-
Uranium	20		1.4	13	-	6.3	0.74	8.7	-	6.9	6.3
Vanadium	6.2		1.1	<2.5	-	1	0.82	<2.5	-	<13	<0.50
Zinc	1100		5.4	45	-	12	<5.0	<25	-	<25	5.5
Mercury	0.29		<0.1	-	<0.1	-	-	<0.1	-	-	-
Sodium	490000	5	130000	<b>860000</b>	-	<b>1400000</b>	260000	<b>2000000</b>	<b>500000</b>	<b>4400000</b>	<b>4300000</b>
Chloride	790000	15	210000	<b>3100000</b>	-	-	210000	<b>3000000</b>	750000	-	-
Nitrate (as NO3-)	NV		-	-	-	-	-	-	-	-	-
Nitrite (as NO2-)	NV		-	-	-	-	-	-	-	-	-
Free cyanide	66		<2	-	<2	-	-	<2	-	-	-

All soil concentrations reported in µg/L.

\* Maximum RDL below MOE (2011) SCS

'<' = Parameter below detection limit, as indicated

'NV'= No value

**Bold** Concentration exceeds MOE (2011) Table 2 SCS (coarse).

**Table D.8- GROUNDWATER ANALYTICAL RESULTS- Metals & Inorga**

BRM-00235695-A0, Former Oakville Hospital

Sample ID	MOE (2011) Table 2: Full Depth Background SCS in a Potable Groundwater Condition Residential/Parkland/Institutional Land Use (coarse textured soil)	MW16-14	MW16-144 (duplicate of MW16-14)	BH16-14A	BH16-14A	MW16-14B	MW16-144B (Dup of MW16-14B)	BH 16-15	BH16-15A	MW16-202
Lab ID		DED123	DED125	CNY603	DCM918	DFW812	DFW813	CBJ332	CNY604	DEM733
Sampling Date		29-Sep-2016	29-Sep-2016	15-Jun-2016	20-Sep-2016	12-Oct-16	12-Oct-16	22-Mar-16	15-Jun-2016	29-Sep-2016
Well screen interval (m)		2.1 - 5.2	2.1 - 5.2	9.1 - 10.7	9.1 - 10.7	13.7 - 15.2	13.7 - 15.2	2.1 - 5.2	10.7 - 12.2	2.3 - 5.3
Consultant		exp	exp	WSP	exp	exp	exp	WSP	WSP	exp
Laboratory		Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam
Antimony	6	-	-	1.9	-	-	-	<0.50	-	-
Arsenic	25	-	-	1.7	-	-	-	<1.0	-	-
Barium	1000	-	-	24	-	-	-	630	-	-
Beryllium	4	-	-	<0.50	-	-	-	<0.50	-	-
Boron (Total)	5000	-	-	3200	-	-	-	130	-	-
Cadmium	2.7	-	-	<0.10	-	-	-	<0.10	-	-
Chromium VI	25	-	-	-	-	-	-	<0.50	-	-
Chromium (total)	50	-	-	<5.0	-	-	-	<5.0	-	-
Cobalt	3.8	<b>5</b>	<b>5.4</b>	<0.50	-	-	-	1.3	-	<0.50
Copper	87	-	-	<1.0	-	-	-	1.7	-	-
Lead	10	-	-	<0.50	-	-	-	<0.50	-	-
Molybdenum	70	-	-	14	-	-	-	3.9	-	-
Nickel	100	-	-	1.2	-	-	-	2.2	-	-
Selenium	10	-	-	<2.0	-	-	-	<2.0	-	-
Silver	1.5	-	-	<0.10	-	-	-	<0.10	-	-
Tellurium (Filtered)	NV	-	-	-	-	-	-	-	-	-
Thallium	2	-	-	<0.050	-	-	-	<0.050	-	-
Thorium (Filtered)	NV	-	-	-	-	-	-	-	-	-
Uranium	20	-	-	1	-	-	-	3.9	-	-
Vanadium	6.2	-	-	<2.5 (1)	-	-	-	<0.50	-	-
Zinc	1100	-	-	<5.0	-	-	-	<5.0	-	-
Mercury	0.29	-	-	-	-	-	-	<0.1	-	-
Sodium	490000	-	-	<b>1100000</b>	<b>990000</b>	<b>2400000</b>	<b>2300000</b>	360000	200000	-
Chloride	790000	-	-	<b>1800000</b>	<b>1500000</b>	<b>4700000</b>	<b>4700000</b>	<b>810000</b>	140000	-
Nitrate (as NO3-)	NV	-	-	-	-	-	-	-	-	-
Nitrite (as NO2-)	NV	-	-	-	-	-	-	-	-	-
Free cyanide	66	-	-	-	-	-	-	<2	-	-

All soil concentrations reported in µg/L.

\* Maximum RDL below MOE (2011) SCS

'<' = Parameter below detection limit, as indicated

'NV'= No value

**Bold** Concentration exceeds MOE (2011) Table 2 SCS (coar

**Table D.8- GROUNDWATER ANALYTICAL RESULTS- Metals & Inorga**  
*BRM-00235695-A0, Former Oakville Hospital*

Sample ID	MOE (2011) Table 2: Full Depth Background SCS in a Potable Groundwater Condition Residential/Parkland/Institutional Land Use (coarse textured soil)	MW16-220	MW16-221
Lab ID		DLG425	DLG424
Sampling Date		14-Nov-16	14-Nov-16
Well screen interval (m)		0.9 - 4.0	2.1 - 5.2
Consultant		exp	exp
Laboratory		Maxxam	Maxxam
Antimony	6	-	1.3
Arsenic	25	-	1.1
Barium	1000	-	160
Beryllium	4	-	<0.50
Boron (Total)	5000	-	300
Cadmium	2.7	-	<0.10
Chromium VI	25	-	-
Chromium (total)	50	-	<5.0
Cobalt	3.8	-	3
Copper	87	-	1
Lead	10	-	<0.50
Molybdenum	70	-	7.9
Nickel	100	-	8.3
Selenium	10	-	<2.0
Silver	1.5	-	<0.10
Tellurium (Filtered)	NV	-	-
Thallium	2	-	0.16
Thorium (Filtered)	NV	-	-
Uranium	20	-	14
Vanadium	6.2	-	<2.5
Zinc	1100	-	9.7
Mercury	0.29	-	-
Sodium	490000	<b>1100000</b>	<b>1000000</b>
Chloride	790000	<b>2200000</b>	-
Nitrate (as NO3-)	NV	-	-
Nitrite (as NO2-)	NV	-	-
Free cyanide	66	-	-

All soil concentrations reported in µg/L.

\* Maximum RDL below MOE (2011) SCS

'<' = Parameter below detection limit, as indicated

'NV' = No value

**Bold** Concentration exceeds MOE (2011) Table 2 SCS (coar

**Table D.9- GROUNDWATER ANALYTICAL RESULTS- PCBs**

BRM-00235695-A0, Former Oakville Hospital

Sample ID	MOE (2011) Table 2: Full Depth Background SCS in a Potable Groundwater Condition Industrial/Commercial/Community Land Use (coarse textured soil)	Reporting Detection Limit (RDL)*	BH 16-11
Lab ID			CBJ326
Sampling Date			21-Mar-16
Well screen interval (m)			1.8 - 4.9
Consultant			WSP
Laboratory			Maxxam
PCBs			3

All soil concentrations reported in µg/g.

\* Maximum RDL below MOE (2011) SCS

'<' = Parameter below detection limit, as indicated

'NV'= No value

**Bold** Concentration exceeds MOE (2011) Table 2 SCS (coarse).

Non-detect but detection limit exceeds the MOE (2011) SCS.

**Table D.10 - GW ANALYTICAL RESULTS- Polycyclic Aromatic Hydrocarbons (PAHs)**

BRM-00235695-A0, Former Oakville Hospital

Sample ID	MOE (2011) Table 2: Full Depth Background SCS in a Potable Groundwater Condition All Types of Land Use (coarse textured soil)	Reporting Detection Limit (RDL)*	BH 16-2	BH16-5	BH 16-9	BH 16-11
Lab ID			CBJ330	CEL037	CBJ331	CBJ326
Sampling Date			22-Mar-16	13-Apr-16	22-Mar-16	21-Mar-16
Well screen interval (m)			1.2 - 4.3	1.5 - 4.6	2.4 - 5.5	1.8 - 4.9
Consultant			WSP	WSP	WSP	WSP
Laboratory			Maxxam	Maxxam	Maxxam	Maxxam
Acenaphthene	4.1	0.050	<0.050	<0.050	<0.050	<0.050
Acenaphthylene	1	0.050	<0.050	<0.050	<0.050	<0.050
Anthracene	2.4	0.050	<0.050	<0.050	<0.050	<0.050
Benzo(a)anthracene	1	0.050	<0.050	<0.050	<0.050	<0.050
Benzo(a)pyrene	0.01	0.010	<0.010	<0.010	<0.010	<0.010
Benzo(b,j)fluoranthene	0.1	0.050	<0.050	<0.050	<0.050	<0.050
Benzo(ghi)perylene	0.2	0.050	<0.050	<0.050	<0.050	<0.050
Benzo(k)fluoranthene	0.1	0.050	<0.050	<0.050	<0.050	<0.050
Chrysene	0.1	0.050	<0.050	<0.050	<0.050	<0.050
Dibenzo(a,h)anthracene	0.2	0.050	<0.050	<0.050	<0.050	<0.050
Fluoranthene	0.41	0.050	<0.050	<0.050	<0.050	<0.050
Fluorene	120	0.050	<0.050	<0.050	<0.050	<0.050
Indeno(1,2,3-cd)pyrene	0.2	0.050	<0.050	<0.050	<0.050	<0.050
1-Methylnaphthalene (SEE FOOTNOTE)	3.2	0.050	<0.050	<0.050	<0.050	<0.050
2-Methylnaphthalene (SEE FOOTNOTE)	3.2	0.050	<0.050	<0.050	<0.050	<0.050
Naphthalene	11	0.050	<0.050	<0.050	<0.050	<0.050
Phenanthrene	1	0.030	<0.030	0.055	0.083	<0.030
Pyrene	4.1	0.050	<0.050	<0.050	<0.050	<0.050
Methylnaphthalene, 2-(1-)	3.2	-	<0.071	<0.071	<0.071	<0.071

All soil concentrations reported in µg/g.

\* Maximum RDL below MOE (2011) SCS

'<' = Parameter below detection limit, as indicated

'NV'= No value

**Concentration exceeds MOE (2011) Table 2 SCS (coarse).**

BH 16-14	BH 16-15	BH16-15	BH16-15	BH16-15A	QA/QC 16-1 (Dup of BH16-15A)	BH 16-19
CBJ329	CBJ332	CLW963	DCM919	CNY604	CNY606	CBJ327
22-Mar-16	22-Mar-16	3-Jun-16	20-Sep-16	16-Jun-16	16-Jun-16	21-Mar-16
2.1 - 5.2	2.1 - 5.2	2.1 - 5.2	2.1 - 5.2	10.7 - 12.2	10.7 - 12.2	1.8 - 3.4
WSP	WSP	WSP	<b>exp</b>	WSP	WSP	WSP
Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam	Maxxam
<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
<0.010	<b>0.015</b>	<b>0.015</b>	<0.010	<0.010	<0.010	<0.010
<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
<0.050	0.079	<0.050	<0.050	<0.050	<0.050	<0.050
<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
<0.050	<0.050	<0.050	<0.050	0.13	0.14	<0.050
<0.050	<0.050	<0.050	<0.050	0.21	0.24	<0.050
<0.050	<0.050	0.069	<0.050	0.15	0.16	<0.050
<0.030	0.14	0.031	<0.030	0.17	0.18	<0.030
<0.050	0.057	<0.050	<0.050	<0.050	<0.050	<0.050
<0.071	<0.071	<0.071	<0.071	0.34	0.38	<0.071



## **Appendix E: Laboratory Certificates of Analysis**

Your P.O. #: BRM-ENV  
 Your Project #: BRM-00235695-A0  
 Site Location: FORMER OAKVILLE HOSPITAL  
 Your C.O.C. #: 581304-01-01

**Attention:Netta Benazon**

exp Services Inc  
 Hamilton Branch  
 80 Bancroft St  
 Hamilton, ON  
 L8E 2W5

**Report Date: 2016/10/13**  
 Report #: R4206019  
 Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B6L7374**  
**Received: 2016/10/07, 14:06**

Sample Matrix: Soil  
 # Samples Received: 4

Analyses	Quantity	Date	Date	Laboratory Method	Reference
		Extracted	Analyzed		
Petroleum Hydro. CCME F1 & BTEX in Soil (1)	4	N/A	2016/10/12	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Soil (2)	4	2016/10/11	2016/10/12	CAM SOP-00316	CCME CWS m
Moisture	4	N/A	2016/10/11	CAM SOP-00445	Carter 2nd ed 51.2 m

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

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

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

**Encryption Key**

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

Sara Singh, B.Sc, Senior Project Manager  
 Email: sarasingh@maxxam.ca  
 Phone# (905)817-5730

=====  
 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.

**RESULTS OF ANALYSES OF SOIL**

Maxxam ID		DFE691	DFE692	DFE692	DFE693	DFE694		
Sampling Date		2016/10/06 17:30	2016/10/06 10:00	2016/10/06 10:00	2016/10/04 12:00	2016/10/04 12:00		
COC Number		581304-01-01	581304-01-01	581304-01-01	581304-01-01	581304-01-01		
	<b>UNITS</b>	<b>BH16-210-S5</b>	<b>BH16-211-S5</b>	<b>BH16-211-S5 Lab-Dup</b>	<b>BH16-5B-S5</b>	<b>BH16-55B-S5</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Inorganics</b>								
Moisture	%	15	18	18	8.5	5.7	1.0	4696199
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate								

**PETROLEUM HYDROCARBONS (CCME)**

Maxxam ID		DFE691	DFE692	DFE693	DFE694		
Sampling Date		2016/10/06 17:30	2016/10/06 10:00	2016/10/04 12:00	2016/10/04 12:00		
COC Number		581304-01-01	581304-01-01	581304-01-01	581304-01-01		
	<b>UNITS</b>	<b>BH16-210-S5</b>	<b>BH16-211-S5</b>	<b>BH16-5B-S5</b>	<b>BH16-55B-S5</b>	<b>RDL</b>	<b>QC Batch</b>
<b>BTEX &amp; F1 Hydrocarbons</b>							
Benzene	ug/g	<0.020	<0.020	<0.020	<0.020	0.020	4696726
Toluene	ug/g	<0.020	<0.020	<0.020	<0.020	0.020	4696726
Ethylbenzene	ug/g	<0.020	<0.020	<0.020	<0.020	0.020	4696726
o-Xylene	ug/g	<0.020	<0.020	<0.020	<0.020	0.020	4696726
p+m-Xylene	ug/g	<0.040	<0.040	<0.040	<0.040	0.040	4696726
Total Xylenes	ug/g	<0.040	<0.040	<0.040	<0.040	0.040	4696726
F1 (C6-C10)	ug/g	<10	<10	<10	<10	10	4696726
F1 (C6-C10) - BTEX	ug/g	<10	<10	<10	<10	10	4696726
<b>F2-F4 Hydrocarbons</b>							
F2 (C10-C16 Hydrocarbons)	ug/g	<10	<10	<10	<10	10	4696118
F3 (C16-C34 Hydrocarbons)	ug/g	<50	<50	<50	<50	50	4696118
F4 (C34-C50 Hydrocarbons)	ug/g	<50	<50	<50	<50	50	4696118
Reached Baseline at C50	ug/g	Yes	Yes	Yes	Yes		4696118
<b>Surrogate Recovery (%)</b>							
1,4-Difluorobenzene	%	99	97	97	98		4696726
4-Bromofluorobenzene	%	100	100	100	99		4696726
D10-Ethylbenzene	%	94	95	96	95		4696726
D4-1,2-Dichloroethane	%	92	91	92	92		4696726
o-Terphenyl	%	98	96	97	102		4696118
RDL = Reportable Detection Limit							
QC Batch = Quality Control Batch							

**TEST SUMMARY**

**Maxxam ID:** DFE691  
**Sample ID:** BH16-210-S5  
**Matrix:** Soil

**Collected:** 2016/10/06  
**Shipped:**  
**Received:** 2016/10/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4696726	N/A	2016/10/12	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4696118	2016/10/11	2016/10/12	Zhiyue (Frank) Zhu
Moisture	BAL	4696199	N/A	2016/10/11	Min Yang

**Maxxam ID:** DFE692  
**Sample ID:** BH16-211-S5  
**Matrix:** Soil

**Collected:** 2016/10/06  
**Shipped:**  
**Received:** 2016/10/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4696726	N/A	2016/10/12	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4696118	2016/10/11	2016/10/12	Zhiyue (Frank) Zhu
Moisture	BAL	4696199	N/A	2016/10/11	Min Yang

**Maxxam ID:** DFE692 Dup  
**Sample ID:** BH16-211-S5  
**Matrix:** Soil

**Collected:** 2016/10/06  
**Shipped:**  
**Received:** 2016/10/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4696199	N/A	2016/10/11	Min Yang

**Maxxam ID:** DFE693  
**Sample ID:** BH16-5B-S5  
**Matrix:** Soil

**Collected:** 2016/10/04  
**Shipped:**  
**Received:** 2016/10/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4696726	N/A	2016/10/12	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4696118	2016/10/11	2016/10/12	Zhiyue (Frank) Zhu
Moisture	BAL	4696199	N/A	2016/10/11	Min Yang

**Maxxam ID:** DFE694  
**Sample ID:** BH16-55B-S5  
**Matrix:** Soil

**Collected:** 2016/10/04  
**Shipped:**  
**Received:** 2016/10/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4696726	N/A	2016/10/12	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4696118	2016/10/11	2016/10/12	Zhiyue (Frank) Zhu
Moisture	BAL	4696199	N/A	2016/10/11	Min Yang

Maxxam Job #: B6L7374  
Report Date: 2016/10/13

exp Services Inc  
Client Project #: BRM-00235695-A0  
Site Location: FORMER OAKVILLE HOSPITAL  
Your P.O. #: BRM-ENV  
Sampler Initials: KM

**GENERAL COMMENTS**

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

Package 1	4.7°C
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**Results relate only to the items tested.**

### QUALITY ASSURANCE REPORT

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4696118	o-Terphenyl	2016/10/12	102	60 - 130	99	60 - 130	102	%		
4696726	1,4-Difluorobenzene	2016/10/12	100	60 - 140	101	60 - 140	100	%		
4696726	4-Bromofluorobenzene	2016/10/12	99	60 - 140	98	60 - 140	99	%		
4696726	D10-Ethylbenzene	2016/10/12	95	60 - 140	88	60 - 140	94	%		
4696726	D4-1,2-Dichloroethane	2016/10/12	94	60 - 140	94	60 - 140	94	%		
4696118	F2 (C10-C16 Hydrocarbons)	2016/10/12	101	50 - 130	97	80 - 120	<10	ug/g	NC	30
4696118	F3 (C16-C34 Hydrocarbons)	2016/10/12	99	50 - 130	96	80 - 120	<50	ug/g	NC	30
4696118	F4 (C34-C50 Hydrocarbons)	2016/10/12	102	50 - 130	98	80 - 120	<50	ug/g	NC	30
4696199	Moisture	2016/10/11							0	20
4696726	Benzene	2016/10/12	93	60 - 140	96	60 - 140	<0.020	ug/g	NC	50
4696726	Ethylbenzene	2016/10/12	102	60 - 140	103	60 - 140	<0.020	ug/g	NC	50
4696726	F1 (C6-C10) - BTEX	2016/10/12					<10	ug/g	NC	30
4696726	F1 (C6-C10)	2016/10/12	90	60 - 140	93	80 - 120	<10	ug/g	NC	30
4696726	o-Xylene	2016/10/12	104	60 - 140	106	60 - 140	<0.020	ug/g	NC	50
4696726	p+m-Xylene	2016/10/12	93	60 - 140	96	60 - 140	<0.040	ug/g	NC	50
4696726	Toluene	2016/10/12	94	60 - 140	96	60 - 140	<0.020	ug/g	NC	50
4696726	Total Xylenes	2016/10/12					<0.040	ug/g	NC	50

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 (one or both samples < 5x RDL).

### 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.



Your P.O. #: ENV-BRM  
 Your Project #: BRM-00235695-A0  
 Site Location: Former Oakville Hospital  
 Your C.O.C. #: 581191-01-01

**Attention:Katie Mclsaac**

exp Services Inc  
 Hamilton Branch  
 80 Bancroft St  
 Hamilton, ON  
 L8E 2W5

**Report Date: 2016/10/19**  
 Report #: R4215875  
 Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B6M0896**  
**Received: 2016/10/13, 15:06**

Sample Matrix: Soil  
 # Samples Received: 2

Analyses	Quantity	Date		Laboratory Method	Reference
		Extracted	Analyzed		
Petroleum Hydro. CCME F1 & BTEX in Soil (1)	2	N/A	2016/10/17	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Soil (2)	2	2016/10/15	2016/10/17	CAM SOP-00316	CCME CWS m
Moisture	2	N/A	2016/10/14	CAM SOP-00445	Carter 2nd ed 51.2 m

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

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

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

**Encryption Key**

Please direct all questions regarding this Certificate of Analysis to your Project Manager.  
 Sara Singh, B.Sc, Senior Project Manager  
 Email: sarasingh@maxxam.ca  
 Phone# (905)817-5730

=====  
 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 #: B6M0896  
Report Date: 2016/10/19

exp Services Inc  
Client Project #: BRM-00235695-A0  
Site Location: Former Oakville Hospital  
Your P.O. #: ENV-BRM  
Sampler Initials: KM

**RESULTS OF ANALYSES OF SOIL**

Maxxam ID		DFW775	DFW776		
Sampling Date		2016/10/11 13:00	2016/10/11 11:00		
COC Number		581191-01-01	581191-01-01		
	<b>UNITS</b>	<b>BH16-212-S3</b>	<b>BH16-213-S3</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Inorganics</b>					
Moisture	%	11	18	1.0	4702069
RDL = Reportable Detection Limit					
QC Batch = Quality Control Batch					

**PETROLEUM HYDROCARBONS (CCME)**

Maxxam ID		DFW775	DFW776		
Sampling Date		2016/10/11 13:00	2016/10/11 11:00		
COC Number		581191-01-01	581191-01-01		
	<b>UNITS</b>	<b>BH16-212-S3</b>	<b>BH16-213-S3</b>	<b>RDL</b>	<b>QC Batch</b>
<b>BTEX &amp; F1 Hydrocarbons</b>					
Benzene	ug/g	<0.020	<0.020	0.020	4703985
Toluene	ug/g	<0.020	<0.020	0.020	4703985
Ethylbenzene	ug/g	<0.020	<0.020	0.020	4703985
o-Xylene	ug/g	<0.020	<0.020	0.020	4703985
p+m-Xylene	ug/g	<0.040	<0.040	0.040	4703985
Total Xylenes	ug/g	<0.040	<0.040	0.040	4703985
F1 (C6-C10)	ug/g	<10	<10	10	4703985
F1 (C6-C10) - BTEX	ug/g	<10	<10	10	4703985
<b>F2-F4 Hydrocarbons</b>					
F2 (C10-C16 Hydrocarbons)	ug/g	17	13	10	4703051
F3 (C16-C34 Hydrocarbons)	ug/g	<50	81	50	4703051
F4 (C34-C50 Hydrocarbons)	ug/g	<50	<50	50	4703051
Reached Baseline at C50	ug/g	Yes	Yes		4703051
<b>Surrogate Recovery (%)</b>					
1,4-Difluorobenzene	%	100	99		4703985
4-Bromofluorobenzene	%	102	100		4703985
D10-Ethylbenzene	%	105	97		4703985
D4-1,2-Dichloroethane	%	98	99		4703985
o-Terphenyl	%	95	95		4703051
RDL = Reportable Detection Limit					
QC Batch = Quality Control Batch					

Maxxam Job #: B6M0896  
Report Date: 2016/10/19

exp Services Inc  
Client Project #: BRM-00235695-A0  
Site Location: Former Oakville Hospital  
Your P.O. #: ENV-BRM  
Sampler Initials: KM

### TEST SUMMARY

**Maxxam ID:** DFW775  
**Sample ID:** BH16-212-S3  
**Matrix:** Soil

**Collected:** 2016/10/11  
**Shipped:**  
**Received:** 2016/10/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4703985	N/A	2016/10/17	Abdi Mohamud
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4703051	2016/10/15	2016/10/17	Dorina Popa
Moisture	BAL	4702069	N/A	2016/10/14	Prgya Panchal

**Maxxam ID:** DFW776  
**Sample ID:** BH16-213-S3  
**Matrix:** Soil

**Collected:** 2016/10/11  
**Shipped:**  
**Received:** 2016/10/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4703985	N/A	2016/10/17	Abdi Mohamud
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4703051	2016/10/15	2016/10/17	Dorina Popa
Moisture	BAL	4702069	N/A	2016/10/14	Prgya Panchal

**GENERAL COMMENTS**

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

Package 1	5.3°C
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**Results relate only to the items tested.**

### QUALITY ASSURANCE REPORT

exp Services Inc  
Client Project #: BRM-00235695-A0  
Site Location: Former Oakville Hospital  
Your P.O. #: ENV-BRM  
Sampler Initials: KM

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4703051	o-Terphenyl	2016/10/17	88	60 - 130	90	60 - 130	93	%		
4703985	1,4-Difluorobenzene	2016/10/17	98	60 - 140	100	60 - 140	101	%		
4703985	4-Bromofluorobenzene	2016/10/17	103	60 - 140	101	60 - 140	101	%		
4703985	D10-Ethylbenzene	2016/10/17	154 (1)	60 - 140	99	60 - 140	108	%		
4703985	D4-1,2-Dichloroethane	2016/10/17	97	60 - 140	99	60 - 140	98	%		
4702069	Moisture	2016/10/14							2.4	20
4703051	F2 (C10-C16 Hydrocarbons)	2016/10/17	NC	50 - 130	85	80 - 120	<10	ug/g	0.080	30
4703051	F3 (C16-C34 Hydrocarbons)	2016/10/17	107	50 - 130	84	80 - 120	<50	ug/g	1.0	30
4703051	F4 (C34-C50 Hydrocarbons)	2016/10/17	83	50 - 130	86	80 - 120	<50	ug/g	NC	30
4703985	Benzene	2016/10/17	73	60 - 140	97	60 - 140	<0.020	ug/g	NC	50
4703985	Ethylbenzene	2016/10/17	99	60 - 140	111	60 - 140	<0.020	ug/g	3.0	50
4703985	F1 (C6-C10) - BTEX	2016/10/17					<10	ug/g	0.59	30
4703985	F1 (C6-C10)	2016/10/17	NC	60 - 140	106	80 - 120	<10	ug/g	0.63	30
4703985	o-Xylene	2016/10/17	NC	60 - 140	114	60 - 140	<0.020	ug/g	3.0	50
4703985	p+m-Xylene	2016/10/17	NC	60 - 140	103	60 - 140	<0.040	ug/g	1.6	50
4703985	Toluene	2016/10/17	61	60 - 140	98	60 - 140	<0.020	ug/g	NC	50
4703985	Total Xylenes	2016/10/17					<0.040	ug/g	1.6	50

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 spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of 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 (one or both samples < 5x RDL).

(1) The extraction surrogate recovery was above the control limit due to high level of native hydrocarbon present in sample.

### VALIDATION SIGNATURE PAGE

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

\_\_\_\_\_  
Ewa Pranjić, M.Sc., C.Chem, Scientific Specialist

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Your P.O. #: BRM-ENV  
 Your Project #: BRM-00235695-A0  
 Site Location: FORMER OAKVILLE HOSPITAL  
 Your C.O.C. #: 581304-03-01

**Attention:Stephanie Hsia**

exp Services Inc  
 Hamilton Branch  
 80 Bancroft St  
 Hamilton, ON  
 L8E 2W5

**Report Date: 2016/11/07**  
 Report #: R4238792  
 Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B6O0097**  
**Received: 2016/11/04, 15:44**

Sample Matrix: Soil  
 # Samples Received: 17

Analyses	Quantity	Date		Laboratory Method	Reference
		Extracted	Analyzed		
Methylnaphthalene Sum	16	N/A	2016/11/07	CAM SOP-00301	EPA 8270D m
Hot Water Extractable Boron	16	2016/11/07	2016/11/07	CAM SOP-00408	R153 Ana. Prot. 2011
Hexavalent Chromium in Soil by IC (1)	16	2016/11/05	2016/11/07	CAM SOP-00436	EPA 3060/7199 m
Petroleum Hydro. CCME F1 & BTEX in Soil (2)	1	N/A	2016/11/05	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Soil (3)	1	2016/11/04	2016/11/05	CAM SOP-00316	CCME CWS m
Strong Acid Leachable Metals by ICPMS	16	2016/11/07	2016/11/07	CAM SOP-00447	EPA 6020B m
Moisture	17	N/A	2016/11/04	CAM SOP-00445	Carter 2nd ed 51.2 m
PAH Compounds in Soil by GC/MS (SIM)	1	2016/11/04	2016/11/04	CAM SOP-00318	EPA 8270D m
PAH Compounds in Soil by GC/MS (SIM)	15	2016/11/04	2016/11/05	CAM SOP-00318	EPA 8270D m

**Remarks:**

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

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

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

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

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

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

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



Your P.O. #: BRM-ENV  
Your Project #: BRM-00235695-A0  
Site Location: FORMER OAKVILLE HOSPITAL  
Your C.O.C. #: 581304-03-01

**Attention:Stephanie Hsia**

exp Services Inc  
Hamilton Branch  
80 Bancroft St  
Hamilton, ON  
L8E 2W5

**Report Date: 2016/11/07**  
Report #: R4238792  
Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B6O0097**

**Received: 2016/11/04, 15:44**

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

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Sara Singh, B.Sc, Senior Project Manager  
Email: sarasingh@maxxam.ca  
Phone# (905)817-5730

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**RESULTS OF ANALYSES OF SOIL**

Maxxam ID		DJU082	DJU083	DJU084	DJU085	DJU086	DJU087		
Sampling Date		2016/11/03 11:00	2016/11/03 11:00	2016/11/03 16:10	2016/11/03 16:10	2016/11/03 16:35	2016/11/03 12:20		
COC Number		581304-03-01	581304-03-01	581304-03-01	581304-03-01	581304-03-01	581304-03-01		
	<b>UNITS</b>	<b>TP5-SS1</b>	<b>TP55-SS11</b>	<b>TP4-SS2</b>	<b>TP44-SS22</b>	<b>TP4-SS6</b>	<b>TP6-SS6</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Inorganics</b>									
Moisture	%	10	11	7.2	5.9	9.7	8.9	1.0	4735015
RDL = Reportable Detection Limit QC Batch = Quality Control Batch									

Maxxam ID		DJU088	DJU089	DJU089	DJU090	DJU091	DJU092		
Sampling Date		2016/11/03 12:00	2016/11/03 14:40	2016/11/03 14:40	2016/11/03 14:10	2016/11/03 09:10	2016/11/03 10:00		
COC Number		581304-03-01	581304-03-01	581304-03-01	581304-03-01	581304-03-01	581304-03-01		
	<b>UNITS</b>	<b>TP6-SS2</b>	<b>TP7-SS5</b>	<b>TP7-SS5 Lab-Dup</b>	<b>TP7-SS2</b>	<b>TP8-SS2</b>	<b>TP10-SS2</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Inorganics</b>									
Moisture	%	7.9	19	19	10	11	8.7	1.0	4735015
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate									

Maxxam ID		DJU093	DJU094	DJU095	DJU096	DJU097	DJU098		
Sampling Date		2016/11/03 10:20	2016/11/03 13:30	2016/11/04 14:00	2016/11/04 14:15	2016/11/04 14:30	2016/11/04 12:30		
COC Number		581304-03-01	581304-03-01	581304-03-01	581304-03-01	581304-03-01	581304-03-01		
	<b>UNITS</b>	<b>TP10-SS5</b>	<b>TP9-SS1</b>	<b>INC-SS1</b>	<b>INC-SS2</b>	<b>INC-SS3</b>	<b>TP2-SS1</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Inorganics</b>									
Moisture	%	13	4.2	11	11	9.7	7.2	1.0	4735015
RDL = Reportable Detection Limit QC Batch = Quality Control Batch									

**ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)**

Maxxam ID		DJU082	DJU083		DJU084		DJU085		
Sampling Date		2016/11/03 11:00	2016/11/03 11:00		2016/11/03 16:10		2016/11/03 16:10		
COC Number		581304-03-01	581304-03-01		581304-03-01		581304-03-01		
	<b>UNITS</b>	<b>TP5-SS1</b>	<b>TP55-SS11</b>	<b>QC Batch</b>	<b>TP4-SS2</b>	<b>QC Batch</b>	<b>TP44-SS22</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Inorganics</b>									
Chromium (VI)	ug/g	0.2	0.3	4735461	<0.2	4735461	<0.2	0.2	4735461
<b>Metals</b>									
Hot Water Ext. Boron (B)	ug/g	0.086	0.12	4736454	<0.050	4736274	<0.050	0.050	4736274
Acid Extractable Antimony (Sb)	ug/g	<0.20	<0.20	4736271	<0.20	4736271	<0.20	0.20	4736419
Acid Extractable Arsenic (As)	ug/g	1.5	1.7	4736271	1.2	4736271	1.1	1.0	4736419
Acid Extractable Barium (Ba)	ug/g	14	12	4736271	7.2	4736271	5.5	0.50	4736419
Acid Extractable Beryllium (Be)	ug/g	<0.20	0.24	4736271	<0.20	4736271	<0.20	0.20	4736419
Acid Extractable Boron (B)	ug/g	<5.0	<5.0	4736271	<5.0	4736271	<5.0	5.0	4736419
Acid Extractable Cadmium (Cd)	ug/g	<0.10	<0.10	4736271	<0.10	4736271	<0.10	0.10	4736419
Acid Extractable Chromium (Cr)	ug/g	6.6	9.3	4736271	7.5	4736271	5.6	1.0	4736419
Acid Extractable Cobalt (Co)	ug/g	2.3	2.4	4736271	2.2	4736271	2.0	0.10	4736419
Acid Extractable Copper (Cu)	ug/g	8.7	7.9	4736271	7.8	4736271	6.9	0.50	4736419
Acid Extractable Lead (Pb)	ug/g	3.5	4.0	4736271	2.9	4736271	2.6	1.0	4736419
Acid Extractable Molybdenum (Mo)	ug/g	<0.50	<0.50	4736271	<0.50	4736271	<0.50	0.50	4736419
Acid Extractable Nickel (Ni)	ug/g	4.7	4.9	4736271	3.9	4736271	3.3	0.50	4736419
Acid Extractable Selenium (Se)	ug/g	<0.50	<0.50	4736271	<0.50	4736271	<0.50	0.50	4736419
Acid Extractable Silver (Ag)	ug/g	<0.20	<0.20	4736271	<0.20	4736271	<0.20	0.20	4736419
Acid Extractable Thallium (Tl)	ug/g	<0.050	<0.050	4736271	<0.050	4736271	<0.050	0.050	4736419
Acid Extractable Uranium (U)	ug/g	0.29	0.29	4736271	0.36	4736271	0.32	0.050	4736419
Acid Extractable Vanadium (V)	ug/g	15	19	4736271	21	4736271	17	5.0	4736419
Acid Extractable Zinc (Zn)	ug/g	13	12	4736271	11	4736271	9.8	5.0	4736419
Acid Extractable Mercury (Hg)	ug/g	<0.050	<0.050	4736271	<0.050	4736271	<0.050	0.050	4736419

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

**ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)**

Maxxam ID		DJU085		DJU086		DJU087	DJU088		
Sampling Date		2016/11/03 16:10		2016/11/03 16:35		2016/11/03 12:20	2016/11/03 12:00		
COC Number		581304-03-01		581304-03-01		581304-03-01	581304-03-01		
	<b>UNITS</b>	<b>TP44-SS22 Lab-Dup</b>	<b>QC Batch</b>	<b>TP4-SS6</b>	<b>QC Batch</b>	<b>TP6-SS6</b>	<b>TP6-SS2</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Inorganics</b>									
Chromium (VI)	ug/g		4735461	<0.2	4735461	<0.2	<0.2	0.2	4735461
<b>Metals</b>									
Hot Water Ext. Boron (B)	ug/g		4736274	0.19	4736454	0.099	<0.050	0.050	4736274
Acid Extractable Antimony (Sb)	ug/g	<0.20	4736419	<0.20	4736271	<0.20	<0.20	0.20	4736271
Acid Extractable Arsenic (As)	ug/g	1.1	4736419	4.5	4736271	2.3	2.0	1.0	4736271
Acid Extractable Barium (Ba)	ug/g	5.9	4736419	39	4736271	43	9.6	0.50	4736271
Acid Extractable Beryllium (Be)	ug/g	<0.20	4736419	0.69	4736271	0.39	<0.20	0.20	4736271
Acid Extractable Boron (B)	ug/g	<5.0	4736419	11	4736271	7.8	<5.0	5.0	4736271
Acid Extractable Cadmium (Cd)	ug/g	<0.10	4736419	<0.10	4736271	0.11	<0.10	0.10	4736271
Acid Extractable Chromium (Cr)	ug/g	6.6	4736419	20	4736271	14	4.7	1.0	4736271
Acid Extractable Cobalt (Co)	ug/g	2.0	4736419	12	4736271	7.0	2.6	0.10	4736271
Acid Extractable Copper (Cu)	ug/g	6.9	4736419	28	4736271	22	7.5	0.50	4736271
Acid Extractable Lead (Pb)	ug/g	2.8	4736419	9.2	4736271	7.6	2.7	1.0	4736271
Acid Extractable Molybdenum (Mo)	ug/g	<0.50	4736419	<0.50	4736271	<0.50	<0.50	0.50	4736271
Acid Extractable Nickel (Ni)	ug/g	3.8	4736419	27	4736271	15	4.4	0.50	4736271
Acid Extractable Selenium (Se)	ug/g	<0.50	4736419	<0.50	4736271	<0.50	<0.50	0.50	4736271
Acid Extractable Silver (Ag)	ug/g	<0.20	4736419	<0.20	4736271	<0.20	<0.20	0.20	4736271
Acid Extractable Thallium (Tl)	ug/g	<0.050	4736419	0.12	4736271	0.081	<0.050	0.050	4736271
Acid Extractable Uranium (U)	ug/g	0.32	4736419	0.57	4736271	0.57	0.22	0.050	4736271
Acid Extractable Vanadium (V)	ug/g	19	4736419	27	4736271	21	9.7	5.0	4736271
Acid Extractable Zinc (Zn)	ug/g	9.8	4736419	64	4736271	45	10	5.0	4736271
Acid Extractable Mercury (Hg)	ug/g	<0.050	4736419	<0.050	4736271	<0.050	<0.050	0.050	4736271

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

**ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)**

Maxxam ID		DJU088	DJU089		DJU090	DJU091	DJU091		
Sampling Date		2016/11/03 12:00	2016/11/03 14:40		2016/11/03 14:10	2016/11/03 09:10	2016/11/03 09:10		
COC Number		581304-03-01	581304-03-01		581304-03-01	581304-03-01	581304-03-01		
	<b>UNITS</b>	<b>TP6-SS2 Lab-Dup</b>	<b>TP7-SS5</b>	<b>QC Batch</b>	<b>TP7-SS2</b>	<b>TP8-SS2</b>	<b>TP8-SS2 Lab-Dup</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Inorganics</b>									
Chromium (VI)	ug/g		<0.2	4735461	<0.2	<0.2		0.2	4735461
<b>Metals</b>									
Hot Water Ext. Boron (B)	ug/g	<0.050	0.059	4736274	0.17	0.11		0.050	4736454
Acid Extractable Antimony (Sb)	ug/g		<0.20	4736271	<0.20	<0.20	<0.20	0.20	4736271
Acid Extractable Arsenic (As)	ug/g		<1.0	4736271	2.1	<1.0	<1.0	1.0	4736271
Acid Extractable Barium (Ba)	ug/g		7.9	4736271	14	21	20	0.50	4736271
Acid Extractable Beryllium (Be)	ug/g		<0.20	4736271	0.33	0.23	0.23	0.20	4736271
Acid Extractable Boron (B)	ug/g		<5.0	4736271	<5.0	<5.0	<5.0	5.0	4736271
Acid Extractable Cadmium (Cd)	ug/g		<0.10	4736271	0.12	<0.10	<0.10	0.10	4736271
Acid Extractable Chromium (Cr)	ug/g		4.9	4736271	8.2	8.5	8.9	1.0	4736271
Acid Extractable Cobalt (Co)	ug/g		2.0	4736271	3.3	3.2	3.2	0.10	4736271
Acid Extractable Copper (Cu)	ug/g		10	4736271	15	12	12	0.50	4736271
Acid Extractable Lead (Pb)	ug/g		2.9	4736271	9.0	4.8	4.9	1.0	4736271
Acid Extractable Molybdenum (Mo)	ug/g		<0.50	4736271	<0.50	<0.50	<0.50	0.50	4736271
Acid Extractable Nickel (Ni)	ug/g		4.4	4736271	6.9	6.7	6.0	0.50	4736271
Acid Extractable Selenium (Se)	ug/g		<0.50	4736271	<0.50	<0.50	<0.50	0.50	4736271
Acid Extractable Silver (Ag)	ug/g		<0.20	4736271	<0.20	<0.20	<0.20	0.20	4736271
Acid Extractable Thallium (Tl)	ug/g		<0.050	4736271	0.068	<0.050	<0.050	0.050	4736271
Acid Extractable Uranium (U)	ug/g		0.26	4736271	0.36	0.34	0.40	0.050	4736271
Acid Extractable Vanadium (V)	ug/g		11	4736271	17	17	18	5.0	4736271
Acid Extractable Zinc (Zn)	ug/g		12	4736271	38	18	18	5.0	4736271
Acid Extractable Mercury (Hg)	ug/g		<0.050	4736271	<0.050	<0.050	<0.050	0.050	4736271

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

**ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)**

Maxxam ID		DJU092		DJU093	DJU095	DJU096		
Sampling Date		2016/11/03 10:00		2016/11/03 10:20	2016/11/04 14:00	2016/11/04 14:15		
COC Number		581304-03-01		581304-03-01	581304-03-01	581304-03-01		
	<b>UNITS</b>	<b>TP10-SS2</b>	<b>QC Batch</b>	<b>TP10-SS5</b>	<b>INC-SS1</b>	<b>INC-SS2</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Inorganics</b>								
Chromium (VI)	ug/g	<0.2	4735461	<0.2	<0.2	<0.2	0.2	4735461
<b>Metals</b>								
Hot Water Ext. Boron (B)	ug/g	0.14	4736454	0.14	0.29	0.24	0.050	4736274
Acid Extractable Antimony (Sb)	ug/g	<0.20	4736271	<0.20	<0.20	<0.20	0.20	4736271
Acid Extractable Arsenic (As)	ug/g	1.6	4736271	2.8	2.4	2.4	1.0	4736271
Acid Extractable Barium (Ba)	ug/g	17	4736271	65	31	35	0.50	4736271
Acid Extractable Beryllium (Be)	ug/g	<0.20	4736271	0.50	0.24	0.25	0.20	4736271
Acid Extractable Boron (B)	ug/g	<5.0	4736271	11	<5.0	<5.0	5.0	4736271
Acid Extractable Cadmium (Cd)	ug/g	<0.10	4736271	<0.10	0.15	<0.10	0.10	4736271
Acid Extractable Chromium (Cr)	ug/g	7.7	4736271	18	9.4	11	1.0	4736271
Acid Extractable Cobalt (Co)	ug/g	3.2	4736271	10	2.9	4.0	0.10	4736271
Acid Extractable Copper (Cu)	ug/g	10	4736271	22	11	13	0.50	4736271
Acid Extractable Lead (Pb)	ug/g	4.9	4736271	8.1	18	10	1.0	4736271
Acid Extractable Molybdenum (Mo)	ug/g	<0.50	4736271	<0.50	<0.50	<0.50	0.50	4736271
Acid Extractable Nickel (Ni)	ug/g	5.9	4736271	22	6.1	8.1	0.50	4736271
Acid Extractable Selenium (Se)	ug/g	<0.50	4736271	<0.50	<0.50	<0.50	0.50	4736271
Acid Extractable Silver (Ag)	ug/g	<0.20	4736271	<0.20	<0.20	<0.20	0.20	4736271
Acid Extractable Thallium (Tl)	ug/g	<0.050	4736271	0.096	0.063	0.054	0.050	4736271
Acid Extractable Uranium (U)	ug/g	0.33	4736271	0.71	0.47	0.33	0.050	4736271
Acid Extractable Vanadium (V)	ug/g	16	4736271	25	21	18	5.0	4736271
Acid Extractable Zinc (Zn)	ug/g	17	4736271	51	37	31	5.0	4736271
Acid Extractable Mercury (Hg)	ug/g	<0.050	4736271	<0.050	<0.050	<0.050	0.050	4736271

RDL = Reportable Detection Limit  
QC Batch = Quality Control Batch

**ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)**

Maxxam ID		DJU097		DJU098	DJU098		
Sampling Date		2016/11/04 14:30		2016/11/04 12:30	2016/11/04 12:30		
COC Number		581304-03-01		581304-03-01	581304-03-01		
	UNITS	INC-SS3	QC Batch	TP2-SS1	TP2-SS1 Lab-Dup	RDL	QC Batch
<b>Inorganics</b>							
Chromium (VI)	ug/g	<0.2	4735461	<0.2	<0.2	0.2	4735461
<b>Metals</b>							
Hot Water Ext. Boron (B)	ug/g	0.59	4736457	0.11		0.050	4736274
Acid Extractable Antimony (Sb)	ug/g	<0.20	4736419	<0.20		0.20	4736271
Acid Extractable Arsenic (As)	ug/g	2.6	4736419	1.7		1.0	4736271
Acid Extractable Barium (Ba)	ug/g	28	4736419	11		0.50	4736271
Acid Extractable Beryllium (Be)	ug/g	0.28	4736419	<0.20		0.20	4736271
Acid Extractable Boron (B)	ug/g	<5.0	4736419	<5.0		5.0	4736271
Acid Extractable Cadmium (Cd)	ug/g	0.20	4736419	<0.10		0.10	4736271
Acid Extractable Chromium (Cr)	ug/g	11	4736419	7.1		1.0	4736271
Acid Extractable Cobalt (Co)	ug/g	4.1	4736419	2.5		0.10	4736271
Acid Extractable Copper (Cu)	ug/g	18	4736419	8.8		0.50	4736271
Acid Extractable Lead (Pb)	ug/g	23	4736419	4.2		1.0	4736271
Acid Extractable Molybdenum (Mo)	ug/g	<0.50	4736419	<0.50		0.50	4736271
Acid Extractable Nickel (Ni)	ug/g	9.5	4736419	4.9		0.50	4736271
Acid Extractable Selenium (Se)	ug/g	<0.50	4736419	<0.50		0.50	4736271
Acid Extractable Silver (Ag)	ug/g	<0.20	4736419	<0.20		0.20	4736271
Acid Extractable Thallium (Tl)	ug/g	0.072	4736419	<0.050		0.050	4736271
Acid Extractable Uranium (U)	ug/g	0.40	4736419	0.32		0.050	4736271
Acid Extractable Vanadium (V)	ug/g	18	4736419	18		5.0	4736271
Acid Extractable Zinc (Zn)	ug/g	52	4736419	14		5.0	4736271
Acid Extractable Mercury (Hg)	ug/g	<0.050	4736419	<0.050		0.050	4736271
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate							

**SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)**

Maxxam ID		DJU082	DJU083	DJU084	DJU085	DJU086	DJU087		
Sampling Date		2016/11/03 11:00	2016/11/03 11:00	2016/11/03 16:10	2016/11/03 16:10	2016/11/03 16:35	2016/11/03 12:20		
COC Number		581304-03-01	581304-03-01	581304-03-01	581304-03-01	581304-03-01	581304-03-01		
	<b>UNITS</b>	<b>TP5-SS1</b>	<b>TP55-SS11</b>	<b>TP4-SS2</b>	<b>TP44-SS22</b>	<b>TP4-SS6</b>	<b>TP6-SS6</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Calculated Parameters</b>									
Methylnaphthalene, 2-(1-)	ug/g	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	0.0071	4733490
<b>Polyaromatic Hydrocarbons</b>									
Acenaphthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4735086
Acenaphthylene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4735086
Anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	0.0085	<0.0050	0.0050	4735086
Benzo(a)anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4735086
Benzo(a)pyrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4735086
Benzo(b,j)fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4735086
Benzo(g,h,i)perylene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4735086
Benzo(k)fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4735086
Chrysene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4735086
Dibenz(a,h)anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4735086
Fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4735086
Fluorene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4735086
Indeno(1,2,3-cd)pyrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4735086
1-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4735086
2-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4735086
Naphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4735086
Phenanthrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	0.020	<0.0050	0.0050	4735086
Pyrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4735086
<b>Surrogate Recovery (%)</b>									
D10-Anthracene	%	106	103	103	101	100	94		4735086
D14-Terphenyl (FS)	%	107	103	100	96	104	100		4735086
D8-Acenaphthylene	%	97	90	90	88	92	90		4735086
RDL = Reportable Detection Limit									
QC Batch = Quality Control Batch									



**SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)**

Maxxam ID		DJU088	DJU089	DJU090	DJU091		DJU092		
Sampling Date		2016/11/03 12:00	2016/11/03 14:40	2016/11/03 14:10	2016/11/03 09:10		2016/11/03 10:00		
COC Number		581304-03-01	581304-03-01	581304-03-01	581304-03-01		581304-03-01		
	<b>UNITS</b>	<b>TP6-SS2</b>	<b>TP7-SS5</b>	<b>TP7-SS2</b>	<b>TP8-SS2</b>	<b>QC Batch</b>	<b>TP10-SS2</b>	<b>RDL</b>	<b>QC Batch</b>

**Calculated Parameters**

Methylnaphthalene, 2-(1-)	ug/g	<0.0071	<0.0071	<0.0071	<0.0071	4733490	<0.0071	0.0071	4734696
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**Polyaromatic Hydrocarbons**

Acenaphthene	ug/g	<0.0050	<0.0050	0.0060	<0.0050	4735086	<0.0050	0.0050	4735086
Acenaphthylene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	4735086	<0.0050	0.0050	4735086
Anthracene	ug/g	<0.0050	<0.0050	0.015	<0.0050	4735086	<0.0050	0.0050	4735086
Benzo(a)anthracene	ug/g	<0.0050	<0.0050	0.063	<0.0050	4735086	0.0078	0.0050	4735086
Benzo(a)pyrene	ug/g	<0.0050	<0.0050	0.062	<0.0050	4735086	0.0069	0.0050	4735086
Benzo(b,j)fluoranthene	ug/g	<0.0050	<0.0050	0.092	<0.0050	4735086	0.011	0.0050	4735086
Benzo(g,h,i)perylene	ug/g	<0.0050	<0.0050	0.038	<0.0050	4735086	<0.0050	0.0050	4735086
Benzo(k)fluoranthene	ug/g	<0.0050	<0.0050	0.028	<0.0050	4735086	<0.0050	0.0050	4735086
Chrysene	ug/g	<0.0050	<0.0050	0.056	<0.0050	4735086	0.0070	0.0050	4735086
Dibenz(a,h)anthracene	ug/g	<0.0050	<0.0050	0.0088	<0.0050	4735086	<0.0050	0.0050	4735086
Fluoranthene	ug/g	<0.0050	<0.0050	0.14	<0.0050	4735086	0.016	0.0050	4735086
Fluorene	ug/g	<0.0050	<0.0050	0.0054	<0.0050	4735086	<0.0050	0.0050	4735086
Indeno(1,2,3-cd)pyrene	ug/g	<0.0050	<0.0050	0.043	<0.0050	4735086	0.0050	0.0050	4735086
1-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	4735086	<0.0050	0.0050	4735086
2-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	4735086	<0.0050	0.0050	4735086
Naphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	4735086	<0.0050	0.0050	4735086
Phenanthrene	ug/g	<0.0050	<0.0050	0.061	<0.0050	4735086	0.0079	0.0050	4735086
Pyrene	ug/g	<0.0050	<0.0050	0.11	<0.0050	4735086	0.013	0.0050	4735086

**Surrogate Recovery (%)**

D10-Anthracene	%	105	98	100	100	4735086	100		4735086
D14-Terphenyl (FS)	%	105	100	103	102	4735086	99		4735086
D8-Acenaphthylene	%	95	90	91	92	4735086	91		4735086

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

**SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)**

Maxxam ID		DJU093	DJU095	DJU096	DJU097	DJU098		
Sampling Date		2016/11/03 10:20	2016/11/04 14:00	2016/11/04 14:15	2016/11/04 14:30	2016/11/04 12:30		
COC Number		581304-03-01	581304-03-01	581304-03-01	581304-03-01	581304-03-01		
	<b>UNITS</b>	<b>TP10-SS5</b>	<b>INC-SS1</b>	<b>INC-SS2</b>	<b>INC-SS3</b>	<b>TP2-SS1</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Calculated Parameters</b>								
Methylnaphthalene, 2-(1-)	ug/g	<0.0071	<0.0071	<0.0071	0.044	<0.0071	0.0071	4734696
<b>Polyaromatic Hydrocarbons</b>								
Acenaphthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4735086
Acenaphthylene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	4735086
Anthracene	ug/g	<0.0050	0.0058	<0.0050	0.0083	<0.0050	0.0050	4735086
Benzo(a)anthracene	ug/g	<0.0050	0.027	0.0085	0.039	<0.0050	0.0050	4735086
Benzo(a)pyrene	ug/g	<0.0050	0.031	0.0099	0.049	<0.0050	0.0050	4735086
Benzo(b/j)fluoranthene	ug/g	<0.0050	0.045	0.016	0.063	0.0051	0.0050	4735086
Benzo(g,h,i)perylene	ug/g	<0.0050	0.027	0.011	0.063	<0.0050	0.0050	4735086
Benzo(k)fluoranthene	ug/g	<0.0050	0.013	<0.0050	0.018	<0.0050	0.0050	4735086
Chrysene	ug/g	<0.0050	0.027	0.0086	0.035	<0.0050	0.0050	4735086
Dibenz(a,h)anthracene	ug/g	<0.0050	<0.0050	<0.0050	0.0078	<0.0050	0.0050	4735086
Fluoranthene	ug/g	<0.0050	0.064	0.021	0.066	<0.0050	0.0050	4735086
Fluorene	ug/g	<0.0050	<0.0050	<0.0050	0.0054	<0.0050	0.0050	4735086
Indeno(1,2,3-cd)pyrene	ug/g	<0.0050	0.026	0.0092	0.057	<0.0050	0.0050	4735086
1-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	0.016	<0.0050	0.0050	4735086
2-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	0.028	<0.0050	0.0050	4735086
Naphthalene	ug/g	<0.0050	<0.0050	<0.0050	0.010	<0.0050	0.0050	4735086
Phenanthrene	ug/g	<0.0050	0.027	0.0094	0.024	<0.0050	0.0050	4735086
Pyrene	ug/g	<0.0050	0.053	0.017	0.059	<0.0050	0.0050	4735086
<b>Surrogate Recovery (%)</b>								
D10-Anthracene	%	98	97	104	95	103		4735086
D14-Terphenyl (FS)	%	99	101	104	98	102		4735086
D8-Acenaphthylene	%	92	92	96	93	96		4735086
RDL = Reportable Detection Limit								
QC Batch = Quality Control Batch								

**PETROLEUM HYDROCARBONS (CCME)**

Maxxam ID		DJU094		
Sampling Date		2016/11/03 13:30		
COC Number		581304-03-01		
	<b>UNITS</b>	<b>TP9-SS1</b>	<b>RDL</b>	<b>QC Batch</b>
<b>BTEX &amp; F1 Hydrocarbons</b>				
Benzene	ug/g	<0.020	0.020	4734926
Toluene	ug/g	<0.020	0.020	4734926
Ethylbenzene	ug/g	<0.020	0.020	4734926
o-Xylene	ug/g	<0.020	0.020	4734926
p+m-Xylene	ug/g	<0.040	0.040	4734926
Total Xylenes	ug/g	<0.040	0.040	4734926
F1 (C6-C10)	ug/g	<10	10	4734926
F1 (C6-C10) - BTEX	ug/g	<10	10	4734926
<b>F2-F4 Hydrocarbons</b>				
F2 (C10-C16 Hydrocarbons)	ug/g	<10	10	4734995
F3 (C16-C34 Hydrocarbons)	ug/g	<50	50	4734995
F4 (C34-C50 Hydrocarbons)	ug/g	<50	50	4734995
Reached Baseline at C50	ug/g	Yes		4734995
<b>Surrogate Recovery (%)</b>				
1,4-Difluorobenzene	%	99		4734926
4-Bromofluorobenzene	%	102		4734926
D10-Ethylbenzene	%	95		4734926
D4-1,2-Dichloroethane	%	98		4734926
o-Terphenyl	%	97		4734995
RDL = Reportable Detection Limit QC Batch = Quality Control Batch				

### TEST SUMMARY

**Maxxam ID:** DJU082  
**Sample ID:** TP5-SS1  
**Matrix:** Soil

**Collected:** 2016/11/03  
**Shipped:**  
**Received:** 2016/11/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4733490	N/A	2016/11/07	Automated Statchk
Hot Water Extractable Boron	ICP	4736454	2016/11/07	2016/11/07	Jolly John
Hexavalent Chromium in Soil by IC	IC/SPEC	4735461	2016/11/05	2016/11/07	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4736271	2016/11/07	2016/11/07	Daniel Teclu
Moisture	BAL	4735015	N/A	2016/11/04	Prgya Panchal
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4735086	2016/11/04	2016/11/04	Mitesh Raj

**Maxxam ID:** DJU083  
**Sample ID:** TP55-SS11  
**Matrix:** Soil

**Collected:** 2016/11/03  
**Shipped:**  
**Received:** 2016/11/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4733490	N/A	2016/11/07	Automated Statchk
Hot Water Extractable Boron	ICP	4736454	2016/11/07	2016/11/07	Jolly John
Hexavalent Chromium in Soil by IC	IC/SPEC	4735461	2016/11/05	2016/11/07	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4736271	2016/11/07	2016/11/07	Daniel Teclu
Moisture	BAL	4735015	N/A	2016/11/04	Prgya Panchal
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4735086	2016/11/04	2016/11/05	Mitesh Raj

**Maxxam ID:** DJU084  
**Sample ID:** TP4-SS2  
**Matrix:** Soil

**Collected:** 2016/11/03  
**Shipped:**  
**Received:** 2016/11/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4733490	N/A	2016/11/07	Automated Statchk
Hot Water Extractable Boron	ICP	4736274	2016/11/07	2016/11/07	Jolly John
Hexavalent Chromium in Soil by IC	IC/SPEC	4735461	2016/11/05	2016/11/07	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4736271	2016/11/07	2016/11/07	Daniel Teclu
Moisture	BAL	4735015	N/A	2016/11/04	Prgya Panchal
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4735086	2016/11/04	2016/11/05	Mitesh Raj

**Maxxam ID:** DJU085  
**Sample ID:** TP44-SS22  
**Matrix:** Soil

**Collected:** 2016/11/03  
**Shipped:**  
**Received:** 2016/11/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4733490	N/A	2016/11/07	Automated Statchk
Hot Water Extractable Boron	ICP	4736274	2016/11/07	2016/11/07	Jolly John
Hexavalent Chromium in Soil by IC	IC/SPEC	4735461	2016/11/05	2016/11/07	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4736419	2016/11/07	2016/11/07	Daniel Teclu
Moisture	BAL	4735015	N/A	2016/11/04	Prgya Panchal
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4735086	2016/11/04	2016/11/05	Mitesh Raj

### TEST SUMMARY

**Maxxam ID:** DJU085 Dup  
**Sample ID:** TP44-SS22  
**Matrix:** Soil

**Collected:** 2016/11/03  
**Shipped:**  
**Received:** 2016/11/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	4736419	2016/11/07	2016/11/07	Daniel Teclu

**Maxxam ID:** DJU086  
**Sample ID:** TP4-SS6  
**Matrix:** Soil

**Collected:** 2016/11/03  
**Shipped:**  
**Received:** 2016/11/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4733490	N/A	2016/11/07	Automated Statchk
Hot Water Extractable Boron	ICP	4736454	2016/11/07	2016/11/07	Jolly John
Hexavalent Chromium in Soil by IC	IC/SPEC	4735461	2016/11/05	2016/11/07	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4736271	2016/11/07	2016/11/07	Daniel Teclu
Moisture	BAL	4735015	N/A	2016/11/04	Prgya Panchal
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4735086	2016/11/04	2016/11/05	Mitesh Raj

**Maxxam ID:** DJU087  
**Sample ID:** TP6-SS6  
**Matrix:** Soil

**Collected:** 2016/11/03  
**Shipped:**  
**Received:** 2016/11/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4733490	N/A	2016/11/07	Automated Statchk
Hot Water Extractable Boron	ICP	4736274	2016/11/07	2016/11/07	Jolly John
Hexavalent Chromium in Soil by IC	IC/SPEC	4735461	2016/11/05	2016/11/07	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4736271	2016/11/07	2016/11/07	Daniel Teclu
Moisture	BAL	4735015	N/A	2016/11/04	Prgya Panchal
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4735086	2016/11/04	2016/11/05	Mitesh Raj

**Maxxam ID:** DJU088  
**Sample ID:** TP6-SS2  
**Matrix:** Soil

**Collected:** 2016/11/03  
**Shipped:**  
**Received:** 2016/11/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4733490	N/A	2016/11/07	Automated Statchk
Hot Water Extractable Boron	ICP	4736274	2016/11/07	2016/11/07	Jolly John
Hexavalent Chromium in Soil by IC	IC/SPEC	4735461	2016/11/05	2016/11/07	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4736271	2016/11/07	2016/11/07	Daniel Teclu
Moisture	BAL	4735015	N/A	2016/11/04	Prgya Panchal
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4735086	2016/11/04	2016/11/05	Mitesh Raj

**Maxxam ID:** DJU088 Dup  
**Sample ID:** TP6-SS2  
**Matrix:** Soil

**Collected:** 2016/11/03  
**Shipped:**  
**Received:** 2016/11/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hot Water Extractable Boron	ICP	4736274	2016/11/07	2016/11/07	Jolly John

### TEST SUMMARY

**Maxxam ID:** DJU089  
**Sample ID:** TP7-SS5  
**Matrix:** Soil

**Collected:** 2016/11/03  
**Shipped:**  
**Received:** 2016/11/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4733490	N/A	2016/11/07	Automated Statchk
Hot Water Extractable Boron	ICP	4736274	2016/11/07	2016/11/07	Jolly John
Hexavalent Chromium in Soil by IC	IC/SPEC	4735461	2016/11/05	2016/11/07	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4736271	2016/11/07	2016/11/07	Daniel Teclu
Moisture	BAL	4735015	N/A	2016/11/04	Prgya Panchal
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4735086	2016/11/04	2016/11/05	Mitesh Raj

**Maxxam ID:** DJU089 Dup  
**Sample ID:** TP7-SS5  
**Matrix:** Soil

**Collected:** 2016/11/03  
**Shipped:**  
**Received:** 2016/11/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4735015	N/A	2016/11/04	Prgya Panchal

**Maxxam ID:** DJU090  
**Sample ID:** TP7-SS2  
**Matrix:** Soil

**Collected:** 2016/11/03  
**Shipped:**  
**Received:** 2016/11/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4733490	N/A	2016/11/07	Automated Statchk
Hot Water Extractable Boron	ICP	4736454	2016/11/07	2016/11/07	Jolly John
Hexavalent Chromium in Soil by IC	IC/SPEC	4735461	2016/11/05	2016/11/07	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4736271	2016/11/07	2016/11/07	Daniel Teclu
Moisture	BAL	4735015	N/A	2016/11/04	Prgya Panchal
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4735086	2016/11/04	2016/11/05	Mitesh Raj

**Maxxam ID:** DJU091  
**Sample ID:** TP8-SS2  
**Matrix:** Soil

**Collected:** 2016/11/03  
**Shipped:**  
**Received:** 2016/11/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4733490	N/A	2016/11/07	Automated Statchk
Hot Water Extractable Boron	ICP	4736454	2016/11/07	2016/11/07	Jolly John
Hexavalent Chromium in Soil by IC	IC/SPEC	4735461	2016/11/05	2016/11/07	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4736271	2016/11/07	2016/11/07	Daniel Teclu
Moisture	BAL	4735015	N/A	2016/11/04	Prgya Panchal
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4735086	2016/11/04	2016/11/05	Mitesh Raj

**Maxxam ID:** DJU091 Dup  
**Sample ID:** TP8-SS2  
**Matrix:** Soil

**Collected:** 2016/11/03  
**Shipped:**  
**Received:** 2016/11/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	4736271	2016/11/07	2016/11/07	Daniel Teclu

### TEST SUMMARY

**Maxxam ID:** DJU092  
**Sample ID:** TP10-SS2  
**Matrix:** Soil

**Collected:** 2016/11/03  
**Shipped:**  
**Received:** 2016/11/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4734696	N/A	2016/11/07	Automated Statchk
Hot Water Extractable Boron	ICP	4736454	2016/11/07	2016/11/07	Jolly John
Hexavalent Chromium in Soil by IC	IC/SPEC	4735461	2016/11/05	2016/11/07	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4736271	2016/11/07	2016/11/07	Daniel Teclu
Moisture	BAL	4735015	N/A	2016/11/04	Prgya Panchal
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4735086	2016/11/04	2016/11/05	Mitesh Raj

**Maxxam ID:** DJU093  
**Sample ID:** TP10-SS5  
**Matrix:** Soil

**Collected:** 2016/11/03  
**Shipped:**  
**Received:** 2016/11/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4734696	N/A	2016/11/07	Automated Statchk
Hot Water Extractable Boron	ICP	4736274	2016/11/07	2016/11/07	Jolly John
Hexavalent Chromium in Soil by IC	IC/SPEC	4735461	2016/11/05	2016/11/07	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4736271	2016/11/07	2016/11/07	Daniel Teclu
Moisture	BAL	4735015	N/A	2016/11/04	Prgya Panchal
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4735086	2016/11/04	2016/11/05	Mitesh Raj

**Maxxam ID:** DJU094  
**Sample ID:** TP9-SS1  
**Matrix:** Soil

**Collected:** 2016/11/03  
**Shipped:**  
**Received:** 2016/11/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4734926	N/A	2016/11/05	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4734995	2016/11/04	2016/11/05	Barbara Wowk
Moisture	BAL	4735015	N/A	2016/11/04	Prgya Panchal

**Maxxam ID:** DJU095  
**Sample ID:** INC-SS1  
**Matrix:** Soil

**Collected:** 2016/11/04  
**Shipped:**  
**Received:** 2016/11/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4734696	N/A	2016/11/07	Automated Statchk
Hot Water Extractable Boron	ICP	4736274	2016/11/07	2016/11/07	Jolly John
Hexavalent Chromium in Soil by IC	IC/SPEC	4735461	2016/11/05	2016/11/07	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4736271	2016/11/07	2016/11/07	Daniel Teclu
Moisture	BAL	4735015	N/A	2016/11/04	Prgya Panchal
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4735086	2016/11/04	2016/11/05	Mitesh Raj

Maxxam Job #: B600097  
Report Date: 2016/11/07

exp Services Inc  
Client Project #: BRM-00235695-A0  
Site Location: FORMER OAKVILLE HOSPITAL  
Your P.O. #: BRM-ENV  
Sampler Initials: KM

### TEST SUMMARY

**Maxxam ID:** DJU096  
**Sample ID:** INC-SS2  
**Matrix:** Soil

**Collected:** 2016/11/04  
**Shipped:**  
**Received:** 2016/11/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4734696	N/A	2016/11/07	Automated Statchk
Hot Water Extractable Boron	ICP	4736274	2016/11/07	2016/11/07	Jolly John
Hexavalent Chromium in Soil by IC	IC/SPEC	4735461	2016/11/05	2016/11/07	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4736271	2016/11/07	2016/11/07	Daniel Teclu
Moisture	BAL	4735015	N/A	2016/11/04	Prgya Panchal
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4735086	2016/11/04	2016/11/05	Mitesh Raj

**Maxxam ID:** DJU097  
**Sample ID:** INC-SS3  
**Matrix:** Soil

**Collected:** 2016/11/04  
**Shipped:**  
**Received:** 2016/11/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4734696	N/A	2016/11/07	Automated Statchk
Hot Water Extractable Boron	ICP	4736457	2016/11/07	2016/11/07	Jolly John
Hexavalent Chromium in Soil by IC	IC/SPEC	4735461	2016/11/05	2016/11/07	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4736419	2016/11/07	2016/11/07	Daniel Teclu
Moisture	BAL	4735015	N/A	2016/11/04	Prgya Panchal
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4735086	2016/11/04	2016/11/05	Mitesh Raj

**Maxxam ID:** DJU098  
**Sample ID:** TP2-SS1  
**Matrix:** Soil

**Collected:** 2016/11/04  
**Shipped:**  
**Received:** 2016/11/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4734696	N/A	2016/11/07	Automated Statchk
Hot Water Extractable Boron	ICP	4736274	2016/11/07	2016/11/07	Jolly John
Hexavalent Chromium in Soil by IC	IC/SPEC	4735461	2016/11/05	2016/11/07	Sally Coughlin
Strong Acid Leachable Metals by ICPMS	ICP/MS	4736271	2016/11/07	2016/11/07	Daniel Teclu
Moisture	BAL	4735015	N/A	2016/11/04	Prgya Panchal
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4735086	2016/11/04	2016/11/05	Mitesh Raj

**Maxxam ID:** DJU098 Dup  
**Sample ID:** TP2-SS1  
**Matrix:** Soil

**Collected:** 2016/11/04  
**Shipped:**  
**Received:** 2016/11/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4735461	2016/11/05	2016/11/07	Sally Coughlin



**GENERAL COMMENTS**

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

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

**QUALITY ASSURANCE REPORT**

exp Services Inc  
Client Project #: BRM-00235695-A0  
Site Location: FORMER OAKVILLE HOSPITAL  
Your P.O. #: BRM-ENV  
Sampler Initials: KM

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4734926	1,4-Difluorobenzene	2016/11/04	102	60 - 140	101	60 - 140	100	%		
4734926	4-Bromofluorobenzene	2016/11/04	103	60 - 140	101	60 - 140	101	%		
4734926	D10-Ethylbenzene	2016/11/04	91	60 - 140	90	60 - 140	93	%		
4734926	D4-1,2-Dichloroethane	2016/11/04	101	60 - 140	99	60 - 140	99	%		
4734995	o-Terphenyl	2016/11/05	94	60 - 130	95	60 - 130	97	%		
4735086	D10-Anthracene	2016/11/04	103	50 - 130	97	50 - 130	99	%		
4735086	D14-Terphenyl (FS)	2016/11/04	107	50 - 130	103	50 - 130	104	%		
4735086	D8-Acenaphthylene	2016/11/04	96	50 - 130	93	50 - 130	92	%		
4734926	Benzene	2016/11/04	94	60 - 140	94	60 - 140	<0.020	ug/g	NC	50
4734926	Ethylbenzene	2016/11/04	98	60 - 140	97	60 - 140	<0.020	ug/g	NC	50
4734926	F1 (C6-C10) - BTEX	2016/11/04					<10	ug/g	NC	30
4734926	F1 (C6-C10)	2016/11/04	87	60 - 140	83	80 - 120	<10	ug/g	NC	30
4734926	o-Xylene	2016/11/04	100	60 - 140	102	60 - 140	<0.020	ug/g	NC	50
4734926	p+m-Xylene	2016/11/04	91	60 - 140	91	60 - 140	<0.040	ug/g	NC	50
4734926	Toluene	2016/11/04	92	60 - 140	91	60 - 140	<0.020	ug/g	NC	50
4734926	Total Xylenes	2016/11/04					<0.040	ug/g	NC	50
4734995	F2 (C10-C16 Hydrocarbons)	2016/11/05	93	50 - 130	88	80 - 120	<10	ug/g	NC	30
4734995	F3 (C16-C34 Hydrocarbons)	2016/11/05	NC	50 - 130	89	80 - 120	<50	ug/g	NC	30
4734995	F4 (C34-C50 Hydrocarbons)	2016/11/05	NC	50 - 130	87	80 - 120	<50	ug/g	NC	30
4735015	Moisture	2016/11/04							0	20
4735086	1-Methylnaphthalene	2016/11/04	88	50 - 130	97	50 - 130	<0.0050	ug/g	NC	40
4735086	2-Methylnaphthalene	2016/11/04	84	50 - 130	94	50 - 130	<0.0050	ug/g	NC	40
4735086	Acenaphthene	2016/11/04	99	50 - 130	97	50 - 130	<0.0050	ug/g	21	40
4735086	Acenaphthylene	2016/11/04	96	50 - 130	94	50 - 130	<0.0050	ug/g	NC	40
4735086	Anthracene	2016/11/04	99	50 - 130	95	50 - 130	<0.0050	ug/g	83 (1)	40
4735086	Benzo(a)anthracene	2016/11/04	107	50 - 130	96	50 - 130	<0.0050	ug/g	82 (1)	40
4735086	Benzo(a)pyrene	2016/11/04	107	50 - 130	99	50 - 130	<0.0050	ug/g	82 (1)	40
4735086	Benzo(b,j)fluoranthene	2016/11/04	101	50 - 130	103	50 - 130	<0.0050	ug/g	79 (1)	40
4735086	Benzo(g,h,i)perylene	2016/11/04	97	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40
4735086	Benzo(k)fluoranthene	2016/11/04	102	50 - 130	101	50 - 130	<0.0050	ug/g	NC	40

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

exp Services Inc  
Client Project #: BRM-00235695-A0  
Site Location: FORMER OAKVILLE HOSPITAL  
Your P.O. #: BRM-ENV  
Sampler Initials: KM

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4735086	Chrysene	2016/11/04	112	50 - 130	100	50 - 130	<0.0050	ug/g	81 (1)	40
4735086	Dibenz(a,h)anthracene	2016/11/04	96	50 - 130	81	50 - 130	<0.0050	ug/g	NC	40
4735086	Fluoranthene	2016/11/04	121	50 - 130	99	50 - 130	<0.0050	ug/g	88 (1)	40
4735086	Fluorene	2016/11/04	101	50 - 130	96	50 - 130	<0.0050	ug/g	44 (2)	40
4735086	Indeno(1,2,3-cd)pyrene	2016/11/04	104	50 - 130	89	50 - 130	<0.0050	ug/g	NC	40
4735086	Naphthalene	2016/11/04	76	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40
4735086	Phenanthrene	2016/11/04	111	50 - 130	93	50 - 130	<0.0050	ug/g	95 (1)	40
4735086	Pyrene	2016/11/04	116	50 - 130	101	50 - 130	<0.0050	ug/g	77 (1)	40
4735461	Chromium (VI)	2016/11/07	88	75 - 125	92	80 - 120	<0.2	ug/g	NC	35
4736271	Acid Extractable Antimony (Sb)	2016/11/07	95	75 - 125	100	80 - 120	<0.20	ug/g	NC	30
4736271	Acid Extractable Arsenic (As)	2016/11/07	97	75 - 125	100	80 - 120	<1.0	ug/g	NC	30
4736271	Acid Extractable Barium (Ba)	2016/11/07	NC	75 - 125	101	80 - 120	<0.50	ug/g	4.2	30
4736271	Acid Extractable Beryllium (Be)	2016/11/07	99	75 - 125	98	80 - 120	<0.20	ug/g	NC	30
4736271	Acid Extractable Boron (B)	2016/11/07	97	75 - 125	97	80 - 120	<5.0	ug/g	NC	30
4736271	Acid Extractable Cadmium (Cd)	2016/11/07	101	75 - 125	95	80 - 120	<0.10	ug/g	NC	30
4736271	Acid Extractable Chromium (Cr)	2016/11/07	103	75 - 125	99	80 - 120	<1.0	ug/g	4.3	30
4736271	Acid Extractable Cobalt (Co)	2016/11/07	99	75 - 125	98	80 - 120	<0.10	ug/g	0.35	30
4736271	Acid Extractable Copper (Cu)	2016/11/07	97	75 - 125	100	80 - 120	<0.50	ug/g	2.2	30
4736271	Acid Extractable Lead (Pb)	2016/11/07	102	75 - 125	96	80 - 120	<1.0	ug/g	NC	30
4736271	Acid Extractable Mercury (Hg)	2016/11/07	98	75 - 125	95	80 - 120	<0.050	ug/g	NC	30
4736271	Acid Extractable Molybdenum (Mo)	2016/11/07	102	75 - 125	99	80 - 120	<0.50	ug/g	NC	30
4736271	Acid Extractable Nickel (Ni)	2016/11/07	97	75 - 125	101	80 - 120	<0.50	ug/g	11	30
4736271	Acid Extractable Selenium (Se)	2016/11/07	98	75 - 125	101	80 - 120	<0.50	ug/g	NC	30
4736271	Acid Extractable Silver (Ag)	2016/11/07	102	75 - 125	99	80 - 120	<0.20	ug/g	NC	30
4736271	Acid Extractable Thallium (Tl)	2016/11/07	101	75 - 125	94	80 - 120	<0.050	ug/g	NC	30
4736271	Acid Extractable Uranium (U)	2016/11/07	101	75 - 125	93	80 - 120	<0.050	ug/g	15	30
4736271	Acid Extractable Vanadium (V)	2016/11/07	NC	75 - 125	103	80 - 120	<5.0	ug/g	NC	30
4736271	Acid Extractable Zinc (Zn)	2016/11/07	NC	75 - 125	101	80 - 120	<5.0	ug/g	NC	30
4736274	Hot Water Ext. Boron (B)	2016/11/07	96	75 - 125	100	75 - 125	<0.050	ug/g	NC	40
4736419	Acid Extractable Antimony (Sb)	2016/11/07	100	75 - 125	103	80 - 120	<0.20	ug/g	NC	30

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

exp Services Inc  
Client Project #: BRM-00235695-A0  
Site Location: FORMER OAKVILLE HOSPITAL  
Your P.O. #: BRM-ENV  
Sampler Initials: KM

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4736419	Acid Extractable Arsenic (As)	2016/11/07	95	75 - 125	98	80 - 120	<1.0	ug/g	NC	30
4736419	Acid Extractable Barium (Ba)	2016/11/07	91	75 - 125	95	80 - 120	<0.50	ug/g	7.3	30
4736419	Acid Extractable Beryllium (Be)	2016/11/07	98	75 - 125	98	80 - 120	<0.20	ug/g	NC	30
4736419	Acid Extractable Boron (B)	2016/11/07	95	75 - 125	95	80 - 120	<5.0	ug/g	NC	30
4736419	Acid Extractable Cadmium (Cd)	2016/11/07	100	75 - 125	101	80 - 120	<0.10	ug/g	NC	30
4736419	Acid Extractable Chromium (Cr)	2016/11/07	101	75 - 125	102	80 - 120	<1.0	ug/g	17	30
4736419	Acid Extractable Cobalt (Co)	2016/11/07	100	75 - 125	102	80 - 120	<0.10	ug/g	3.3	30
4736419	Acid Extractable Copper (Cu)	2016/11/07	101	75 - 125	101	80 - 120	<0.50	ug/g	0.42	30
4736419	Acid Extractable Lead (Pb)	2016/11/07	97	75 - 125	102	80 - 120	<1.0	ug/g	NC	30
4736419	Acid Extractable Mercury (Hg)	2016/11/07	96	75 - 125	98	80 - 120	<0.050	ug/g	NC	30
4736419	Acid Extractable Molybdenum (Mo)	2016/11/07	101	75 - 125	102	80 - 120	<0.50	ug/g	NC	30
4736419	Acid Extractable Nickel (Ni)	2016/11/07	101	75 - 125	102	80 - 120	<0.50	ug/g	15	30
4736419	Acid Extractable Selenium (Se)	2016/11/07	96	75 - 125	101	80 - 120	<0.50	ug/g	NC	30
4736419	Acid Extractable Silver (Ag)	2016/11/07	101	75 - 125	102	80 - 120	<0.20	ug/g	NC	30
4736419	Acid Extractable Thallium (Tl)	2016/11/07	95	75 - 125	101	80 - 120	<0.050	ug/g	NC	30
4736419	Acid Extractable Uranium (U)	2016/11/07	98	75 - 125	101	80 - 120	<0.050	ug/g	1.9	30
4736419	Acid Extractable Vanadium (V)	2016/11/07	NC	75 - 125	99	80 - 120	<5.0	ug/g	NC	30
4736419	Acid Extractable Zinc (Zn)	2016/11/07	95	75 - 125	102	80 - 120	<5.0	ug/g	NC	30
4736454	Hot Water Ext. Boron (B)	2016/11/07	101	75 - 125	102	75 - 125	<0.050	ug/g	NC	40

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

exp Services Inc  
Client Project #: BRM-00235695-A0  
Site Location: FORMER OAKVILLE HOSPITAL  
Your P.O. #: BRM-ENV  
Sampler Initials: KM

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4736457	Hot Water Ext. Boron (B)	2016/11/07	100	75 - 125	101	75 - 125	<0.050	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 (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of 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 (one or both samples < 5x RDL).

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

(2) Duplicate results exceeded RPD acceptance criteria due to the sample heterogeneity. The variability in the results for flagged analytes may be more pronounced.

### VALIDATION SIGNATURE PAGE

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

\_\_\_\_\_  
Ewa Pranjić, 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.

Your Project #: BRM-00235695-A0  
 Site Location: Former Oakville Hospital  
 Your C.O.C. #: 585899-01-01

**Attention:Stephanie Hsia**

exp Services Inc  
 Hamilton Branch  
 80 Bancroft St  
 Hamilton, ON  
 L8E 2W5

**Report Date: 2016/11/11**  
 Report #: R4243896  
 Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B605261**

**Received: 2016/11/10, 17:58**

Sample Matrix: Soil  
 # Samples Received: 7

Analyses	Quantity	Date	Date	Laboratory Method	Reference
		Extracted	Analyzed		
Petroleum Hydro. CCME F1 & BTEX in Soil (1)	7	N/A	2016/11/11	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Soil (2)	7	2016/11/10	2016/11/11	CAM SOP-00316	CCME CWS m
Moisture	7	N/A	2016/11/10	CAM SOP-00445	Carter 2nd ed 51.2 m

**Remarks:**

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

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

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

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

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

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

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

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

Your Project #: BRM-00235695-A0  
Site Location: Former Oakville Hospital  
Your C.O.C. #: 585899-01-01

**Attention:Stephanie Hsia**

exp Services Inc  
Hamilton Branch  
80 Bancroft St  
Hamilton, ON  
L8E 2W5

**Report Date: 2016/11/11**  
Report #: R4243896  
Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B605261**  
**Received: 2016/11/10, 17:58**

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.  
Sara Singh, B.Sc, Senior Project Manager  
Email: sarasingh@maxxam.ca  
Phone# (905)817-5730

=====  
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.



**RESULTS OF ANALYSES OF SOIL**

Maxxam ID		DKU852	DKU853	DKU854	DKU855	DKU855	DKU856		
Sampling Date		2016/11/08 10:00	2016/11/08 11:00	2016/11/08 12:00	2016/11/08 10:00	2016/11/08 10:00	2016/11/08 09:30		
COC Number		585899-01-01	585899-01-01	585899-01-01	585899-01-01	585899-01-01	585899-01-01		
	<b>UNITS</b>	<b>BH16-214-SS6</b>	<b>BH16-218-SS3</b>	<b>BH16-219-SS3</b>	<b>BH16-215-SS5</b>	<b>BH16-215-SS5 Lab-Dup</b>	<b>BH16-216-SS5</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Inorganics</b>									
Moisture	%	14	12	12	15	16	15	1.0	4743943
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate									

Maxxam ID		DKU857	DKU858		
Sampling Date		2016/11/08 14:45	2016/11/08 14:45		
COC Number		585899-01-01	585899-01-01		
	<b>UNITS</b>	<b>BH16-217-SS5</b>	<b>BH16-257-SS5</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Inorganics</b>					
Moisture	%	13	14	1.0	4743943
RDL = Reportable Detection Limit QC Batch = Quality Control Batch					

**PETROLEUM HYDROCARBONS (CCME)**

Maxxam ID		DKU852	DKU853	DKU854	DKU855	DKU856	DKU857		
Sampling Date		2016/11/08 10:00	2016/11/08 11:00	2016/11/08 12:00	2016/11/08 10:00	2016/11/08 09:30	2016/11/08 14:45		
COC Number		585899-01-01	585899-01-01	585899-01-01	585899-01-01	585899-01-01	585899-01-01		
	<b>UNITS</b>	<b>BH16-214-SS6</b>	<b>BH16-218-SS3</b>	<b>BH16-219-SS3</b>	<b>BH16-215-SS5</b>	<b>BH16-216-SS5</b>	<b>BH16-217-SS5</b>	<b>RDL</b>	<b>QC Batch</b>
<b>BTEX &amp; F1 Hydrocarbons</b>									
Benzene	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	4743864
Toluene	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	4743864
Ethylbenzene	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	4743864
o-Xylene	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	4743864
p+m-Xylene	ug/g	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	0.040	4743864
Total Xylenes	ug/g	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	0.040	4743864
F1 (C6-C10)	ug/g	<10	<10	<10	<10	<10	<10	10	4743864
F1 (C6-C10) - BTEX	ug/g	<10	<10	<10	<10	<10	<10	10	4743864
<b>F2-F4 Hydrocarbons</b>									
F2 (C10-C16 Hydrocarbons)	ug/g	<10	<10	<10	<10	<10	<10	10	4744003
F3 (C16-C34 Hydrocarbons)	ug/g	<50	<50	<50	<50	<50	<50	50	4744003
F4 (C34-C50 Hydrocarbons)	ug/g	<50	<50	<50	<50	<50	<50	50	4744003
Reached Baseline at C50	ug/g	Yes	Yes	Yes	Yes	Yes	Yes		4744003
<b>Surrogate Recovery (%)</b>									
1,4-Difluorobenzene	%	97	97	96	97	97	97		4743864
4-Bromofluorobenzene	%	101	101	99	101	100	102		4743864
D10-Ethylbenzene	%	102	102	100	100	107	100		4743864
D4-1,2-Dichloroethane	%	99	100	100	99	100	101		4743864
o-Terphenyl	%	96	95	97	97	95	98		4744003
RDL = Reportable Detection Limit									
QC Batch = Quality Control Batch									

**PETROLEUM HYDROCARBONS (CCME)**

Maxxam ID		DKU858		
Sampling Date		2016/11/08 14:45		
COC Number		585899-01-01		
	<b>UNITS</b>	<b>BH16-257-SS5</b>	<b>RDL</b>	<b>QC Batch</b>
<b>BTEX &amp; F1 Hydrocarbons</b>				
Benzene	ug/g	<0.020	0.020	4743864
Toluene	ug/g	<0.020	0.020	4743864
Ethylbenzene	ug/g	<0.020	0.020	4743864
o-Xylene	ug/g	<0.020	0.020	4743864
p+m-Xylene	ug/g	<0.040	0.040	4743864
Total Xylenes	ug/g	<0.040	0.040	4743864
F1 (C6-C10)	ug/g	<10	10	4743864
F1 (C6-C10) - BTEX	ug/g	<10	10	4743864
<b>F2-F4 Hydrocarbons</b>				
F2 (C10-C16 Hydrocarbons)	ug/g	<10	10	4744003
F3 (C16-C34 Hydrocarbons)	ug/g	<50	50	4744003
F4 (C34-C50 Hydrocarbons)	ug/g	<50	50	4744003
Reached Baseline at C50	ug/g	Yes		4744003
<b>Surrogate Recovery (%)</b>				
1,4-Difluorobenzene	%	96		4743864
4-Bromofluorobenzene	%	101		4743864
D10-Ethylbenzene	%	102		4743864
D4-1,2-Dichloroethane	%	98		4743864
o-Terphenyl	%	98		4744003
RDL = Reportable Detection Limit				
QC Batch = Quality Control Batch				

### TEST SUMMARY

**Maxxam ID:** DKU852  
**Sample ID:** BH16-214-SS6  
**Matrix:** Soil

**Collected:** 2016/11/08  
**Shipped:**  
**Received:** 2016/11/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4743864	N/A	2016/11/11	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4744003	2016/11/10	2016/11/11	Dorina Popa
Moisture	BAL	4743943	N/A	2016/11/10	Prgya Panchal

**Maxxam ID:** DKU853  
**Sample ID:** BH16-218-SS3  
**Matrix:** Soil

**Collected:** 2016/11/08  
**Shipped:**  
**Received:** 2016/11/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4743864	N/A	2016/11/11	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4744003	2016/11/10	2016/11/11	Dorina Popa
Moisture	BAL	4743943	N/A	2016/11/10	Prgya Panchal

**Maxxam ID:** DKU854  
**Sample ID:** BH16-219-SS3  
**Matrix:** Soil

**Collected:** 2016/11/08  
**Shipped:**  
**Received:** 2016/11/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4743864	N/A	2016/11/11	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4744003	2016/11/10	2016/11/11	Dorina Popa
Moisture	BAL	4743943	N/A	2016/11/10	Prgya Panchal

**Maxxam ID:** DKU855  
**Sample ID:** BH16-215-SS5  
**Matrix:** Soil

**Collected:** 2016/11/08  
**Shipped:**  
**Received:** 2016/11/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4743864	N/A	2016/11/11	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4744003	2016/11/10	2016/11/11	Dorina Popa
Moisture	BAL	4743943	N/A	2016/11/10	Prgya Panchal

**Maxxam ID:** DKU855 Dup  
**Sample ID:** BH16-215-SS5  
**Matrix:** Soil

**Collected:** 2016/11/08  
**Shipped:**  
**Received:** 2016/11/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4743943	N/A	2016/11/10	Prgya Panchal

**Maxxam ID:** DKU856  
**Sample ID:** BH16-216-SS5  
**Matrix:** Soil

**Collected:** 2016/11/08  
**Shipped:**  
**Received:** 2016/11/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4743864	N/A	2016/11/11	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4744003	2016/11/10	2016/11/11	Dorina Popa

**TEST SUMMARY**

**Maxxam ID:** DKU856  
**Sample ID:** BH16-216-SS5  
**Matrix:** Soil

**Collected:** 2016/11/08  
**Shipped:**  
**Received:** 2016/11/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4743943	N/A	2016/11/10	Prgya Panchal

**Maxxam ID:** DKU857  
**Sample ID:** BH16-217-SS5  
**Matrix:** Soil

**Collected:** 2016/11/08  
**Shipped:**  
**Received:** 2016/11/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4743864	N/A	2016/11/11	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4744003	2016/11/10	2016/11/11	Dorina Popa
Moisture	BAL	4743943	N/A	2016/11/10	Prgya Panchal

**Maxxam ID:** DKU858  
**Sample ID:** BH16-257-SS5  
**Matrix:** Soil

**Collected:** 2016/11/08  
**Shipped:**  
**Received:** 2016/11/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4743864	N/A	2016/11/11	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4744003	2016/11/10	2016/11/11	Dorina Popa
Moisture	BAL	4743943	N/A	2016/11/10	Prgya Panchal

**GENERAL COMMENTS**

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

Package 1	1.3°C
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**Results relate only to the items tested.**

### QUALITY ASSURANCE REPORT

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4743864	1,4-Difluorobenzene	2016/11/11	97	60 - 140	99	60 - 140	96	%		
4743864	4-Bromofluorobenzene	2016/11/11	100	60 - 140	101	60 - 140	100	%		
4743864	D10-Ethylbenzene	2016/11/11	98	60 - 140	88	60 - 140	90	%		
4743864	D4-1,2-Dichloroethane	2016/11/11	97	60 - 140	99	60 - 140	96	%		
4744003	o-Terphenyl	2016/11/11	102	60 - 130	98	60 - 130	96	%		
4743864	Benzene	2016/11/11	87	60 - 140	88	60 - 140	<0.020	ug/g	NC	50
4743864	Ethylbenzene	2016/11/11	97	60 - 140	98	60 - 140	<0.020	ug/g	NC	50
4743864	F1 (C6-C10) - BTEX	2016/11/11					<10	ug/g	NC	30
4743864	F1 (C6-C10)	2016/11/11	77	60 - 140	82	80 - 120	<10	ug/g	NC	30
4743864	o-Xylene	2016/11/11	102	60 - 140	104	60 - 140	<0.020	ug/g	NC	50
4743864	p+m-Xylene	2016/11/11	89	60 - 140	91	60 - 140	<0.040	ug/g	NC	50
4743864	Toluene	2016/11/11	89	60 - 140	90	60 - 140	<0.020	ug/g	NC	50
4743864	Total Xylenes	2016/11/11					<0.040	ug/g	NC	50
4743943	Moisture	2016/11/10							2.0	20
4744003	F2 (C10-C16 Hydrocarbons)	2016/11/11	105	50 - 130	101	80 - 120	<10	ug/g	NC	30
4744003	F3 (C16-C34 Hydrocarbons)	2016/11/11	99	50 - 130	95	80 - 120	<50	ug/g	NC	30
4744003	F4 (C34-C50 Hydrocarbons)	2016/11/11	101	50 - 130	96	80 - 120	<50	ug/g	NC	30

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

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

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

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

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

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

### VALIDATION SIGNATURE PAGE

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

*Cristina Carriere*

---

Cristina Carriere, Scientific Services

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



Your P.O. #: BRM-ENV  
 Your Project #: BRM-00235695-A0  
 Site Location: FORMER OAKVILLE HOSPITAL  
 Your C.O.C. #: 581304-17-01

**Attention:Stephanie Hsia**

exp Services Inc  
 Hamilton Branch  
 80 Bancroft St  
 Hamilton, ON  
 L8E 2W5

**Report Date: 2016/11/15**  
 Report #: R4247759  
 Version: 2 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B606151**

**Received: 2016/11/11, 15:47**

Sample Matrix: Soil  
 # Samples Received: 8

Analyses	Quantity	Date	Date	Laboratory Method	Reference
		Extracted	Analyzed		
Hot Water Extractable Boron	2	2016/11/14	2016/11/14	CAM SOP-00408	R153 Ana. Prot. 2011
1,3-Dichloropropene Sum	2	N/A	2016/11/13		EPA 8260C m
Conductivity	1	2016/11/14	2016/11/14	CAM SOP-00414	OMOE E3530 v1 m
Hexavalent Chromium in Soil by IC (1)	2	2016/11/12	2016/11/14	CAM SOP-00436	EPA 3060/7199 m
Petroleum Hydro. CCME F1 & BTEX in Soil (2)	4	N/A	2016/11/12	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Soil (3)	4	2016/11/12	2016/11/13	CAM SOP-00316	CCME CWS m
F4G (CCME Hydrocarbons Gravimetric)	2	2016/11/15	2016/11/15	CAM SOP-00316	CCME PHC-CWS m
Strong Acid Leachable Metals by ICPMS	2	2016/11/14	2016/11/14	CAM SOP-00447	EPA 6020B m
Moisture	8	N/A	2016/11/11	CAM SOP-00445	Carter 2nd ed 51.2 m
Sodium Adsorption Ratio (SAR)	1	N/A	2016/11/14	CAM SOP-00102	EPA 6010C
SAR - ICP Metals	1	2016/11/14	2016/11/14	CAM SOP-00408	EPA 6010C m
Volatile Organic Compounds in Soil	2	N/A	2016/11/12	CAM SOP-00228	EPA 8260C m

**Remarks:**

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

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

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

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

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

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

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

Your P.O. #: BRM-ENV  
Your Project #: BRM-00235695-A0  
Site Location: FORMER OAKVILLE HOSPITAL  
Your C.O.C. #: 581304-17-01

**Attention:Stephanie Hsia**

exp Services Inc  
Hamilton Branch  
80 Bancroft St  
Hamilton, ON  
L8E 2W5

**Report Date: 2016/11/15**  
Report #: R4247759  
Version: 2 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B606151**

**Received: 2016/11/11, 15:47**

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

**Encryption Key**

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

Sara Singh, B.Sc, Senior Project Manager  
Email: sarasingh@maxxam.ca  
Phone# (905)817-5730

=====  
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.

**RESULTS OF ANALYSES OF SOIL**

Maxxam ID		DLA164	DLA165	DLA166	DLA167	DLA168	DLA169		
Sampling Date		2016/11/11 09:00	2016/11/11 09:30	2016/11/11 09:45	2016/11/11 11:45	2016/11/11 12:00	2016/11/11 13:50		
COC Number		581304-17-01	581304-17-01	581304-17-01	581304-17-01	581304-17-01	581304-17-01		
	<b>UNITS</b>	<b>BH16-221-SS1</b>	<b>BH16-221-SS5</b>	<b>BH16-221-SS6</b>	<b>BH16-222-SS4</b>	<b>BH16-222-SS6</b>	<b>BH16-220-SS4</b>	<b>RDL</b>	<b>QC Batch</b>

**Calculated Parameters**

Sodium Adsorption Ratio	N/A						23		4744456
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**Inorganics**

Conductivity	mS/cm						0.98	0.002	4746541
Moisture	%	9.6	8.2	6.3	19	11	12	1.0	4745245

**Metals**

Soluble Calcium (Ca)	mg/L						4.0	0.5	4746537
Soluble Magnesium (Mg)	mg/L						0.6	0.5	4746537
Soluble Sodium (Na)	mg/L						186	5	4746537

RDL = Reportable Detection Limit  
QC Batch = Quality Control Batch

Maxxam ID		DLA170	DLA171		
Sampling Date		2016/11/11 13:50	2016/11/11 13:35		
COC Number		581304-17-01	581304-17-01		
	<b>UNITS</b>	<b>BH16-250-SS4</b>	<b>BH16-220-SS2</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Inorganics</b>					
Moisture	%	12	11	1.0	4745245

RDL = Reportable Detection Limit  
QC Batch = Quality Control Batch

**ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)**

Maxxam ID		DLA164	DLA164	DLA171	DLA171		
Sampling Date		2016/11/11 09:00	2016/11/11 09:00	2016/11/11 13:35	2016/11/11 13:35		
COC Number		581304-17-01	581304-17-01	581304-17-01	581304-17-01		
	UNITS	BH16-221-SS1	BH16-221-SS1 Lab-Dup	BH16-220-SS2	BH16-220-SS2 Lab-Dup	RDL	QC Batch
<b>Inorganics</b>							
Chromium (VI)	ug/g	<0.2		<0.2	0.2	0.2	4745674
<b>Metals</b>							
Hot Water Ext. Boron (B)	ug/g	0.20	0.18	0.20		0.050	4746518
Acid Extractable Antimony (Sb)	ug/g	<0.20	<0.20	<0.20		0.20	4746398
Acid Extractable Arsenic (As)	ug/g	1.8	1.6	2.5		1.0	4746398
Acid Extractable Barium (Ba)	ug/g	16	19	30		0.50	4746398
Acid Extractable Beryllium (Be)	ug/g	0.22	0.21	0.27		0.20	4746398
Acid Extractable Boron (B)	ug/g	<5.0	<5.0	<5.0		5.0	4746398
Acid Extractable Cadmium (Cd)	ug/g	<0.10	0.12	0.11		0.10	4746398
Acid Extractable Chromium (Cr)	ug/g	7.8	8.2	10		1.0	4746398
Acid Extractable Cobalt (Co)	ug/g	2.4	2.4	4.3		0.10	4746398
Acid Extractable Copper (Cu)	ug/g	5.4	5.4	15		0.50	4746398
Acid Extractable Lead (Pb)	ug/g	7.9	8.2	46		1.0	4746398
Acid Extractable Molybdenum (Mo)	ug/g	<0.50	<0.50	<0.50		0.50	4746398
Acid Extractable Nickel (Ni)	ug/g	3.9	4.4	9.1		0.50	4746398
Acid Extractable Selenium (Se)	ug/g	<0.50	<0.50	<0.50		0.50	4746398
Acid Extractable Silver (Ag)	ug/g	<0.20	<0.20	<0.20		0.20	4746398
Acid Extractable Thallium (Tl)	ug/g	<0.050	<0.050	0.072		0.050	4746398
Acid Extractable Uranium (U)	ug/g	0.22	0.22	0.31		0.050	4746398
Acid Extractable Vanadium (V)	ug/g	17	17	23		5.0	4746398
Acid Extractable Zinc (Zn)	ug/g	17	20	35		5.0	4746398
Acid Extractable Mercury (Hg)	ug/g	<0.050	<0.050	<0.050		0.050	4746398
RDL = Reportable Detection Limit							
QC Batch = Quality Control Batch							
Lab-Dup = Laboratory Initiated Duplicate							

**VOLATILE ORGANICS BY GC/MS (SOIL)**

Maxxam ID		DLA166	DLA168		
Sampling Date		2016/11/11 09:45	2016/11/11 12:00		
COC Number		581304-17-01	581304-17-01		
	<b>UNITS</b>	<b>BH16-221-SS6</b>	<b>BH16-222-SS6</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Calculated Parameters</b>					
1,3-Dichloropropene (cis+trans)	ug/g	<0.050	<0.050	0.050	4744528
<b>Volatile Organics</b>					
Acetone (2-Propanone)	ug/g	<0.50	<0.50	0.50	4741133
Benzene	ug/g	<0.020	<0.020	0.020	4741133
Bromodichloromethane	ug/g	<0.050	<0.050	0.050	4741133
Bromoform	ug/g	<0.050	<0.050	0.050	4741133
Bromomethane	ug/g	<0.050	<0.050	0.050	4741133
Carbon Tetrachloride	ug/g	<0.050	<0.050	0.050	4741133
Chlorobenzene	ug/g	<0.050	<0.050	0.050	4741133
Chloroform	ug/g	<0.050	<0.050	0.050	4741133
Dibromochloromethane	ug/g	<0.050	<0.050	0.050	4741133
1,2-Dichlorobenzene	ug/g	<0.050	<0.050	0.050	4741133
1,3-Dichlorobenzene	ug/g	<0.050	<0.050	0.050	4741133
1,4-Dichlorobenzene	ug/g	<0.050	<0.050	0.050	4741133
Dichlorodifluoromethane (FREON 12)	ug/g	<0.050	<0.050	0.050	4741133
1,1-Dichloroethane	ug/g	<0.050	<0.050	0.050	4741133
1,2-Dichloroethane	ug/g	<0.050	<0.050	0.050	4741133
1,1-Dichloroethylene	ug/g	<0.050	<0.050	0.050	4741133
cis-1,2-Dichloroethylene	ug/g	<0.050	<0.050	0.050	4741133
trans-1,2-Dichloroethylene	ug/g	<0.050	<0.050	0.050	4741133
1,2-Dichloropropane	ug/g	<0.050	<0.050	0.050	4741133
cis-1,3-Dichloropropene	ug/g	<0.030	<0.030	0.030	4741133
trans-1,3-Dichloropropene	ug/g	<0.040	<0.040	0.040	4741133
Ethylbenzene	ug/g	<0.020	<0.020	0.020	4741133
Ethylene Dibromide	ug/g	<0.050	<0.050	0.050	4741133
Hexane	ug/g	<0.050	<0.050	0.050	4741133
Methylene Chloride(Dichloromethane)	ug/g	<0.050	<0.050	0.050	4741133
Methyl Ethyl Ketone (2-Butanone)	ug/g	<0.50	<0.50	0.50	4741133
Methyl Isobutyl Ketone	ug/g	<0.50	<0.50	0.50	4741133
Methyl t-butyl ether (MTBE)	ug/g	<0.050	<0.050	0.050	4741133
Styrene	ug/g	<0.050	<0.050	0.050	4741133
1,1,1,2-Tetrachloroethane	ug/g	<0.050	<0.050	0.050	4741133
1,1,2,2-Tetrachloroethane	ug/g	<0.050	<0.050	0.050	4741133
RDL = Reportable Detection Limit					
QC Batch = Quality Control Batch					

**VOLATILE ORGANICS BY GC/MS (SOIL)**

Maxxam ID		DLA166	DLA168		
Sampling Date		2016/11/11 09:45	2016/11/11 12:00		
COC Number		581304-17-01	581304-17-01		
	<b>UNITS</b>	<b>BH16-221-SS6</b>	<b>BH16-222-SS6</b>	<b>RDL</b>	<b>QC Batch</b>
Tetrachloroethylene	ug/g	<0.050	<0.050	0.050	4741133
Toluene	ug/g	<0.020	<0.020	0.020	4741133
1,1,1-Trichloroethane	ug/g	<0.050	<0.050	0.050	4741133
1,1,2-Trichloroethane	ug/g	<0.050	<0.050	0.050	4741133
Trichloroethylene	ug/g	<0.050	<0.050	0.050	4741133
Trichlorofluoromethane (FREON 11)	ug/g	<0.050	<0.050	0.050	4741133
Vinyl Chloride	ug/g	<0.020	<0.020	0.020	4741133
p+m-Xylene	ug/g	<0.020	<0.020	0.020	4741133
o-Xylene	ug/g	<0.020	<0.020	0.020	4741133
Total Xylenes	ug/g	<0.020	<0.020	0.020	4741133
<b>Surrogate Recovery (%)</b>					
4-Bromofluorobenzene	%	94	93		4741133
D10-o-Xylene	%	100	99		4741133
D4-1,2-Dichloroethane	%	96	97		4741133
D8-Toluene	%	98	98		4741133
RDL = Reportable Detection Limit					
QC Batch = Quality Control Batch					

**PETROLEUM HYDROCARBONS (CCME)**

Maxxam ID		DLA165	DLA167	DLA169	DLA170		
Sampling Date		2016/11/11 09:30	2016/11/11 11:45	2016/11/11 13:50	2016/11/11 13:50		
COC Number		581304-17-01	581304-17-01	581304-17-01	581304-17-01		
	<b>UNITS</b>	<b>BH16-221-SS5</b>	<b>BH16-222-SS4</b>	<b>BH16-220-SS4</b>	<b>BH16-250-SS4</b>	<b>RDL</b>	<b>QC Batch</b>

<b>BTEX &amp; F1 Hydrocarbons</b>							
Benzene	ug/g	<0.020	<0.020	<0.020	<0.020	0.020	4745387
Toluene	ug/g	<0.020	<0.020	<0.020	<0.020	0.020	4745387
Ethylbenzene	ug/g	<0.020	<0.020	<0.020	<0.020	0.020	4745387
o-Xylene	ug/g	<0.020	<0.020	<0.020	<0.020	0.020	4745387
p+m-Xylene	ug/g	<0.040	<0.040	<0.040	<0.040	0.040	4745387
Total Xylenes	ug/g	<0.040	<0.040	<0.040	<0.040	0.040	4745387
F1 (C6-C10)	ug/g	<10	<10	<10	<10	10	4745387
F1 (C6-C10) - BTEX	ug/g	<10	<10	<10	<10	10	4745387
<b>F2-F4 Hydrocarbons</b>							
F4G-sg (Grav. Heavy Hydrocarbons)	ug/g			1100	1000	100	4748075
F2 (C10-C16 Hydrocarbons)	ug/g	<10	<10	<10	<10	10	4745685
F3 (C16-C34 Hydrocarbons)	ug/g	<50	<50	88	110	50	4745685
F4 (C34-C50 Hydrocarbons)	ug/g	<50	<50	160	340	50	4745685
Reached Baseline at C50	ug/g	Yes	Yes	No	No		4745685
<b>Surrogate Recovery (%)</b>							
1,4-Difluorobenzene	%	94	96	95	95		4745387
4-Bromofluorobenzene	%	102	103	103	100		4745387
D10-Ethylbenzene	%	87	94	93	93		4745387
D4-1,2-Dichloroethane	%	98	98	98	97		4745387
o-Terphenyl	%	106	105	110	100		4745685
RDL = Reportable Detection Limit							
QC Batch = Quality Control Batch							

Maxxam Job #: B6O6151  
Report Date: 2016/11/15

exp Services Inc  
Client Project #: BRM-00235695-A0  
Site Location: FORMER OAKVILLE HOSPITAL  
Your P.O. #: BRM-ENV  
Sampler Initials: KM

### TEST SUMMARY

**Maxxam ID:** DLA164  
**Sample ID:** BH16-221-SS1  
**Matrix:** Soil

**Collected:** 2016/11/11  
**Shipped:**  
**Received:** 2016/11/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hot Water Extractable Boron	ICP	4746518	2016/11/14	2016/11/14	Jolly John
Hexavalent Chromium in Soil by IC	IC/SPEC	4745674	2016/11/12	2016/11/14	Manoj Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	4746398	2016/11/14	2016/11/14	Daniel Teclu
Moisture	BAL	4745245	N/A	2016/11/11	Prgya Panchal

**Maxxam ID:** DLA164 Dup  
**Sample ID:** BH16-221-SS1  
**Matrix:** Soil

**Collected:** 2016/11/11  
**Shipped:**  
**Received:** 2016/11/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hot Water Extractable Boron	ICP	4746518	2016/11/14	2016/11/14	Jolly John
Strong Acid Leachable Metals by ICPMS	ICP/MS	4746398	2016/11/14	2016/11/14	Daniel Teclu

**Maxxam ID:** DLA165  
**Sample ID:** BH16-221-SS5  
**Matrix:** Soil

**Collected:** 2016/11/11  
**Shipped:**  
**Received:** 2016/11/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4745387	N/A	2016/11/12	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4745685	2016/11/12	2016/11/13	Zhiyue (Frank) Zhu
Moisture	BAL	4745245	N/A	2016/11/11	Prgya Panchal

**Maxxam ID:** DLA166  
**Sample ID:** BH16-221-SS6  
**Matrix:** Soil

**Collected:** 2016/11/11  
**Shipped:**  
**Received:** 2016/11/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	4744528	N/A	2016/11/13	Automated Statchk
Moisture	BAL	4745245	N/A	2016/11/11	Prgya Panchal
Volatile Organic Compounds in Soil	GC/MS	4741133	N/A	2016/11/12	Anna Gabrielyan

**Maxxam ID:** DLA167  
**Sample ID:** BH16-222-SS4  
**Matrix:** Soil

**Collected:** 2016/11/11  
**Shipped:**  
**Received:** 2016/11/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4745387	N/A	2016/11/12	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4745685	2016/11/12	2016/11/13	Zhiyue (Frank) Zhu
Moisture	BAL	4745245	N/A	2016/11/11	Prgya Panchal



### TEST SUMMARY

**Maxxam ID:** DLA168  
**Sample ID:** BH16-222-SS6  
**Matrix:** Soil

**Collected:** 2016/11/11  
**Shipped:**  
**Received:** 2016/11/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	4744528	N/A	2016/11/13	Automated Statchk
Moisture	BAL	4745245	N/A	2016/11/11	Prgya Panchal
Volatile Organic Compounds in Soil	GC/MS	4741133	N/A	2016/11/12	Anna Gabrielyan

**Maxxam ID:** DLA169  
**Sample ID:** BH16-220-SS4  
**Matrix:** Soil

**Collected:** 2016/11/11  
**Shipped:**  
**Received:** 2016/11/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Conductivity	AT	4746541	2016/11/14	2016/11/14	Tahir Anwar
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4745387	N/A	2016/11/12	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4745685	2016/11/12	2016/11/13	Zhiyue (Frank) Zhu
F4G (CCME Hydrocarbons Gravimetric)	BAL	4748075	2016/11/15	2016/11/15	Debra Deslandes
Moisture	BAL	4745245	N/A	2016/11/11	Prgya Panchal
Sodium Adsorption Ratio (SAR)	CALC/MET	4744456	N/A	2016/11/14	Automated Statchk
SAR - ICP Metals	ICP	4746537	2016/11/14	2016/11/14	Jolly John

**Maxxam ID:** DLA170  
**Sample ID:** BH16-250-SS4  
**Matrix:** Soil

**Collected:** 2016/11/11  
**Shipped:**  
**Received:** 2016/11/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4745387	N/A	2016/11/12	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4745685	2016/11/12	2016/11/13	Zhiyue (Frank) Zhu
F4G (CCME Hydrocarbons Gravimetric)	BAL	4748075	2016/11/15	2016/11/15	Debra Deslandes
Moisture	BAL	4745245	N/A	2016/11/11	Prgya Panchal

**Maxxam ID:** DLA171  
**Sample ID:** BH16-220-SS2  
**Matrix:** Soil

**Collected:** 2016/11/11  
**Shipped:**  
**Received:** 2016/11/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hot Water Extractable Boron	ICP	4746518	2016/11/14	2016/11/14	Jolly John
Hexavalent Chromium in Soil by IC	IC/SPEC	4745674	2016/11/12	2016/11/14	Manoj Gera
Strong Acid Leachable Metals by ICPMS	ICP/MS	4746398	2016/11/14	2016/11/14	Daniel Teclu
Moisture	BAL	4745245	N/A	2016/11/11	Prgya Panchal

**Maxxam ID:** DLA171 Dup  
**Sample ID:** BH16-220-SS2  
**Matrix:** Soil

**Collected:** 2016/11/11  
**Shipped:**  
**Received:** 2016/11/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hexavalent Chromium in Soil by IC	IC/SPEC	4745674	2016/11/12	2016/11/14	Manoj Gera

Maxxam Job #: B606151  
Report Date: 2016/11/15

exp Services Inc  
Client Project #: BRM-00235695-A0  
Site Location: FORMER OAKVILLE HOSPITAL  
Your P.O. #: BRM-ENV  
Sampler Initials: KM

**GENERAL COMMENTS**

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

Package 1	10.3°C
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**Results relate only to the items tested.**

**QUALITY ASSURANCE REPORT**

exp Services Inc  
Client Project #: BRM-00235695-A0  
Site Location: FORMER OAKVILLE HOSPITAL  
Your P.O. #: BRM-ENV  
Sampler Initials: KM

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4741133	4-Bromofluorobenzene	2016/11/11	100	60 - 140	101	60 - 140	94	%		
4741133	D10-o-Xylene	2016/11/11	109	60 - 130	89	60 - 130	83	%		
4741133	D4-1,2-Dichloroethane	2016/11/11	94	60 - 140	96	60 - 140	108	%		
4741133	D8-Toluene	2016/11/11	106	60 - 140	105	60 - 140	92	%		
4745387	1,4-Difluorobenzene	2016/11/11	99	60 - 140	99	60 - 140	99	%		
4745387	4-Bromofluorobenzene	2016/11/11	100	60 - 140	97	60 - 140	101	%		
4745387	D10-Ethylbenzene	2016/11/11	91	60 - 140	92	60 - 140	92	%		
4745387	D4-1,2-Dichloroethane	2016/11/11	100	60 - 140	100	60 - 140	101	%		
4745685	o-Terphenyl	2016/11/12	101	60 - 130	104	60 - 130	110	%		
4741133	1,1,1,2-Tetrachloroethane	2016/11/11	98	60 - 140	96	60 - 130	<0.050	ug/g	NC	50
4741133	1,1,1-Trichloroethane	2016/11/11	96	60 - 140	95	60 - 130	<0.050	ug/g	NC	50
4741133	1,1,2,2-Tetrachloroethane	2016/11/11	90	60 - 140	92	60 - 130	<0.050	ug/g	NC	50
4741133	1,1,2-Trichloroethane	2016/11/11	94	60 - 140	93	60 - 130	<0.050	ug/g	NC	50
4741133	1,1-Dichloroethane	2016/11/11	95	60 - 140	95	60 - 130	<0.050	ug/g	NC	50
4741133	1,1-Dichloroethylene	2016/11/11	100	60 - 140	97	60 - 130	<0.050	ug/g	NC	50
4741133	1,2-Dichlorobenzene	2016/11/11	97	60 - 140	94	60 - 130	<0.050	ug/g	NC	50
4741133	1,2-Dichloroethane	2016/11/11	87	60 - 140	89	60 - 130	<0.050	ug/g	NC	50
4741133	1,2-Dichloropropane	2016/11/11	94	60 - 140	95	60 - 130	<0.050	ug/g	NC	50
4741133	1,3-Dichlorobenzene	2016/11/11	99	60 - 140	93	60 - 130	<0.050	ug/g	NC	50
4741133	1,4-Dichlorobenzene	2016/11/11	102	60 - 140	96	60 - 130	<0.050	ug/g	NC	50
4741133	Acetone (2-Propanone)	2016/11/11	87	60 - 140	84	60 - 140	<0.50	ug/g	NC	50
4741133	Benzene	2016/11/11	95	60 - 140	96	60 - 130	<0.020	ug/g	NC	50
4741133	Bromodichloromethane	2016/11/11	93	60 - 140	95	60 - 130	<0.050	ug/g	NC	50
4741133	Bromoform	2016/11/11	89	60 - 140	92	60 - 130	<0.050	ug/g	NC	50
4741133	Bromomethane	2016/11/11	77	60 - 140	75	60 - 140	<0.050	ug/g	NC	50
4741133	Carbon Tetrachloride	2016/11/11	98	60 - 140	98	60 - 130	<0.050	ug/g	NC	50
4741133	Chlorobenzene	2016/11/11	101	60 - 140	98	60 - 130	<0.050	ug/g	NC	50
4741133	Chloroform	2016/11/11	92	60 - 140	93	60 - 130	<0.050	ug/g	NC	50
4741133	cis-1,2-Dichloroethylene	2016/11/11	97	60 - 140	98	60 - 130	<0.050	ug/g	NC	50
4741133	cis-1,3-Dichloropropene	2016/11/11	92	60 - 140	90	60 - 130	<0.030	ug/g	NC	50

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

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4741133	Dibromochloromethane	2016/11/11	94	60 - 140	94	60 - 130	<0.050	ug/g	NC	50
4741133	Dichlorodifluoromethane (FREON 12)	2016/11/11	77	60 - 140	78	60 - 140	<0.050	ug/g	NC	50
4741133	Ethylbenzene	2016/11/11	107	60 - 140	103	60 - 130	<0.020	ug/g	NC	50
4741133	Ethylene Dibromide	2016/11/11	92	60 - 140	91	60 - 130	<0.050	ug/g	NC	50
4741133	Hexane	2016/11/11	114	60 - 140	112	60 - 130	<0.050	ug/g	NC	50
4741133	Methyl Ethyl Ketone (2-Butanone)	2016/11/11	91	60 - 140	91	60 - 140	<0.50	ug/g	NC	50
4741133	Methyl Isobutyl Ketone	2016/11/11	91	60 - 140	95	60 - 130	<0.50	ug/g	NC	50
4741133	Methyl t-butyl ether (MTBE)	2016/11/11	92	60 - 140	92	60 - 130	<0.050	ug/g	NC	50
4741133	Methylene Chloride(Dichloromethane)	2016/11/11	102	60 - 140	103	60 - 130	<0.050	ug/g	NC	50
4741133	o-Xylene	2016/11/11	102	60 - 140	99	60 - 130	<0.020	ug/g	NC	50
4741133	p+m-Xylene	2016/11/11	108	60 - 140	103	60 - 130	<0.020	ug/g	NC	50
4741133	Styrene	2016/11/11	106	60 - 140	104	60 - 130	<0.050	ug/g	NC	50
4741133	Tetrachloroethylene	2016/11/11	100	60 - 140	96	60 - 130	<0.050	ug/g	NC	50
4741133	Toluene	2016/11/11	104	60 - 140	101	60 - 130	<0.020	ug/g	NC	50
4741133	Total Xylenes	2016/11/11					<0.020	ug/g	NC	50
4741133	trans-1,2-Dichloroethylene	2016/11/11	96	60 - 140	95	60 - 130	<0.050	ug/g	NC	50
4741133	trans-1,3-Dichloropropene	2016/11/11	96	60 - 140	88	60 - 130	<0.040	ug/g	NC	50
4741133	Trichloroethylene	2016/11/11	95	60 - 140	94	60 - 130	<0.050	ug/g	NC	50
4741133	Trichlorofluoromethane (FREON 11)	2016/11/11	99	60 - 140	98	60 - 130	<0.050	ug/g	NC	50
4741133	Vinyl Chloride	2016/11/11	94	60 - 140	94	60 - 130	<0.020	ug/g	NC	50
4745245	Moisture	2016/11/11							0.60	20
4745387	Benzene	2016/11/11	89	60 - 140	91	60 - 140	<0.020	ug/g	NC	50
4745387	Ethylbenzene	2016/11/11	99	60 - 140	98	60 - 140	<0.020	ug/g	NC	50
4745387	F1 (C6-C10) - BTEX	2016/11/11					<10	ug/g	NC	30
4745387	F1 (C6-C10)	2016/11/11	82	60 - 140	88	80 - 120	<10	ug/g	NC	30
4745387	o-Xylene	2016/11/11	104	60 - 140	103	60 - 140	<0.020	ug/g	NC	50
4745387	p+m-Xylene	2016/11/11	90	60 - 140	90	60 - 140	<0.040	ug/g	NC	50
4745387	Toluene	2016/11/11	90	60 - 140	90	60 - 140	<0.020	ug/g	NC	50
4745387	Total Xylenes	2016/11/11					<0.040	ug/g	NC	50
4745674	Chromium (VI)	2016/11/14	91	75 - 125	95	80 - 120	<0.2	ug/g	NC	35

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

exp Services Inc  
Client Project #: BRM-00235695-A0  
Site Location: FORMER OAKVILLE HOSPITAL  
Your P.O. #: BRM-ENV  
Sampler Initials: KM

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4745685	F2 (C10-C16 Hydrocarbons)	2016/11/13	103	50 - 130	106	80 - 120	<10	ug/g	NC	30
4745685	F3 (C16-C34 Hydrocarbons)	2016/11/13	96	50 - 130	98	80 - 120	<50	ug/g	NC	30
4745685	F4 (C34-C50 Hydrocarbons)	2016/11/13	98	50 - 130	101	80 - 120	<50	ug/g	NC	30
4746398	Acid Extractable Antimony (Sb)	2016/11/14	91	75 - 125	107	80 - 120	<0.20	ug/g	NC	30
4746398	Acid Extractable Arsenic (As)	2016/11/14	98	75 - 125	102	80 - 120	<1.0	ug/g	NC	30
4746398	Acid Extractable Barium (Ba)	2016/11/14	NC	75 - 125	96	80 - 120	<0.50	ug/g	18	30
4746398	Acid Extractable Beryllium (Be)	2016/11/14	99	75 - 125	98	80 - 120	<0.20	ug/g	NC	30
4746398	Acid Extractable Boron (B)	2016/11/14	95	75 - 125	95	80 - 120	<5.0	ug/g	NC	30
4746398	Acid Extractable Cadmium (Cd)	2016/11/14	96	75 - 125	105	80 - 120	<0.10	ug/g	NC	30
4746398	Acid Extractable Chromium (Cr)	2016/11/14	97	75 - 125	105	80 - 120	<1.0	ug/g	5.3	30
4746398	Acid Extractable Cobalt (Co)	2016/11/14	99	75 - 125	100	80 - 120	<0.10	ug/g	3.1	30
4746398	Acid Extractable Copper (Cu)	2016/11/14	93	75 - 125	104	80 - 120	<0.50	ug/g	0.86	30
4746398	Acid Extractable Lead (Pb)	2016/11/14	99	75 - 125	105	80 - 120	<1.0	ug/g	2.8	30
4746398	Acid Extractable Mercury (Hg)	2016/11/14	95	75 - 125	100	80 - 120	<0.050	ug/g	NC	30
4746398	Acid Extractable Molybdenum (Mo)	2016/11/14	99	75 - 125	100	80 - 120	<0.50	ug/g	NC	30
4746398	Acid Extractable Nickel (Ni)	2016/11/14	102	75 - 125	104	80 - 120	<0.50	ug/g	10	30
4746398	Acid Extractable Selenium (Se)	2016/11/14	98	75 - 125	102	80 - 120	<0.50	ug/g	NC	30
4746398	Acid Extractable Silver (Ag)	2016/11/14	97	75 - 125	104	80 - 120	<0.20	ug/g	NC	30
4746398	Acid Extractable Thallium (Tl)	2016/11/14	101	75 - 125	105	80 - 120	<0.050	ug/g	NC	30
4746398	Acid Extractable Uranium (U)	2016/11/14	89	75 - 125	94	80 - 120	<0.050	ug/g	NC	30
4746398	Acid Extractable Vanadium (V)	2016/11/14	NC	75 - 125	105	80 - 120	<5.0	ug/g	NC	30
4746398	Acid Extractable Zinc (Zn)	2016/11/14	NC	75 - 125	100	80 - 120	<5.0	ug/g	NC	30
4746518	Hot Water Ext. Boron (B)	2016/11/14	98	75 - 125	99	75 - 125	<0.050	ug/g	NC	40
4746537	Soluble Calcium (Ca)	2016/11/14			98	80 - 120	<0.5	mg/L	NC	30
4746537	Soluble Magnesium (Mg)	2016/11/14			99	80 - 120	<0.5	mg/L	NC	30
4746537	Soluble Sodium (Na)	2016/11/14			94	80 - 120	<5	mg/L	0.14	30
4746541	Conductivity	2016/11/14			100	90 - 110	<0.002	mS/cm	0.98	10

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

exp Services Inc  
Client Project #: BRM-00235695-A0  
Site Location: FORMER OAKVILLE HOSPITAL  
Your P.O. #: BRM-ENV  
Sampler Initials: KM

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4748075	F4G-sg (Grav. Heavy Hydrocarbons)	2016/11/15	99	65 - 135	99	65 - 135	<100	ug/g	NC	50

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 spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of 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 (one or both samples < 5x RDL).

**VALIDATION SIGNATURE PAGE**

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

*Cristina Carriere*

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Cristina Carriere, Scientific Services

*Ewa Pranjic*



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

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

Your P.O. #: BRM-ENV  
 Your Project #: BRM-00235695-A0  
 Site Location: FORMER OAKVILLE HOSPITAL  
 Your C.O.C. #: 579482-01-01

**Attention:Netta Benazon**

exp Services Inc  
 Hamilton Branch  
 80 Bancroft St  
 Hamilton, ON  
 L8E 2W5

**Report Date: 2016/10/05**  
 Report #: R4191003  
 Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B6K9155**  
**Received: 2016/09/28, 15:37**

Sample Matrix: Soil  
 # Samples Received: 4

Analyses	Quantity	Date	Date	Laboratory Method	Reference
		Extracted	Analyzed		
Petroleum Hydro. CCME F1 & BTEX in Soil (1)	4	N/A	2016/09/30	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Soil (2)	4	2016/09/30	2016/09/30	CAM SOP-00316	CCME CWS m
F4G (CCME Hydrocarbons Gravimetric)	2	2016/10/05	2016/10/05	CAM SOP-00316	CCME PHC-CWS m
Moisture	4	N/A	2016/09/30	CAM SOP-00445	Carter 2nd ed 51.2 m

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

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

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

**Encryption Key**

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

Sara Singh, B.Sc, Senior Project Manager  
 Email: sarasingh@maxxam.ca  
 Phone# (905)817-5730

=====  
 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.



**RESULTS OF ANALYSES OF SOIL**

Maxxam ID		DDS245	DDS245	DDS246	DDS247	DDS248		
Sampling Date		2016/09/26 09:10	2016/09/26 09:10	2016/09/26 10:30	2016/09/26 10:30	2016/09/26 09:45		
COC Number		579482-01-01	579482-01-01	579482-01-01	579482-01-01	579482-01-01		
	<b>UNITS</b>	<b>BH16-201-5</b>	<b>BH16-201-5 Lab-Dup</b>	<b>BH16-202-5</b>	<b>BH16-2022-5</b>	<b>BH16-203-5</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Inorganics</b>								
Moisture	%	3.6	3.6	14	14	17	1.0	4683207
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate								

**PETROLEUM HYDROCARBONS (CCME)**

Maxxam ID		DDS245	DDS245	DDS246	DDS247	DDS248		
Sampling Date		2016/09/26 09:10	2016/09/26 09:10	2016/09/26 10:30	2016/09/26 10:30	2016/09/26 09:45		
COC Number		579482-01-01	579482-01-01	579482-01-01	579482-01-01	579482-01-01		
	<b>UNITS</b>	<b>BH16-201-5</b>	<b>BH16-201-5 Lab-Dup</b>	<b>BH16-202-5</b>	<b>BH16-202-5</b>	<b>BH16-203-5</b>	<b>RDL</b>	<b>QC Batch</b>

<b>BTEX &amp; F1 Hydrocarbons</b>								
Benzene	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	4683279
Toluene	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	4683279
Ethylbenzene	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	4683279
o-Xylene	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	4683279
p-m-Xylene	ug/g	<0.040	<0.040	<0.040	<0.040	<0.040	0.040	4683279
Total Xylenes	ug/g	<0.040	<0.040	<0.040	<0.040	<0.040	0.040	4683279
F1 (C6-C10)	ug/g	<10	<10	<10	<10	<10	10	4683279
F1 (C6-C10) - BTEX	ug/g	<10	<10	<10	<10	<10	10	4683279

<b>F2-F4 Hydrocarbons</b>								
F4G-sg (Grav. Heavy Hydrocarbons)	ug/g	750		890			100	4689026
F2 (C10-C16 Hydrocarbons)	ug/g	<10		<10	<10	<10	10	4683196
F3 (C16-C34 Hydrocarbons)	ug/g	120		110	<50	<50	50	4683196
F4 (C34-C50 Hydrocarbons)	ug/g	350		260	<50	<50	50	4683196
Reached Baseline at C50	ug/g	No		No	Yes	Yes		4683196

<b>Surrogate Recovery (%)</b>								
1,4-Difluorobenzene	%	103	106	103	102	102		4683279
4-Bromofluorobenzene	%	96	93	97	101	97		4683279
D10-Ethylbenzene	%	103	102	110	102	108		4683279
D4-1,2-Dichloroethane	%	101	104	101	100	100		4683279
o-Terphenyl	%	102		100	97	96		4683196

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

**TEST SUMMARY**

**Maxxam ID:** DDS245  
**Sample ID:** BH16-201-5  
**Matrix:** Soil

**Collected:** 2016/09/26  
**Shipped:**  
**Received:** 2016/09/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4683279	N/A	2016/09/30	Joe Paino
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4683196	2016/09/30	2016/09/30	Biljana Lazovic
F4G (CCME Hydrocarbons Gravimetric)	BAL	4689026	2016/10/05	2016/10/05	Lovelpreet Thind
Moisture	BAL	4683207	N/A	2016/09/30	Shivani Desai

**Maxxam ID:** DDS245 Dup  
**Sample ID:** BH16-201-5  
**Matrix:** Soil

**Collected:** 2016/09/26  
**Shipped:**  
**Received:** 2016/09/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4683279	N/A	2016/09/30	Joe Paino
Moisture	BAL	4683207	N/A	2016/09/30	Shivani Desai

**Maxxam ID:** DDS246  
**Sample ID:** BH16-202-5  
**Matrix:** Soil

**Collected:** 2016/09/26  
**Shipped:**  
**Received:** 2016/09/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4683279	N/A	2016/09/30	Joe Paino
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4683196	2016/09/30	2016/09/30	Biljana Lazovic
F4G (CCME Hydrocarbons Gravimetric)	BAL	4689026	2016/10/05	2016/10/05	Lovelpreet Thind
Moisture	BAL	4683207	N/A	2016/09/30	Shivani Desai

**Maxxam ID:** DDS247  
**Sample ID:** BH16-2022-5  
**Matrix:** Soil

**Collected:** 2016/09/26  
**Shipped:**  
**Received:** 2016/09/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4683279	N/A	2016/09/30	Joe Paino
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4683196	2016/09/30	2016/09/30	Biljana Lazovic
Moisture	BAL	4683207	N/A	2016/09/30	Shivani Desai

**Maxxam ID:** DDS248  
**Sample ID:** BH16-203-5  
**Matrix:** Soil

**Collected:** 2016/09/26  
**Shipped:**  
**Received:** 2016/09/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	4683279	N/A	2016/09/30	Joe Paino
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	4683196	2016/09/30	2016/09/30	Biljana Lazovic
Moisture	BAL	4683207	N/A	2016/09/30	Shivani Desai

Maxxam Job #: B6K9155  
Report Date: 2016/10/05

exp Services Inc  
Client Project #: BRM-00235695-A0  
Site Location: FORMER OAKVILLE HOSPITAL  
Your P.O. #: BRM-ENV  
Sampler Initials: KM

**GENERAL COMMENTS**

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

Package 1	7.7°C
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**Results relate only to the items tested.**

**QUALITY ASSURANCE REPORT**

exp Services Inc  
Client Project #: BRM-00235695-A0  
Site Location: FORMER OAKVILLE HOSPITAL  
Your P.O. #: BRM-ENV  
Sampler Initials: KM

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4683196	o-Terphenyl	2016/09/30	97	60 - 130	94	60 - 130	105	%		
4683279	1,4-Difluorobenzene	2016/09/30	103	60 - 140	103	60 - 140	105	%		
4683279	4-Bromofluorobenzene	2016/09/30	102	60 - 140	103	60 - 140	99	%		
4683279	D10-Ethylbenzene	2016/09/30	102	60 - 140	107	60 - 140	104	%		
4683279	D4-1,2-Dichloroethane	2016/09/30	100	60 - 140	99	60 - 140	102	%		
4683196	F2 (C10-C16 Hydrocarbons)	2016/09/30	90	50 - 130	87	80 - 120	<10	ug/g	NC	30
4683196	F3 (C16-C34 Hydrocarbons)	2016/09/30	95	50 - 130	91	80 - 120	<50	ug/g	NC	30
4683196	F4 (C34-C50 Hydrocarbons)	2016/09/30	87	50 - 130	84	80 - 120	<50	ug/g	NC	30
4683207	Moisture	2016/09/30							NC	20
4683279	Benzene	2016/09/30	98	60 - 140	109	60 - 140	<0.020	ug/g	NC	50
4683279	Ethylbenzene	2016/09/30	113	60 - 140	122	60 - 140	<0.020	ug/g	NC	50
4683279	F1 (C6-C10) - BTEX	2016/09/30					<10	ug/g	NC	30
4683279	F1 (C6-C10)	2016/09/30	81	60 - 140	88	80 - 120	<10	ug/g	NC	30
4683279	o-Xylene	2016/09/30	118	60 - 140	127	60 - 140	<0.020	ug/g	NC	50
4683279	p+m-Xylene	2016/09/30	104	60 - 140	112	60 - 140	<0.040	ug/g	NC	50
4683279	Toluene	2016/09/30	97	60 - 140	106	60 - 140	<0.020	ug/g	NC	50
4683279	Total Xylenes	2016/09/30					<0.040	ug/g	NC	50
4689026	F4G-sg (Grav. Heavy Hydrocarbons)	2016/10/05	105	65 - 135	102	65 - 135	<100	ug/g	NC	50

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 (one or both samples < 5x RDL).

**VALIDATION SIGNATURE PAGE**

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



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Brad Newman, Scientific Specialist



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Cristina Carriere, Scientific Services

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

Your P.O. #: BRM-ENV  
 Your Project #: BRM-00235695-A0  
 Site Location: FORMER OAKVILLE HOSPITAL  
 Your C.O.C. #: 579482-04-01, 579482-02-01

**Attention:Netta Benazon**

exp Services Inc  
 Hamilton Branch  
 80 Bancroft St  
 Hamilton, ON  
 L8E 2W5

**Report Date: 2016/10/07**  
 Report #: R4194316  
 Version: 2 - Revision

**CERTIFICATE OF ANALYSIS – REVISED REPORT**

**MAXXAM JOB #: B6L0200**  
**Received: 2016/09/29, 16:22**

Sample Matrix: Soil  
 # Samples Received: 13

Analyses	Quantity	Date		Laboratory Method	Reference
		Extracted	Analyzed		
Methylnaphthalene Sum	12	N/A	2016/10/05	CAM SOP-00301	EPA 8270D m
Methylnaphthalene Sum	1	N/A	2016/10/07	CAM SOP-00301	EPA 8270D m
Moisture	12	N/A	2016/10/04	CAM SOP-00445	Carter 2nd ed 51.2 m
Moisture	1	N/A	2016/10/06	CAM SOP-00445	Carter 2nd ed 51.2 m
PAH Compounds in Soil by GC/MS (SIM)	11	2016/10/03	2016/10/03	CAM SOP-00318	EPA 8270D m
PAH Compounds in Soil by GC/MS (SIM)	1	2016/10/04	2016/10/05	CAM SOP-00318	EPA 8270D m
PAH Compounds in Soil by GC/MS (SIM)	1	2016/10/06	2016/10/07	CAM SOP-00318	EPA 8270D m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.  
 \* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

**Encryption Key**

Please direct all questions regarding this Certificate of Analysis to your Project Manager.  
 Sara Singh, B.Sc, Senior Project Manager  
 Email: sarasingh@maxxam.ca  
 Phone# (905)817-5730

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

**RESULTS OF ANALYSES OF SOIL**

Maxxam ID		DDX054	DDX055	DDX056	DDX058	DDX059	DDX061		
Sampling Date		2016/09/18 11:00	2016/09/18 11:00	2016/09/18 11:20	2016/09/18 09:30	2016/09/18 10:10	2016/09/18 10:30		
COC Number		579482-04-01	579482-04-01	579482-04-01	579482-04-01	579482-04-01	579482-04-01		
	<b>UNITS</b>	<b>BH16-204-S2</b>	<b>BH16-2044-S2</b>	<b>BH16-204-S5</b>	<b>BH16-205-S1</b>	<b>BH16-205-S3</b>	<b>BH16-206-S2</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Inorganics</b>									
Moisture	%	8.3	9.2	12	5.0	11	9.3	1.0	4687381
RDL = Reportable Detection Limit QC Batch = Quality Control Batch									

Maxxam ID		DDX062		DDX064		DDX067	DDX067	DDX068		
Sampling Date		2016/09/18 10:35		2016/09/28 11:45		2016/09/28 12:35	2016/09/28 12:35	2016/09/28 12:45		
COC Number		579482-04-01		579482-02-01		579482-02-01	579482-02-01	579482-02-01		
	<b>UNITS</b>	<b>BH16-206-S4</b>	<b>QC Batch</b>	<b>BH16-208-S1</b>	<b>QC Batch</b>	<b>BH16-207-S2</b>	<b>BH16-207-S2 Lab-Dup</b>	<b>BH16-207-S5</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Inorganics</b>										
Moisture	%	11	4687381	4.0	4687575	19	19	14	1.0	4687381
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate										

Maxxam ID		DDX069	DDX070		DED170		
Sampling Date		2016/09/28 08:45	2016/09/28 08:50		2016/09/28 09:25		
COC Number		579482-02-01	579482-02-01		579482-02-01		
	<b>UNITS</b>	<b>BH16-209-S1</b>	<b>BH16-209-S3</b>	<b>QC Batch</b>	<b>BH208 S4</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Inorganics</b>							
Moisture	%	6.4	9.3	4687381	12	1.0	4692002
RDL = Reportable Detection Limit QC Batch = Quality Control Batch							



**SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)**

Maxxam ID		DDX054		DDX055		DDX056		DDX058		
Sampling Date		2016/09/18 11:00		2016/09/18 11:00		2016/09/18 11:20		2016/09/18 09:30		
COC Number		579482-04-01		579482-04-01		579482-04-01		579482-04-01		
	<b>UNITS</b>	<b>BH16-204-S2</b>	<b>RDL</b>	<b>BH16-2044-S2</b>	<b>RDL</b>	<b>BH16-204-S5</b>	<b>RDL</b>	<b>BH16-205-S1</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Calculated Parameters</b>										
Methylnaphthalene, 2-(1-)	ug/g	<0.0071	0.0071	0.12	0.035	<0.0071	0.0071	<0.71	0.71	4683350
<b>Polyaromatic Hydrocarbons</b>										
Acenaphthene	ug/g	0.41	0.0050	0.31	0.025	<0.0050	0.0050	<0.50	0.50	4685857
Acenaphthylene	ug/g	0.0051	0.0050	0.030	0.025	<0.0050	0.0050	<0.50	0.50	4685857
Anthracene	ug/g	0.54	0.0050	0.59	0.025	<0.0050	0.0050	<0.50	0.50	4685857
Benzo(a)anthracene	ug/g	1.8	0.0050	2.0	0.025	<0.0050	0.0050	<0.50	0.50	4685857
Benzo(a)pyrene	ug/g	1.4	0.0050	1.7	0.025	<0.0050	0.0050	<0.50	0.50	4685857
Benzo(b,j)fluoranthene	ug/g	2.0	0.0050	2.3	0.025	<0.0050	0.0050	<0.50	0.50	4685857
Benzo(g,h,i)perylene	ug/g	0.75	0.0050	0.92	0.025	<0.0050	0.0050	<0.50	0.50	4685857
Benzo(k)fluoranthene	ug/g	0.65	0.0050	0.90	0.025	<0.0050	0.0050	<0.50	0.50	4685857
Chrysene	ug/g	1.6	0.0050	1.8	0.025	<0.0050	0.0050	<0.50	0.50	4685857
Dibenz(a,h)anthracene	ug/g	0.20	0.0050	0.23	0.025	<0.0050	0.0050	<0.50	0.50	4685857
Fluoranthene	ug/g	4.7	0.0050	4.8	0.025	<0.0050	0.0050	<0.50	0.50	4685857
Fluorene	ug/g	0.39	0.0050	0.37	0.025	<0.0050	0.0050	<0.50	0.50	4685857
Indeno(1,2,3-cd)pyrene	ug/g	0.95	0.0050	1.1	0.025	<0.0050	0.0050	<0.50	0.50	4685857
1-Methylnaphthalene	ug/g	<0.0050	0.0050	0.046	0.025	<0.0050	0.0050	<0.50	0.50	4685857
2-Methylnaphthalene	ug/g	<0.0050	0.0050	0.074	0.025	<0.0050	0.0050	<0.50	0.50	4685857
Naphthalene	ug/g	<0.0050	0.0050	0.089	0.025	<0.0050	0.0050	<0.50	0.50	4685857
Phenanthrene	ug/g	3.7	0.0050	3.2	0.025	<0.0050	0.0050	<0.50	0.50	4685857
Pyrene	ug/g	3.1	0.0050	3.3	0.025	<0.0050	0.0050	<0.50	0.50	4685857
<b>Surrogate Recovery (%)</b>										
D10-Anthracene	%	87		99		98		115		4685857
D14-Terphenyl (FS)	%	80		82		83		72		4685857
D8-Acenaphthylene	%	87		86		90		96		4685857
RDL = Reportable Detection Limit										
QC Batch = Quality Control Batch										

**SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)**

Maxxam ID		DDX059		DDX061		DDX062		DDX064		
Sampling Date		2016/09/18 10:10		2016/09/18 10:30		2016/09/18 10:35		2016/09/28 11:45		
COC Number		579482-04-01		579482-04-01		579482-04-01		579482-02-01		
	<b>UNITS</b>	<b>BH16-205-S3</b>	<b>RDL</b>	<b>BH16-206-S2</b>	<b>RDL</b>	<b>BH16-206-S4</b>	<b>QC Batch</b>	<b>BH16-208-S1</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Calculated Parameters</b>										
Methylnaphthalene, 2-(1-)	ug/g	0.25	0.071	0.18	0.035	<0.0071	4683350	0.014	0.0071	4686205
<b>Polyaromatic Hydrocarbons</b>										
Acenaphthene	ug/g	<0.050	0.050	0.50	0.025	<0.0050	4685857	0.039	0.0050	4688768
Acenaphthylene	ug/g	0.075	0.050	0.055	0.025	<0.0050	4685857	0.013	0.0050	4688768
Anthracene	ug/g	<0.050	0.050	1.7	0.025	<0.0050	4685857	0.11	0.0050	4688768
Benzo(a)anthracene	ug/g	<0.050	0.050	5.1	0.025	<0.0050	4685857	0.50	0.0050	4688768
Benzo(a)pyrene	ug/g	<0.050	0.050	4.1	0.025	<0.0050	4685857	0.35	0.0050	4688768
Benzo(b,j)fluoranthene	ug/g	<0.050	0.050	4.8	0.025	<0.0050	4685857	0.41	0.0050	4688768
Benzo(g,h,i)perylene	ug/g	<0.050	0.050	2.0	0.025	<0.0050	4685857	0.21	0.0050	4688768
Benzo(k)fluoranthene	ug/g	<0.050	0.050	1.6	0.025	<0.0050	4685857	0.14	0.0050	4688768
Chrysene	ug/g	<0.050	0.050	4.1	0.025	<0.0050	4685857	0.33	0.0050	4688768
Dibenz(a,h)anthracene	ug/g	<0.050	0.050	0.54	0.025	<0.0050	4685857	0.047	0.0050	4688768
Fluoranthene	ug/g	<0.050	0.050	11	0.025	<0.0050	4685857	1.0	0.0050	4688768
Fluorene	ug/g	0.10	0.050	0.45	0.025	<0.0050	4685857	0.029	0.0050	4688768
Indeno(1,2,3-cd)pyrene	ug/g	<0.050	0.050	2.4	0.025	<0.0050	4685857	0.26	0.0050	4688768
1-Methylnaphthalene	ug/g	0.082	0.050	0.080	0.025	<0.0050	4685857	0.0065	0.0050	4688768
2-Methylnaphthalene	ug/g	0.17	0.050	0.10	0.025	<0.0050	4685857	0.0079	0.0050	4688768
Naphthalene	ug/g	0.17	0.050	0.14	0.025	<0.0050	4685857	0.018	0.0050	4688768
Phenanthrene	ug/g	<0.050	0.050	5.4	0.025	<0.0050	4685857	0.37	0.0050	4688768
Pyrene	ug/g	<0.050	0.050	8.0	0.025	<0.0050	4685857	0.81	0.0050	4688768
<b>Surrogate Recovery (%)</b>										
D10-Anthracene	%	79		100		97	4685857	69		4688768
D14-Terphenyl (FS)	%	81		89		84	4685857	67		4688768
D8-Acenaphthylene	%	89		91		93	4685857	73		4688768
RDL = Reportable Detection Limit										
QC Batch = Quality Control Batch										

**SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)**

Maxxam ID		DDX067	DDX068		DDX069		DDX070		
Sampling Date		2016/09/28 12:35	2016/09/28 12:45		2016/09/28 08:45		2016/09/28 08:50		
COC Number		579482-02-01	579482-02-01		579482-02-01		579482-02-01		
	<b>UNITS</b>	<b>BH16-207-S2</b>	<b>BH16-207-S5</b>	<b>RDL</b>	<b>BH16-209-S1</b>	<b>RDL</b>	<b>BH16-209-S3</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Calculated Parameters</b>									
Methylnaphthalene, 2-(1-)	ug/g	<0.0071	<0.0071	0.0071	<0.71	0.71	<0.0071	0.0071	4683350
<b>Polyaromatic Hydrocarbons</b>									
Acenaphthene	ug/g	<0.0050	<0.0050	0.0050	<0.50	0.50	<0.0050	0.0050	4685857
Acenaphthylene	ug/g	<0.0050	<0.0050	0.0050	<0.50	0.50	<0.0050	0.0050	4685857
Anthracene	ug/g	<0.0050	<0.0050	0.0050	<0.50	0.50	<0.0050	0.0050	4685857
Benzo(a)anthracene	ug/g	<0.0050	<0.0050	0.0050	<0.50	0.50	<0.0050	0.0050	4685857
Benzo(a)pyrene	ug/g	<0.0050	<0.0050	0.0050	0.53	0.50	<0.0050	0.0050	4685857
Benzo(b/j)fluoranthene	ug/g	<0.0050	<0.0050	0.0050	0.66	0.50	<0.0050	0.0050	4685857
Benzo(g,h,i)perylene	ug/g	<0.0050	<0.0050	0.0050	<0.50	0.50	<0.0050	0.0050	4685857
Benzo(k)fluoranthene	ug/g	<0.0050	<0.0050	0.0050	<0.50	0.50	<0.0050	0.0050	4685857
Chrysene	ug/g	<0.0050	<0.0050	0.0050	0.50	0.50	<0.0050	0.0050	4685857
Dibenz(a,h)anthracene	ug/g	<0.0050	<0.0050	0.0050	<0.50	0.50	<0.0050	0.0050	4685857
Fluoranthene	ug/g	<0.0050	<0.0050	0.0050	1.1	0.50	<0.0050	0.0050	4685857
Fluorene	ug/g	<0.0050	<0.0050	0.0050	<0.50	0.50	<0.0050	0.0050	4685857
Indeno(1,2,3-cd)pyrene	ug/g	<0.0050	<0.0050	0.0050	<0.50	0.50	<0.0050	0.0050	4685857
1-Methylnaphthalene	ug/g	<0.0050	<0.0050	0.0050	<0.50	0.50	<0.0050	0.0050	4685857
2-Methylnaphthalene	ug/g	<0.0050	<0.0050	0.0050	<0.50	0.50	<0.0050	0.0050	4685857
Naphthalene	ug/g	<0.0050	<0.0050	0.0050	<0.50	0.50	<0.0050	0.0050	4685857
Phenanthrene	ug/g	<0.0050	<0.0050	0.0050	0.55	0.50	<0.0050	0.0050	4685857
Pyrene	ug/g	<0.0050	<0.0050	0.0050	0.90	0.50	<0.0050	0.0050	4685857
<b>Surrogate Recovery (%)</b>									
D10-Anthracene	%	99	100		115		100		4685857
D14-Terphenyl (FS)	%	85	85		88		83		4685857
D8-Acenaphthylene	%	92	92		111		90		4685857
RDL = Reportable Detection Limit QC Batch = Quality Control Batch									

**SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)**

Maxxam ID		DED170	DED170		
Sampling Date		2016/09/28 09:25	2016/09/28 09:25		
COC Number		579482-02-01	579482-02-01		
	<b>UNITS</b>	<b>BH208 S4</b>	<b>BH208 S4 Lab-Dup</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Calculated Parameters</b>					
Methylnaphthalene, 2-(1-)	ug/g	<0.0071		0.0071	4691177
<b>Polyaromatic Hydrocarbons</b>					
Acenaphthene	ug/g	<0.0050	<0.0050	0.0050	4692492
Acenaphthylene	ug/g	<0.0050	<0.0050	0.0050	4692492
Anthracene	ug/g	<0.0050	<0.0050	0.0050	4692492
Benzo(a)anthracene	ug/g	<0.0050	<0.0050	0.0050	4692492
Benzo(a)pyrene	ug/g	<0.0050	<0.0050	0.0050	4692492
Benzo(b/j)fluoranthene	ug/g	<0.0050	<0.0050	0.0050	4692492
Benzo(g,h,i)perylene	ug/g	<0.0050	<0.0050	0.0050	4692492
Benzo(k)fluoranthene	ug/g	<0.0050	<0.0050	0.0050	4692492
Chrysene	ug/g	<0.0050	<0.0050	0.0050	4692492
Dibenz(a,h)anthracene	ug/g	<0.0050	<0.0050	0.0050	4692492
Fluoranthene	ug/g	<0.0050	<0.0050	0.0050	4692492
Fluorene	ug/g	<0.0050	<0.0050	0.0050	4692492
Indeno(1,2,3-cd)pyrene	ug/g	<0.0050	<0.0050	0.0050	4692492
1-Methylnaphthalene	ug/g	<0.0050	<0.0050	0.0050	4692492
2-Methylnaphthalene	ug/g	<0.0050	<0.0050	0.0050	4692492
Naphthalene	ug/g	<0.0050	<0.0050	0.0050	4692492
Phenanthrene	ug/g	<0.0050	<0.0050	0.0050	4692492
Pyrene	ug/g	<0.0050	<0.0050	0.0050	4692492
<b>Surrogate Recovery (%)</b>					
D10-Anthracene	%	74	70		4692492
D14-Terphenyl (FS)	%	74	71		4692492
D8-Acenaphthylene	%	68	64		4692492
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate					

### TEST SUMMARY

**Maxxam ID:** DDX054  
**Sample ID:** BH16-204-S2  
**Matrix:** Soil

**Collected:** 2016/09/18  
**Shipped:**  
**Received:** 2016/09/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4683350	N/A	2016/10/05	Automated Statchk
Moisture	BAL	4687381	N/A	2016/10/04	Min Yang
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4685857	2016/10/03	2016/10/03	Lingyun Feng

**Maxxam ID:** DDX055  
**Sample ID:** BH16-2044-S2  
**Matrix:** Soil

**Collected:** 2016/09/18  
**Shipped:**  
**Received:** 2016/09/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4683350	N/A	2016/10/05	Automated Statchk
Moisture	BAL	4687381	N/A	2016/10/04	Min Yang
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4685857	2016/10/03	2016/10/03	Lingyun Feng

**Maxxam ID:** DDX056  
**Sample ID:** BH16-204-S5  
**Matrix:** Soil

**Collected:** 2016/09/18  
**Shipped:**  
**Received:** 2016/09/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4683350	N/A	2016/10/05	Automated Statchk
Moisture	BAL	4687381	N/A	2016/10/04	Min Yang
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4685857	2016/10/03	2016/10/03	Lingyun Feng

**Maxxam ID:** DDX058  
**Sample ID:** BH16-205-S1  
**Matrix:** Soil

**Collected:** 2016/09/18  
**Shipped:**  
**Received:** 2016/09/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4683350	N/A	2016/10/05	Automated Statchk
Moisture	BAL	4687381	N/A	2016/10/04	Min Yang
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4685857	2016/10/03	2016/10/03	Lingyun Feng

**Maxxam ID:** DDX059  
**Sample ID:** BH16-205-S3  
**Matrix:** Soil

**Collected:** 2016/09/18  
**Shipped:**  
**Received:** 2016/09/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4683350	N/A	2016/10/05	Automated Statchk
Moisture	BAL	4687381	N/A	2016/10/04	Min Yang
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4685857	2016/10/03	2016/10/03	Lingyun Feng

**TEST SUMMARY**

**Maxxam ID:** DDX061  
**Sample ID:** BH16-206-S2  
**Matrix:** Soil

**Collected:** 2016/09/18  
**Shipped:**  
**Received:** 2016/09/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4683350	N/A	2016/10/05	Automated Statchk
Moisture	BAL	4687381	N/A	2016/10/04	Min Yang
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4685857	2016/10/03	2016/10/03	Lingyun Feng

**Maxxam ID:** DDX062  
**Sample ID:** BH16-206-S4  
**Matrix:** Soil

**Collected:** 2016/09/18  
**Shipped:**  
**Received:** 2016/09/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4683350	N/A	2016/10/05	Automated Statchk
Moisture	BAL	4687381	N/A	2016/10/04	Min Yang
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4685857	2016/10/03	2016/10/03	Lingyun Feng

**Maxxam ID:** DDX064  
**Sample ID:** BH16-208-S1  
**Matrix:** Soil

**Collected:** 2016/09/28  
**Shipped:**  
**Received:** 2016/09/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4686205	N/A	2016/10/05	Automated Statchk
Moisture	BAL	4687575	N/A	2016/10/04	Prgya Panchal
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4688768	2016/10/04	2016/10/05	Mitesh Raj

**Maxxam ID:** DDX067  
**Sample ID:** BH16-207-S2  
**Matrix:** Soil

**Collected:** 2016/09/28  
**Shipped:**  
**Received:** 2016/09/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4683350	N/A	2016/10/05	Automated Statchk
Moisture	BAL	4687381	N/A	2016/10/04	Min Yang
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4685857	2016/10/03	2016/10/03	Lingyun Feng

**Maxxam ID:** DDX067 Dup  
**Sample ID:** BH16-207-S2  
**Matrix:** Soil

**Collected:** 2016/09/28  
**Shipped:**  
**Received:** 2016/09/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4687381	N/A	2016/10/04	Min Yang

**Maxxam ID:** DDX068  
**Sample ID:** BH16-207-S5  
**Matrix:** Soil

**Collected:** 2016/09/28  
**Shipped:**  
**Received:** 2016/09/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4683350	N/A	2016/10/05	Automated Statchk

### TEST SUMMARY

**Maxxam ID:** DDX068  
**Sample ID:** BH16-207-S5  
**Matrix:** Soil

**Collected:** 2016/09/28  
**Shipped:**  
**Received:** 2016/09/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4687381	N/A	2016/10/04	Min Yang
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4685857	2016/10/03	2016/10/03	Lingyun Feng

**Maxxam ID:** DDX069  
**Sample ID:** BH16-209-S1  
**Matrix:** Soil

**Collected:** 2016/09/28  
**Shipped:**  
**Received:** 2016/09/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4683350	N/A	2016/10/05	Automated Statchk
Moisture	BAL	4687381	N/A	2016/10/04	Min Yang
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4685857	2016/10/03	2016/10/03	Lingyun Feng

**Maxxam ID:** DDX070  
**Sample ID:** BH16-209-S3  
**Matrix:** Soil

**Collected:** 2016/09/28  
**Shipped:**  
**Received:** 2016/09/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4683350	N/A	2016/10/05	Automated Statchk
Moisture	BAL	4687381	N/A	2016/10/04	Min Yang
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4685857	2016/10/03	2016/10/03	Lingyun Feng

**Maxxam ID:** DED170  
**Sample ID:** BH208 S4  
**Matrix:** Soil

**Collected:** 2016/09/28  
**Shipped:**  
**Received:** 2016/09/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4691177	N/A	2016/10/07	Automated Statchk
Moisture	BAL	4692002	N/A	2016/10/06	Nimarta Singh
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4692492	2016/10/06	2016/10/07	Lingyun Feng

**Maxxam ID:** DED170 Dup  
**Sample ID:** BH208 S4  
**Matrix:** Soil

**Collected:** 2016/09/28  
**Shipped:**  
**Received:** 2016/09/29

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	4692492	2016/10/06	2016/10/07	Lingyun Feng

### GENERAL COMMENTS

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

Package 1	5.0°C
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PAH analysis: Due to the sample matrix, some of the samples required dilution. Detection limits were adjusted accordingly.

Revised Report [2016/10/06] PAH analysis has been added to sample BH208-S4

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



**QUALITY ASSURANCE REPORT**

exp Services Inc  
Client Project #: BRM-00235695-A0  
Site Location: FORMER OAKVILLE HOSPITAL  
Your P.O. #: BRM-ENV  
Sampler Initials: KM

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4685857	D10-Anthracene	2016/10/03	96	50 - 130	92	50 - 130	98	%		
4685857	D14-Terphenyl (FS)	2016/10/03	86	50 - 130	84	50 - 130	87	%		
4685857	D8-Acenaphthylene	2016/10/03	92	50 - 130	88	50 - 130	90	%		
4688768	D10-Anthracene	2016/10/05	81	50 - 130	81	50 - 130	87	%		
4688768	D14-Terphenyl (FS)	2016/10/05	81	50 - 130	85	50 - 130	89	%		
4688768	D8-Acenaphthylene	2016/10/05	86	50 - 130	84	50 - 130	88	%		
4692492	D10-Anthracene	2016/10/07	91	50 - 130	84	50 - 130	79	%		
4692492	D14-Terphenyl (FS)	2016/10/07	91	50 - 130	83	50 - 130	80	%		
4692492	D8-Acenaphthylene	2016/10/07	86	50 - 130	79	50 - 130	74	%		
4685857	1-Methylnaphthalene	2016/10/03	77	50 - 130	83	50 - 130	<0.0050	ug/g	NC	40
4685857	2-Methylnaphthalene	2016/10/03	78	50 - 130	85	50 - 130	<0.0050	ug/g	NC	40
4685857	Acenaphthene	2016/10/03	84	50 - 130	89	50 - 130	<0.0050	ug/g	NC	40
4685857	Acenaphthylene	2016/10/03	85	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40
4685857	Anthracene	2016/10/03	84	50 - 130	87	50 - 130	<0.0050	ug/g	NC	40
4685857	Benzo(a)anthracene	2016/10/03	92	50 - 130	94	50 - 130	<0.0050	ug/g	NC	40
4685857	Benzo(a)pyrene	2016/10/03	93	50 - 130	96	50 - 130	<0.0050	ug/g	NC	40
4685857	Benzo(b,j)fluoranthene	2016/10/03	88	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
4685857	Benzo(g,h,i)perylene	2016/10/03	82	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40
4685857	Benzo(k)fluoranthene	2016/10/03	91	50 - 130	94	50 - 130	<0.0050	ug/g	NC	40
4685857	Chrysene	2016/10/03	94	50 - 130	98	50 - 130	<0.0050	ug/g	NC	40
4685857	Dibenz(a,h)anthracene	2016/10/03	81	50 - 130	85	50 - 130	<0.0050	ug/g	NC	40
4685857	Fluoranthene	2016/10/03	87	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
4685857	Fluorene	2016/10/03	87	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
4685857	Indeno(1,2,3-cd)pyrene	2016/10/03	85	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
4685857	Naphthalene	2016/10/03	67	50 - 130	76	50 - 130	<0.0050	ug/g	NC	40
4685857	Phenanthrene	2016/10/03	86	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40
4685857	Pyrene	2016/10/03	90	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
4687381	Moisture	2016/10/04							0.53	20
4687575	Moisture	2016/10/04							1.9	20
4688768	1-Methylnaphthalene	2016/10/05	56	50 - 130	72	50 - 130	<0.0050	ug/g	NC	40

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

exp Services Inc  
Client Project #: BRM-00235695-A0  
Site Location: FORMER OAKVILLE HOSPITAL  
Your P.O. #: BRM-ENV  
Sampler Initials: KM

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4688768	2-Methylnaphthalene	2016/10/05	56	50 - 130	74	50 - 130	<0.0050	ug/g	NC	40
4688768	Acenaphthene	2016/10/05	59	50 - 130	74	50 - 130	<0.0050	ug/g	16	40
4688768	Acenaphthylene	2016/10/05	90	50 - 130	74	50 - 130	<0.0050	ug/g	27	40
4688768	Anthracene	2016/10/05	69	50 - 130	73	50 - 130	<0.0050	ug/g	33	40
4688768	Benzo(a)anthracene	2016/10/05	NC	50 - 130	82	50 - 130	<0.0050	ug/g	22	40
4688768	Benzo(a)pyrene	2016/10/05	107	50 - 130	76	50 - 130	<0.0050	ug/g	37	40
4688768	Benzo(b/j)fluoranthene	2016/10/05	69	50 - 130	79	50 - 130	<0.0050	ug/g	36	40
4688768	Benzo(g,h,i)perylene	2016/10/05	79	50 - 130	78	50 - 130	<0.0050	ug/g	38	40
4688768	Benzo(k)fluoranthene	2016/10/05	81	50 - 130	79	50 - 130	<0.0050	ug/g	36	40
4688768	Chrysene	2016/10/05	104	50 - 130	83	50 - 130	<0.0050	ug/g	23	40
4688768	Dibenz(a,h)anthracene	2016/10/05	66	50 - 130	79	50 - 130	<0.0050	ug/g	35	40
4688768	Fluoranthene	2016/10/05	NC	50 - 130	81	50 - 130	<0.0050	ug/g	19	40
4688768	Fluorene	2016/10/05	60	50 - 130	81	50 - 130	<0.0050	ug/g	23	40
4688768	Indeno(1,2,3-cd)pyrene	2016/10/05	97	50 - 130	82	50 - 130	<0.0050	ug/g	35	40
4688768	Naphthalene	2016/10/05	51	50 - 130	68	50 - 130	<0.0050	ug/g	4.5	40
4688768	Phenanthrene	2016/10/05	NC	50 - 130	75	50 - 130	<0.0050	ug/g	27	40
4688768	Pyrene	2016/10/05	NC	50 - 130	83	50 - 130	<0.0050	ug/g	20	40
4692002	Moisture	2016/10/06							3.7	20
4692492	1-Methylnaphthalene	2016/10/07	78	50 - 130	77	50 - 130	<0.0050	ug/g	NC	40
4692492	2-Methylnaphthalene	2016/10/07	76	50 - 130	76	50 - 130	<0.0050	ug/g	NC	40
4692492	Acenaphthene	2016/10/07	88	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40
4692492	Acenaphthylene	2016/10/07	83	50 - 130	81	50 - 130	<0.0050	ug/g	NC	40
4692492	Anthracene	2016/10/07	82	50 - 130	79	50 - 130	<0.0050	ug/g	NC	40
4692492	Benzo(a)anthracene	2016/10/07	91	50 - 130	91	50 - 130	<0.0050	ug/g	NC	40
4692492	Benzo(a)pyrene	2016/10/07	85	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40
4692492	Benzo(b/j)fluoranthene	2016/10/07	112	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
4692492	Benzo(g,h,i)perylene	2016/10/07	108	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
4692492	Benzo(k)fluoranthene	2016/10/07	121	50 - 130	99	50 - 130	<0.0050	ug/g	NC	40
4692492	Chrysene	2016/10/07	99	50 - 130	95	50 - 130	<0.0050	ug/g	NC	40
4692492	Dibenz(a,h)anthracene	2016/10/07	106	50 - 130	85	50 - 130	<0.0050	ug/g	NC	40

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

exp Services Inc  
Client Project #: BRM-00235695-A0  
Site Location: FORMER OAKVILLE HOSPITAL  
Your P.O. #: BRM-ENV  
Sampler Initials: KM

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4692492	Fluoranthene	2016/10/07	92	50 - 130	89	50 - 130	<0.0050	ug/g	NC	40
4692492	Fluorene	2016/10/07	87	50 - 130	84	50 - 130	<0.0050	ug/g	NC	40
4692492	Indeno(1,2,3-cd)pyrene	2016/10/07	107	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
4692492	Naphthalene	2016/10/07	73	50 - 130	73	50 - 130	<0.0050	ug/g	NC	40
4692492	Phenanthrene	2016/10/07	88	50 - 130	85	50 - 130	<0.0050	ug/g	NC	40
4692492	Pyrene	2016/10/07	95	50 - 130	92	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.

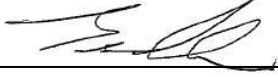
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of 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 (one or both samples < 5x RDL).

**VALIDATION SIGNATURE PAGE**

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



Brad Newman, Scientific Specialist



Cristina Carriere, Scientific Services

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

Your P.O. #: HAM-ENV  
 Your Project #: HAM-801053-A  
 Site Location: OAKVILLE HOSPITAL  
 Your C.O.C. #: n/a

**Attention:Netta Benazon**

exp Services Inc  
 Hamilton Branch  
 80 Bancroft St  
 Hamilton, ON  
 L8E 2W5

**Report Date: 2016/09/23**  
 Report #: R4178347  
 Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B6K2899**

**Received: 2016/09/21, 15:20**

Sample Matrix: Water  
 # Samples Received: 2

Analyses	Quantity	Date		Laboratory Method	Reference
		Extracted	Analyzed		
Methylnaphthalene Sum	1	N/A	2016/09/23	CAM SOP-00301	EPA 8270D m
Chloride by Automated Colourimetry	1	N/A	2016/09/22	CAM SOP-00463	EPA 325.2 m
Lab Filtered Metals Analysis by ICP	1	2016/09/22	2016/09/23	CAM SOP-00408	EPA 6010C m
PAH Compounds in Water by GC/MS (SIM)	1	2016/09/22	2016/09/22	CAM SOP-00318	EPA 8270D m

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

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

**Encryption Key**

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

Sara Singh, B.Sc, Senior Project Manager

Email: sarasingh@maxxam.ca

Phone# (905)817-5730

=====

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.

**RESULTS OF ANALYSES OF WATER**

Maxxam ID		DCM918		
Sampling Date		2016/09/20 14:00		
COC Number		n/a		
	<b>UNITS</b>	<b>BH16-14A</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Inorganics</b>				
Dissolved Chloride (Cl)	mg/L	1500	15	4670841
RDL = Reportable Detection Limit				
QC Batch = Quality Control Batch				

**ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)**

Maxxam ID		DCM918	DCM918		
Sampling Date		2016/09/20 14:00	2016/09/20 14:00		
COC Number		n/a	n/a		
	<b>UNITS</b>	<b>BH16-14A</b>	<b>BH16-14A Lab-Dup</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Metals</b>					
Dissolved Sodium (Na)	mg/L	990	990	5	4671626
RDL = Reportable Detection Limit					
QC Batch = Quality Control Batch					
Lab-Dup = Laboratory Initiated Duplicate					

**SEMI-VOLATILE ORGANICS BY GC-MS (WATER)**

Maxxam ID		DCM919	DCM919		
Sampling Date		2016/09/20 12:30	2016/09/20 12:30		
COC Number		n/a	n/a		
	<b>UNITS</b>	<b>BH16-15</b>	<b>BH16-15 Lab-Dup</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Calculated Parameters</b>					
Methylnaphthalene, 2-(1-)	ug/L	<0.071		0.071	4670075
<b>Polyaromatic Hydrocarbons</b>					
Acenaphthene	ug/L	<0.050	<0.050	0.050	4672842
Acenaphthylene	ug/L	<0.050	<0.050	0.050	4672842
Anthracene	ug/L	<0.050	<0.050	0.050	4672842
Benzo(a)anthracene	ug/L	<0.050	<0.050	0.050	4672842
Benzo(a)pyrene	ug/L	<0.010	<0.010	0.010	4672842
Benzo(b/j)fluoranthene	ug/L	<0.050	<0.050	0.050	4672842
Benzo(g,h,i)perylene	ug/L	<0.050	<0.050	0.050	4672842
Benzo(k)fluoranthene	ug/L	<0.050	<0.050	0.050	4672842
Chrysene	ug/L	<0.050	<0.050	0.050	4672842
Dibenz(a,h)anthracene	ug/L	<0.050	<0.050	0.050	4672842
Fluoranthene	ug/L	<0.050	<0.050	0.050	4672842
Fluorene	ug/L	<0.050	<0.050	0.050	4672842
Indeno(1,2,3-cd)pyrene	ug/L	<0.050	<0.050	0.050	4672842
1-Methylnaphthalene	ug/L	<0.050	<0.050	0.050	4672842
2-Methylnaphthalene	ug/L	<0.050	<0.050	0.050	4672842
Naphthalene	ug/L	<0.050	<0.050	0.050	4672842
Phenanthrene	ug/L	<0.030	<0.030	0.030	4672842
Pyrene	ug/L	<0.050	<0.050	0.050	4672842
<b>Surrogate Recovery (%)</b>					
D10-Anthracene	%	92	95		4672842
D14-Terphenyl (FS)	%	97	101		4672842
D8-Acenaphthylene	%	96	98		4672842
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate					



Maxxam Job #: B6K2899  
Report Date: 2016/09/23

exp Services Inc  
Client Project #: HAM-801053-A  
Site Location: OAKVILLE HOSPITAL  
Your P.O. #: HAM-ENV  
Sampler Initials: KM

### TEST SUMMARY

**Maxxam ID:** DCM918  
**Sample ID:** BH16-14A  
**Matrix:** Water

**Collected:** 2016/09/20  
**Shipped:**  
**Received:** 2016/09/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chloride by Automated Colourimetry	KONE	4670841	N/A	2016/09/22	Alina Dobreanu
Lab Filtered Metals Analysis by ICP	ICP	4671626	2016/09/22	2016/09/23	Azita Fazaeli

**Maxxam ID:** DCM918 Dup  
**Sample ID:** BH16-14A  
**Matrix:** Water

**Collected:** 2016/09/20  
**Shipped:**  
**Received:** 2016/09/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Lab Filtered Metals Analysis by ICP	ICP	4671626	2016/09/22	2016/09/23	Azita Fazaeli

**Maxxam ID:** DCM919  
**Sample ID:** BH16-15  
**Matrix:** Water

**Collected:** 2016/09/20  
**Shipped:**  
**Received:** 2016/09/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	4670075	N/A	2016/09/23	Automated Statchk
PAH Compounds in Water by GC/MS (SIM)	GC/MS	4672842	2016/09/22	2016/09/22	Mitesh Raj

**Maxxam ID:** DCM919 Dup  
**Sample ID:** BH16-15  
**Matrix:** Water

**Collected:** 2016/09/20  
**Shipped:**  
**Received:** 2016/09/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PAH Compounds in Water by GC/MS (SIM)	GC/MS	4672842	2016/09/22	2016/09/22	Mitesh Raj

**GENERAL COMMENTS**

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

Package 1	1.7°C
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**Results relate only to the items tested.**

**QUALITY ASSURANCE REPORT**

exp Services Inc  
Client Project #: HAM-801053-A  
Site Location: OAKVILLE HOSPITAL  
Your P.O. #: HAM-ENV  
Sampler Initials: KM

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4672842	D10-Anthracene	2016/09/22	104	50 - 130	93	50 - 130	92	%		
4672842	D14-Terphenyl (FS)	2016/09/22	98	50 - 130	98	50 - 130	96	%		
4672842	D8-Acenaphthylene	2016/09/22	112	50 - 130	92	50 - 130	92	%		
4670841	Dissolved Chloride (Cl)	2016/09/22	NC	80 - 120	102	80 - 120	<1.0	mg/L	0.12	20
4671626	Dissolved Sodium (Na)	2016/09/23	NC	80 - 120	100	80 - 120	<0.5	mg/L	0.071	25
4672842	1-Methylnaphthalene	2016/09/22	84	50 - 130	87	50 - 130	<0.050	ug/L	NC	30
4672842	2-Methylnaphthalene	2016/09/22	85	50 - 130	88	50 - 130	<0.050	ug/L	NC	30
4672842	Acenaphthene	2016/09/22	93	50 - 130	95	50 - 130	<0.050	ug/L	NC	30
4672842	Acenaphthylene	2016/09/22	98	50 - 130	83	50 - 130	<0.050	ug/L	NC	30
4672842	Anthracene	2016/09/22	90	50 - 130	84	50 - 130	<0.050	ug/L	NC	30
4672842	Benzo(a)anthracene	2016/09/22	107	50 - 130	96	50 - 130	<0.050	ug/L	NC	30
4672842	Benzo(a)pyrene	2016/09/22	97	50 - 130	100	50 - 130	<0.010	ug/L	NC	30
4672842	Benzo(b/j)fluoranthene	2016/09/22	103	50 - 130	122	50 - 130	<0.050	ug/L	NC	30
4672842	Benzo(g,h,i)perylene	2016/09/22	100	50 - 130	117	50 - 130	<0.050	ug/L	NC	30
4672842	Benzo(k)fluoranthene	2016/09/22	104	50 - 130	119	50 - 130	<0.050	ug/L	NC	30
4672842	Chrysene	2016/09/22	100	50 - 130	104	50 - 130	<0.050	ug/L	NC	30
4672842	Dibenz(a,h)anthracene	2016/09/22	100	50 - 130	113	50 - 130	<0.050	ug/L	NC	30
4672842	Fluoranthene	2016/09/22	110	50 - 130	105	50 - 130	<0.050	ug/L	NC	30
4672842	Fluorene	2016/09/22	107	50 - 130	106	50 - 130	<0.050	ug/L	NC	30
4672842	Indeno(1,2,3-cd)pyrene	2016/09/22	104	50 - 130	113	50 - 130	<0.050	ug/L	NC	30
4672842	Naphthalene	2016/09/22	79	50 - 130	82	50 - 130	<0.050	ug/L	NC	30
4672842	Phenanthrene	2016/09/22	100	50 - 130	99	50 - 130	<0.030	ug/L	NC	30

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

exp Services Inc  
Client Project #: HAM-801053-A  
Site Location: OAKVILLE HOSPITAL  
Your P.O. #: HAM-ENV  
Sampler Initials: KM

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4672842	Pyrene	2016/09/22	108	50 - 130	104	50 - 130	<0.050	ug/L	NC	30

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

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

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

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

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

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of 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 (one or both samples < 5x RDL).

**VALIDATION SIGNATURE PAGE**

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

*Cristina Carriere*

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Cristina Carriere, Scientific Services

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

Your P.O. #: BRM-ENV  
 Your Project #: BRM-00235695-A0  
 Site Location: 527 CARLTON STREET, FORMER OAKVILLE  
 HOSPITAL  
 Your C.O.C. #: 574590-01-01

**Attention: Netta Benazon**

exp Services Inc  
 Hamilton Branch  
 80 Bancroft St  
 Hamilton, ON  
 L8E 2W5

**Report Date: 2016/10/11**  
 Report #: R4200938  
 Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B6L3611**  
**Received: 2016/10/04, 14:12**

Sample Matrix: Water  
 # Samples Received: 1

Analyses	Date		Laboratory Method	Reference
	Quantity Extracted	Date Analyzed		
Dissolved Metals by ICPMS	1	N/A	2016/10/07 CAM SOP-00447	EPA 6020B m

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.  
 \* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

**Encryption Key**

Please direct all questions regarding this Certificate of Analysis to your Project Manager.  
 Sara Singh, B.Sc, Senior Project Manager  
 Email: sarasingh@maxxam.ca  
 Phone# (905)817-5730

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

**ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)**

Maxxam ID		DEM733		
Sampling Date		2016/09/29 14:00		
COC Number		574590-01-01		
	<b>UNITS</b>	<b>BH16-202</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Metals</b>				
Dissolved Cobalt (Co)	ug/L	<0.50	0.50	4691102
RDL = Reportable Detection Limit				
QC Batch = Quality Control Batch				

Maxxam Job #: B6L3611  
Report Date: 2016/10/11

exp Services Inc  
Client Project #: BRM-00235695-A0  
Site Location: 527 CARLTON STREET, FORMER OAKVILLE  
HOSPITAL  
Your P.O. #: BRM-ENV  
Sampler Initials: KM

**TEST SUMMARY**

**Maxxam ID:** DEM733  
**Sample ID:** BH16-202  
**Matrix:** Water

**Collected:** 2016/09/29  
**Shipped:**  
**Received:** 2016/10/04

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Metals by ICPMS	ICP/MS	4691102	N/A	2016/10/07	John Bowman



Maxxam Job #: B6L3611  
Report Date: 2016/10/11

exp Services Inc  
Client Project #: BRM-00235695-A0  
Site Location: 527 CARLTON STREET, FORMER OAKVILLE  
HOSPITAL  
Your P.O. #: BRM-ENV  
Sampler Initials: KM

**GENERAL COMMENTS**

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

Package 1	6.0°C
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**Results relate only to the items tested.**

### QUALITY ASSURANCE REPORT

exp Services Inc  
Client Project #: BRM-00235695-A0  
527 CARLTON STREET, FORMER OAKVILLE  
Site Location: HOSPITAL  
Your P.O. #: BRM-ENV  
Sampler Initials: KM

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4691102	Dissolved Cobalt (Co)	2016/10/07	107	80 - 120	102	80 - 120	<0.50	ug/L	NC	20

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

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

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

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

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

Maxxam Job #: B6L3611  
Report Date: 2016/10/11

exp Services Inc  
Client Project #: BRM-00235695-A0  
Site Location: 527 CARLTON STREET, FORMER OAKVILLE  
HOSPITAL  
Your P.O. #: BRM-ENV  
Sampler Initials: KM

**VALIDATION SIGNATURE PAGE**

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



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Brad Newman, Scientific Specialist

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

Your P.O. #: ENV-BRM  
 Your Project #: BRM-00235695-A0  
 Site Location: Former Oakville Hospital  
 Your C.O.C. #: 581191-02-01

**Attention:Katie Mclsaac**

exp Services Inc  
 Hamilton Branch  
 80 Bancroft St  
 Hamilton, ON  
 L8E 2W5

**Report Date: 2016/10/19**  
 Report #: R4216691  
 Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B6M0905**  
**Received: 2016/10/13, 15:06**

Sample Matrix: Water  
 # Samples Received: 9

Analyses	Quantity	Date		Laboratory Method	Reference
		Extracted	Analyzed		
Chloride by Automated Colourimetry	2	N/A	2016/10/18	CAM SOP-00463	EPA 325.2 m
Petroleum Hydro. CCME F1 & BTEX in Water	6	N/A	2016/10/17	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydro. CCME F1 & BTEX in Water	1	N/A	2016/10/18	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Water (1)	6	2016/10/16	2016/10/17	CAM SOP-00316	CCME PHC-CWS m
Lab Filtered Metals Analysis by ICP	2	2016/10/17	2016/10/19	CAM SOP-00408	EPA 6010C m

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

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

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

**Encryption Key**

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

Sara Singh, B.Sc, Senior Project Manager  
 Email: sarasingh@maxxam.ca  
 Phone# (905)817-5730

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**RESULTS OF ANALYSES OF WATER**

Maxxam ID		DFW812	DFW813		
Sampling Date		2016/10/12 18:15	2016/10/12 18:15		
COC Number		581191-02-01	581191-02-01		
	<b>UNITS</b>	<b>MW16-14B</b>	<b>MW16-144B</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Inorganics</b>					
Dissolved Chloride (Cl)	mg/L	4700	4700	50	4703199
RDL = Reportable Detection Limit					
QC Batch = Quality Control Batch					

**ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)**

Maxxam ID		DFW812	DFW813		
Sampling Date		2016/10/12 18:15	2016/10/12 18:15		
COC Number		581191-02-01	581191-02-01		
	<b>UNITS</b>	<b>MW16-14B</b>	<b>MW16-144B</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Metals</b>					
Dissolved Sodium (Na)	mg/L	2400	2300	50	4703527
RDL = Reportable Detection Limit					
QC Batch = Quality Control Batch					

**PETROLEUM HYDROCARBONS (CCME)**

Maxxam ID		DFW808	DFW808		DFW809	DFW810	DFW811		
Sampling Date		2016/10/12 11:00	2016/10/12 11:00		2016/10/12 15:30	2016/10/12 15:30	2016/10/12 14:50		
COC Number		581191-02-01	581191-02-01		581191-02-01	581191-02-01	581191-02-01		
	<b>UNITS</b>	<b>MW16-211</b>	<b>MW16-211 Lab-Dup</b>	<b>QC Batch</b>	<b>MW16-210</b>	<b>MW16-2101</b>	<b>MW16-203A</b>	<b>RDL</b>	<b>QC Batch</b>
<b>BTEX &amp; F1 Hydrocarbons</b>									
Benzene	ug/L	<0.20	<0.20	4705016	<0.20	<0.20	<0.20	0.20	4704407
Toluene	ug/L	<0.20	<0.20	4705016	<0.20	<0.20	<0.20	0.20	4704407
Ethylbenzene	ug/L	<0.20	<0.20	4705016	<0.20	<0.20	<0.20	0.20	4704407
o-Xylene	ug/L	<0.20	<0.20	4705016	<0.20	<0.20	<0.20	0.20	4704407
p+m-Xylene	ug/L	<0.40	<0.40	4705016	<0.40	<0.40	<0.40	0.40	4704407
Total Xylenes	ug/L	<0.40	<0.40	4705016	<0.40	<0.40	<0.40	0.40	4704407
F1 (C6-C10)	ug/L	<25	<25	4705016	<25	<25	<25	25	4704407
F1 (C6-C10) - BTEX	ug/L	<25	<25	4705016	<25	<25	<25	25	4704407
<b>F2-F4 Hydrocarbons</b>									
F2 (C10-C16 Hydrocarbons)	ug/L	<100		4703727	<100	<100	<100	100	4703727
F3 (C16-C34 Hydrocarbons)	ug/L	<200		4703727	3700	2500	<200	200	4703727
F4 (C34-C50 Hydrocarbons)	ug/L	<200		4703727	1100	700	<200	200	4703727
Reached Baseline at C50	ug/L	Yes		4703727	Yes	Yes	Yes		4703727
<b>Surrogate Recovery (%)</b>									
1,4-Difluorobenzene	%	103	104	4705016	103	101	102		4704407
4-Bromofluorobenzene	%	97	95	4705016	102	102	103		4704407
D10-Ethylbenzene	%	98	96	4705016	111	108	110		4704407
D4-1,2-Dichloroethane	%	98	98	4705016	99	97	98		4704407
o-Terphenyl	%	109		4703727	110	110	106		4703727
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate									

**PETROLEUM HYDROCARBONS (CCME)**

Maxxam ID		DFW814	DFW815	DFW816		
Sampling Date		2016/10/13 09:00	2016/10/13 10:00	2016/10/13 11:00		
COC Number		581191-02-01	581191-02-01	581191-02-01		
	<b>UNITS</b>	<b>MW16-5B</b>	<b>MW16-213</b>	<b>TRIP BLANK</b>	<b>RDL</b>	<b>QC Batch</b>
<b>BTEX &amp; F1 Hydrocarbons</b>						
Benzene	ug/L	<0.20	<0.20	<0.20	0.20	4704407
Toluene	ug/L	<0.20	<0.20	<0.20	0.20	4704407
Ethylbenzene	ug/L	<0.20	<0.20	<0.20	0.20	4704407
o-Xylene	ug/L	<0.20	<0.20	<0.20	0.20	4704407
p+m-Xylene	ug/L	<0.40	<0.40	<0.40	0.40	4704407
Total Xylenes	ug/L	<0.40	<0.40	<0.40	0.40	4704407
F1 (C6-C10)	ug/L	<25	<25	<25	25	4704407
F1 (C6-C10) - BTEX	ug/L	<25	<25	<25	25	4704407
<b>F2-F4 Hydrocarbons</b>						
F2 (C10-C16 Hydrocarbons)	ug/L	<100	<100		100	4703727
F3 (C16-C34 Hydrocarbons)	ug/L	210	<200		200	4703727
F4 (C34-C50 Hydrocarbons)	ug/L	<200	<200		200	4703727
Reached Baseline at C50	ug/L	Yes	Yes			4703727
<b>Surrogate Recovery (%)</b>						
1,4-Difluorobenzene	%	101	102	102		4704407
4-Bromofluorobenzene	%	101	102	102		4704407
D10-Ethylbenzene	%	109	110	109		4704407
D4-1,2-Dichloroethane	%	97	98	98		4704407
o-Terphenyl	%	106	106			4703727
RDL = Reportable Detection Limit						
QC Batch = Quality Control Batch						



**TEST SUMMARY**

**Maxxam ID:** DFW808  
**Sample ID:** MW16-211  
**Matrix:** Water

**Collected:** 2016/10/12  
**Shipped:**  
**Received:** 2016/10/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	4705016	N/A	2016/10/17	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	4703727	2016/10/16	2016/10/17	Margaret Kulczyk-Stanko

**Maxxam ID:** DFW808 Dup  
**Sample ID:** MW16-211  
**Matrix:** Water

**Collected:** 2016/10/12  
**Shipped:**  
**Received:** 2016/10/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	4705016	N/A	2016/10/17	Georgeta Rusu

**Maxxam ID:** DFW809  
**Sample ID:** MW16-210  
**Matrix:** Water

**Collected:** 2016/10/12  
**Shipped:**  
**Received:** 2016/10/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	4704407	N/A	2016/10/17	Ravinder Gaidhu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	4703727	2016/10/16	2016/10/17	Margaret Kulczyk-Stanko

**Maxxam ID:** DFW810  
**Sample ID:** MW16-2101  
**Matrix:** Water

**Collected:** 2016/10/12  
**Shipped:**  
**Received:** 2016/10/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	4704407	N/A	2016/10/17	Ravinder Gaidhu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	4703727	2016/10/16	2016/10/17	Margaret Kulczyk-Stanko

**Maxxam ID:** DFW811  
**Sample ID:** MW16-203A  
**Matrix:** Water

**Collected:** 2016/10/12  
**Shipped:**  
**Received:** 2016/10/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	4704407	N/A	2016/10/17	Ravinder Gaidhu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	4703727	2016/10/16	2016/10/17	Margaret Kulczyk-Stanko

**Maxxam ID:** DFW812  
**Sample ID:** MW16-14B  
**Matrix:** Water

**Collected:** 2016/10/12  
**Shipped:**  
**Received:** 2016/10/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chloride by Automated Colourimetry	KONE	4703199	N/A	2016/10/18	Deonarine Ramnarine
Lab Filtered Metals Analysis by ICP	ICP	4703527	2016/10/17	2016/10/19	Archana Patel

**TEST SUMMARY**

**Maxxam ID:** DFW813  
**Sample ID:** MW16-144B  
**Matrix:** Water

**Collected:** 2016/10/12  
**Shipped:**  
**Received:** 2016/10/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chloride by Automated Colourimetry	KONE	4703199	N/A	2016/10/18	Deonarine Ramnarine
Lab Filtered Metals Analysis by ICP	ICP	4703527	2016/10/17	2016/10/19	Archana Patel

**Maxxam ID:** DFW814  
**Sample ID:** MW16-5B  
**Matrix:** Water

**Collected:** 2016/10/13  
**Shipped:**  
**Received:** 2016/10/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	4704407	N/A	2016/10/17	Ravinder Gaidhu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	4703727	2016/10/16	2016/10/17	Margaret Kulczyk-Stanko

**Maxxam ID:** DFW815  
**Sample ID:** MW16-213  
**Matrix:** Water

**Collected:** 2016/10/13  
**Shipped:**  
**Received:** 2016/10/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	4704407	N/A	2016/10/17	Ravinder Gaidhu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	4703727	2016/10/16	2016/10/17	Margaret Kulczyk-Stanko

**Maxxam ID:** DFW816  
**Sample ID:** TRIP BLANK  
**Matrix:** Water

**Collected:** 2016/10/13  
**Shipped:**  
**Received:** 2016/10/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	4704407	N/A	2016/10/18	Ravinder Gaidhu

**GENERAL COMMENTS**

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

Package 1	5.3°C
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**Results relate only to the items tested.**

**QUALITY ASSURANCE REPORT**

exp Services Inc  
Client Project #: BRM-00235695-A0  
Site Location: Former Oakville Hospital  
Your P.O. #: ENV-BRM  
Sampler Initials: KM

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4703727	o-Terphenyl	2016/10/17	111	60 - 130	114	60 - 130	106	%		
4704407	1,4-Difluorobenzene	2016/10/17	103	70 - 130	101	70 - 130	99	%		
4704407	4-Bromofluorobenzene	2016/10/17	102	70 - 130	102	70 - 130	100	%		
4704407	D10-Ethylbenzene	2016/10/17	100	70 - 130	97	70 - 130	106	%		
4704407	D4-1,2-Dichloroethane	2016/10/17	97	70 - 130	102	70 - 130	98	%		
4705016	1,4-Difluorobenzene	2016/10/17	103	70 - 130	102	70 - 130	103	%		
4705016	4-Bromofluorobenzene	2016/10/17	99	70 - 130	98	70 - 130	95	%		
4705016	D10-Ethylbenzene	2016/10/17	89	70 - 130	86	70 - 130	94	%		
4705016	D4-1,2-Dichloroethane	2016/10/17	97	70 - 130	99	70 - 130	98	%		
4703199	Dissolved Chloride (Cl)	2016/10/18	NC	80 - 120	104	80 - 120	<1.0	mg/L	0.74	20
4703527	Dissolved Sodium (Na)	2016/10/18	98	80 - 120	97	80 - 120	<0.5	mg/L	2.3	25
4703727	F2 (C10-C16 Hydrocarbons)	2016/10/17	NC	50 - 130	113	60 - 130	<100	ug/L	NC	30
4703727	F3 (C16-C34 Hydrocarbons)	2016/10/17	NC	50 - 130	104	60 - 130	<200	ug/L	NC	30
4703727	F4 (C34-C50 Hydrocarbons)	2016/10/17	98	50 - 130	101	60 - 130	<200	ug/L	NC	30
4704407	Benzene	2016/10/17	91	70 - 130	93	70 - 130	<0.20	ug/L	NC	30
4704407	Ethylbenzene	2016/10/17	100	70 - 130	100	70 - 130	<0.20	ug/L	NC	30
4704407	F1 (C6-C10) - BTEX	2016/10/17					<25	ug/L	NC	30
4704407	F1 (C6-C10)	2016/10/17	75	70 - 130	87	70 - 130	<25	ug/L	NC	30
4704407	o-Xylene	2016/10/17	104	70 - 130	102	70 - 130	<0.20	ug/L	NC	30
4704407	p+m-Xylene	2016/10/17	91	70 - 130	91	70 - 130	<0.40	ug/L	NC	30
4704407	Toluene	2016/10/17	89	70 - 130	89	70 - 130	<0.20	ug/L	NC	30
4704407	Total Xylenes	2016/10/17					<0.40	ug/L	NC	30
4705016	Benzene	2016/10/17	92	70 - 130	87	70 - 130	<0.20	ug/L	NC	30
4705016	Ethylbenzene	2016/10/17	96	70 - 130	91	70 - 130	<0.20	ug/L	NC	30
4705016	F1 (C6-C10) - BTEX	2016/10/17					<25	ug/L	NC	30
4705016	F1 (C6-C10)	2016/10/17	95	70 - 130	85	70 - 130	<25	ug/L	NC	30
4705016	o-Xylene	2016/10/17	98	70 - 130	94	70 - 130	<0.20	ug/L	NC	30
4705016	p+m-Xylene	2016/10/17	85	70 - 130	81	70 - 130	<0.40	ug/L	NC	30
4705016	Toluene	2016/10/17	92	70 - 130	87	70 - 130	<0.20	ug/L	NC	30

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

exp Services Inc  
Client Project #: BRM-00235695-A0  
Site Location: Former Oakville Hospital  
Your P.O. #: ENV-BRM  
Sampler Initials: KM

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4705016	Total Xylenes	2016/10/17					<0.40	ug/L	NC	30

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

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

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

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



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

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of 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 (one or both samples < 5x RDL).

### VALIDATION SIGNATURE PAGE

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

\_\_\_\_\_  
Ewa Pranjić, 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.

Your Project #: BRM-00235695-A0  
 Site Location: Former Oakville Hospital  
 Your C.O.C. #: 585899-02-01

**Attention:Stephanie Hsia**

exp Services Inc  
 Hamilton Branch  
 80 Bancroft St  
 Hamilton, ON  
 L8E 2W5

**Report Date: 2016/11/11**  
 Report #: R4244105  
 Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B605166**  
**Received: 2016/11/10, 17:32**

Sample Matrix: Water  
 # Samples Received: 4

Analyses	Quantity	Date	Date	Laboratory Method	Reference
		Extracted	Analyzed		
Petroleum Hydro. CCME F1 & BTEX in Water	4	N/A	2016/11/11	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Water (1)	2	2016/11/11	2016/11/11	CAM SOP-00316	CCME PHC-CWS m

**Remarks:**

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

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

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

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

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

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

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

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

Your Project #: BRM-00235695-A0  
Site Location: Former Oakville Hospital  
Your C.O.C. #: 585899-02-01

**Attention:Stephanie Hsia**

exp Services Inc  
Hamilton Branch  
80 Bancroft St  
Hamilton, ON  
L8E 2W5

**Report Date: 2016/11/11**  
Report #: R4244105  
Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B605166**  
**Received: 2016/11/10, 17:32**

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.  
Sara Singh, B.Sc, Senior Project Manager  
Email: sarasingh@maxxam.ca  
Phone# (905)817-5730

=====  
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.



**PETROLEUM HYDROCARBONS (CCME)**

Maxxam ID		DKU559	DKU559	DKU560	DKU561	DKU562		
Sampling Date		2016/11/10 13:15	2016/11/10 13:15	2016/11/10 14:30	2016/11/10 14:30	2016/11/10 15:15		
COC Number		585899-02-01	585899-02-01	585899-02-01	585899-02-01	585899-02-01		
	<b>UNITS</b>	<b>MW16-214</b>	<b>MW16-214 Lab-Dup</b>	<b>MW16-215</b>	<b>MW16-255</b>	<b>MW16-219</b>	<b>RDL</b>	<b>QC Batch</b>
<b>BTEX &amp; F1 Hydrocarbons</b>								
Benzene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4744441
Toluene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4744441
Ethylbenzene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4744441
o-Xylene	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	4744441
p+m-Xylene	ug/L	<0.40	<0.40	<0.40	<0.40	<0.40	0.40	4744441
Total Xylenes	ug/L	<0.40	<0.40	<0.40	<0.40	<0.40	0.40	4744441
F1 (C6-C10)	ug/L	<25	<25	<25	<25	<25	25	4744441
F1 (C6-C10) - BTEX	ug/L	<25	<25	<25	<25	<25	25	4744441
<b>F2-F4 Hydrocarbons</b>								
F2 (C10-C16 Hydrocarbons)	ug/L	<100				<100	100	4744282
F3 (C16-C34 Hydrocarbons)	ug/L	<200				<200	200	4744282
F4 (C34-C50 Hydrocarbons)	ug/L	<200				<200	200	4744282
Reached Baseline at C50	ug/L	Yes				Yes		4744282
<b>Surrogate Recovery (%)</b>								
1,4-Difluorobenzene	%	103	103	101	100	100		4744441
4-Bromofluorobenzene	%	102	101	99	99	99		4744441
D10-Ethylbenzene	%	98	97	98	95	94		4744441
D4-1,2-Dichloroethane	%	97	98	95	96	96		4744441
o-Terphenyl	%	100				97		4744282
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate								

**TEST SUMMARY**

**Maxxam ID:** DKU559  
**Sample ID:** MW16-214  
**Matrix:** Water

**Collected:** 2016/11/10  
**Shipped:**  
**Received:** 2016/11/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	4744441	N/A	2016/11/11	Haibin Wu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	4744282	2016/11/11	2016/11/11	Barbara Wowk

**Maxxam ID:** DKU559 Dup  
**Sample ID:** MW16-214  
**Matrix:** Water

**Collected:** 2016/11/10  
**Shipped:**  
**Received:** 2016/11/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	4744441	N/A	2016/11/11	Haibin Wu

**Maxxam ID:** DKU560  
**Sample ID:** MW16-215  
**Matrix:** Water

**Collected:** 2016/11/10  
**Shipped:**  
**Received:** 2016/11/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	4744441	N/A	2016/11/11	Haibin Wu

**Maxxam ID:** DKU561  
**Sample ID:** MW16-255  
**Matrix:** Water

**Collected:** 2016/11/10  
**Shipped:**  
**Received:** 2016/11/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	4744441	N/A	2016/11/11	Haibin Wu

**Maxxam ID:** DKU562  
**Sample ID:** MW16-219  
**Matrix:** Water

**Collected:** 2016/11/10  
**Shipped:**  
**Received:** 2016/11/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	4744441	N/A	2016/11/11	Haibin Wu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	4744282	2016/11/11	2016/11/11	Barbara Wowk

### GENERAL COMMENTS

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

Package 1	13.0°C
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All sample bottles contained visible sediment, which was included in the extraction.  
All sample vials contained visible sediment.

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

### QUALITY ASSURANCE REPORT

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4744282	o-Terphenyl	2016/11/11	98	60 - 130	97	60 - 130	95	%		
4744441	1,4-Difluorobenzene	2016/11/11	103	70 - 130	103	70 - 130	104	%		
4744441	4-Bromofluorobenzene	2016/11/11	104	70 - 130	104	70 - 130	102	%		
4744441	D10-Ethylbenzene	2016/11/11	99	70 - 130	104	70 - 130	98	%		
4744441	D4-1,2-Dichloroethane	2016/11/11	98	70 - 130	102	70 - 130	99	%		
4744282	F2 (C10-C16 Hydrocarbons)	2016/11/11	96	50 - 130	98	60 - 130	<100	ug/L	4.3	30
4744282	F3 (C16-C34 Hydrocarbons)	2016/11/11	NC	50 - 130	100	60 - 130	<200	ug/L	5.2	30
4744282	F4 (C34-C50 Hydrocarbons)	2016/11/11	100	50 - 130	100	60 - 130	<200	ug/L	3.3	30
4744441	Benzene	2016/11/11	88	70 - 130	109	70 - 130	<0.20	ug/L	NC	30
4744441	Ethylbenzene	2016/11/11	92	70 - 130	111	70 - 130	<0.20	ug/L	NC	30
4744441	F1 (C6-C10) - BTEX	2016/11/11					<25	ug/L	NC	30
4744441	F1 (C6-C10)	2016/11/11	95	70 - 130	101	70 - 130	<25	ug/L	NC	30
4744441	o-Xylene	2016/11/11	94	70 - 130	112	70 - 130	<0.20	ug/L	NC	30
4744441	p+m-Xylene	2016/11/11	90	70 - 130	108	70 - 130	<0.40	ug/L	NC	30
4744441	Toluene	2016/11/11	85	70 - 130	102	70 - 130	<0.20	ug/L	NC	30
4744441	Total Xylenes	2016/11/11					<0.40	ug/L	NC	30

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

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

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

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

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

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of 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 (one or both samples < 5x RDL).

### VALIDATION SIGNATURE PAGE

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

*Cristina Carriere*

---

Cristina Carriere, Scientific Services

---

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.

Your P.O. #: BRM-ENV  
 Your Project #: BRM-00235695-A0  
 Site Location: FORMER OAKVILLE HOSPITAL  
 Your C.O.C. #: 581304-16-01

**Attention:Stephanie Hsia**

exp Services Inc  
 Hamilton Branch  
 80 Bancroft St  
 Hamilton, ON  
 L8E 2W5

**Report Date: 2016/11/14**  
 Report #: R4246191  
 Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B606180**  
**Received: 2016/11/11, 15:47**

Sample Matrix: Water  
 # Samples Received: 4

Analyses	Quantity	Date	Date	Laboratory Method	Reference
		Extracted	Analyzed		
Petroleum Hydro. CCME F1 & BTEX in Water	3	N/A	2016/11/13	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Water (1)	4	2016/11/12	2016/11/14	CAM SOP-00316	CCME PHC-CWS m

**Remarks:**

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

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

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

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

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

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

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

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

Your P.O. #: BRM-ENV  
Your Project #: BRM-00235695-A0  
Site Location: FORMER OAKVILLE HOSPITAL  
Your C.O.C. #: 581304-16-01

**Attention:Stephanie Hsia**

exp Services Inc  
Hamilton Branch  
80 Bancroft St  
Hamilton, ON  
L8E 2W5

**Report Date: 2016/11/14**  
Report #: R4246191  
Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B606180**  
**Received: 2016/11/11, 15:47**

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.  
Sara Singh, B.Sc, Senior Project Manager  
Email: sarasingh@maxxam.ca  
Phone# (905)817-5730  
=====

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.

**PETROLEUM HYDROCARBONS (CCME)**

Maxxam ID		DLA332	DLA333	DLA334	DLA336		
Sampling Date		2016/11/11 14:00	2016/11/11 12:00	2016/11/11 14:00			
COC Number		581304-16-01	581304-16-01	581304-16-01	581304-16-01		
	<b>UNITS</b>	<b>MW16-216</b>	<b>MW16-217</b>	<b>MW16-256</b>	<b>MW16-255</b>	<b>RDL</b>	<b>QC Batch</b>
<b>BTEX &amp; F1 Hydrocarbons</b>							
Benzene	ug/L	<0.20	<0.20	<0.20		0.20	4745663
Toluene	ug/L	<0.20	<0.20	<0.20		0.20	4745663
Ethylbenzene	ug/L	<0.20	<0.20	<0.20		0.20	4745663
o-Xylene	ug/L	<0.20	<0.20	<0.20		0.20	4745663
p+m-Xylene	ug/L	<0.40	<0.40	<0.40		0.40	4745663
Total Xylenes	ug/L	<0.40	<0.40	<0.40		0.40	4745663
F1 (C6-C10)	ug/L	<25	<25	<25		25	4745663
F1 (C6-C10) - BTEX	ug/L	<25	<25	<25		25	4745663
<b>F2-F4 Hydrocarbons</b>							
F2 (C10-C16 Hydrocarbons)	ug/L	<100	<100	<100	<100	100	4745673
F3 (C16-C34 Hydrocarbons)	ug/L	<200	<200	<200	<200	200	4745673
F4 (C34-C50 Hydrocarbons)	ug/L	<200	<200	<200	<200	200	4745673
Reached Baseline at C50	ug/L	Yes	Yes	Yes	Yes		4745673
<b>Surrogate Recovery (%)</b>							
1,4-Difluorobenzene	%	103	102	101			4745663
4-Bromofluorobenzene	%	98	98	98			4745663
D10-Ethylbenzene	%	116	110	110			4745663
D4-1,2-Dichloroethane	%	97	99	98			4745663
o-Terphenyl	%	100	100	100	101		4745673
RDL = Reportable Detection Limit QC Batch = Quality Control Batch							



Maxxam Job #: B6O6180  
Report Date: 2016/11/14

exp Services Inc  
Client Project #: BRM-00235695-A0  
Site Location: FORMER OAKVILLE HOSPITAL  
Your P.O. #: BRM-ENV  
Sampler Initials: KM

### TEST SUMMARY

**Maxxam ID:** DLA332  
**Sample ID:** MW16-216  
**Matrix:** Water

**Collected:** 2016/11/11  
**Shipped:**  
**Received:** 2016/11/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	4745663	N/A	2016/11/13	Abdi Mohamud
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	4745673	2016/11/12	2016/11/14	(Kent) Maolin Li

**Maxxam ID:** DLA333  
**Sample ID:** MW16-217  
**Matrix:** Water

**Collected:** 2016/11/11  
**Shipped:**  
**Received:** 2016/11/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	4745663	N/A	2016/11/13	Abdi Mohamud
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	4745673	2016/11/12	2016/11/14	(Kent) Maolin Li

**Maxxam ID:** DLA334  
**Sample ID:** MW16-256  
**Matrix:** Water

**Collected:** 2016/11/11  
**Shipped:**  
**Received:** 2016/11/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	4745663	N/A	2016/11/13	Abdi Mohamud
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	4745673	2016/11/12	2016/11/14	(Kent) Maolin Li

**Maxxam ID:** DLA336  
**Sample ID:** MW16-255  
**Matrix:** Water

**Collected:**  
**Shipped:**  
**Received:** 2016/11/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	4745673	2016/11/12	2016/11/14	(Kent) Maolin Li

**GENERAL COMMENTS**

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

Package 1	10.3°C
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**Results relate only to the items tested.**

### QUALITY ASSURANCE REPORT

exp Services Inc  
Client Project #: BRM-00235695-A0  
Site Location: FORMER OAKVILLE HOSPITAL  
Your P.O. #: BRM-ENV  
Sampler Initials: KM

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4745663	1,4-Difluorobenzene	2016/11/12	103	70 - 130	99	70 - 130	101	%		
4745663	4-Bromofluorobenzene	2016/11/12	102	70 - 130	98	70 - 130	100	%		
4745663	D10-Ethylbenzene	2016/11/12	102	70 - 130	103	70 - 130	106	%		
4745663	D4-1,2-Dichloroethane	2016/11/12	94	70 - 130	92	70 - 130	95	%		
4745673	o-Terphenyl	2016/11/14	103	60 - 130	103	60 - 130	102	%		
4745663	Benzene	2016/11/12	89	70 - 130	95	70 - 130	<0.20	ug/L	NC	30
4745663	Ethylbenzene	2016/11/12	96	70 - 130	102	70 - 130	<0.20	ug/L	NC	30
4745663	F1 (C6-C10) - BTEX	2016/11/12					<25	ug/L	NC	30
4745663	F1 (C6-C10)	2016/11/12	79	70 - 130	85	70 - 130	<25	ug/L	NC	30
4745663	o-Xylene	2016/11/12	100	70 - 130	103	70 - 130	<0.20	ug/L	NC	30
4745663	p+m-Xylene	2016/11/12	89	70 - 130	95	70 - 130	<0.40	ug/L	NC	30
4745663	Toluene	2016/11/12	87	70 - 130	95	70 - 130	<0.20	ug/L	NC	30
4745663	Total Xylenes	2016/11/12					<0.40	ug/L	NC	30
4745673	F2 (C10-C16 Hydrocarbons)	2016/11/14	103	50 - 130	98	60 - 130	<100	ug/L	NC	30
4745673	F3 (C16-C34 Hydrocarbons)	2016/11/14	NC	50 - 130	105	60 - 130	<200	ug/L	NC	30
4745673	F4 (C34-C50 Hydrocarbons)	2016/11/14	102	50 - 130	101	60 - 130	<200	ug/L	NC	30

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

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

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

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



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

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of 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 (one or both samples < 5x RDL).

### VALIDATION SIGNATURE PAGE

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

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

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Maxxam 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.

Your P.O. #: BRM-ENV  
 Your Project #: BRM-00235695-A0  
 Site Location: FORMER OAKVILLE HOSPITAL  
 Your C.O.C. #: 581304-05-01, 581304-16-01

**Attention:Stephanie Hsia**

exp Services Inc  
 Hamilton Branch  
 80 Bancroft St  
 Hamilton, ON  
 L8E 2W5

**Report Date: 2016/11/14**  
 Report #: R4246279  
 Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B606195**

**Received: 2016/11/11, 15:47**

Sample Matrix: Water  
 # Samples Received: 1

Analyses	Quantity	Date	Date	Laboratory Method	Reference
		Extracted	Analyzed		
Petroleum Hydrocarbons F2-F4 in Water (1, 2)	1	2016/11/12	2016/11/14	CAM SOP-00316	CCME PHC-CWS m

**Remarks:**

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

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

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

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

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

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

(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.

Your P.O. #: BRM-ENV  
Your Project #: BRM-00235695-A0  
Site Location: FORMER OAKVILLE HOSPITAL  
Your C.O.C. #: 581304-05-01, 581304-16-01

**Attention:Stephanie Hsia**

exp Services Inc  
Hamilton Branch  
80 Bancroft St  
Hamilton, ON  
L8E 2W5

**Report Date: 2016/11/14**  
Report #: R4246279  
Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B606195**  
**Received: 2016/11/11, 15:47**

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.  
Sara Singh, B.Sc, Senior Project Manager  
Email: sarasingh@maxxam.ca  
Phone# (905)817-5730

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Maxxam Job #: B6O6195  
Report Date: 2016/11/14

exp Services Inc  
Client Project #: BRM-00235695-A0  
Site Location: FORMER OAKVILLE HOSPITAL  
Your P.O. #: BRM-ENV  
Sampler Initials: KM

**PETROLEUM HYDROCARBONS (CCME)**

Maxxam ID		DLA390		
Sampling Date		2016/11/11 14:00		
COC Number		581304-05-01		
	<b>UNITS</b>	<b>MW16-215</b>	<b>RDL</b>	<b>QC Batch</b>
<b>F2-F4 Hydrocarbons</b>				
F2 (C10-C16 Hydrocarbons)	ug/L	<100	100	4745673
F3 (C16-C34 Hydrocarbons)	ug/L	<200	200	4745673
F4 (C34-C50 Hydrocarbons)	ug/L	<200	200	4745673
Reached Baseline at C50	ug/L	Yes		4745673
<b>Surrogate Recovery (%)</b>				
o-Terphenyl	%	99		4745673
RDL = Reportable Detection Limit				
QC Batch = Quality Control Batch				

Maxxam Job #: B606195  
Report Date: 2016/11/14

exp Services Inc  
Client Project #: BRM-00235695-A0  
Site Location: FORMER OAKVILLE HOSPITAL  
Your P.O. #: BRM-ENV  
Sampler Initials: KM

**TEST SUMMARY**

**Maxxam ID:** DLA390  
**Sample ID:** MW16-215  
**Matrix:** Water

**Collected:** 2016/11/11  
**Shipped:**  
**Received:** 2016/11/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	4745673	2016/11/12	2016/11/14	(Kent) Maolin Li



Maxxam Job #: B606195  
Report Date: 2016/11/14

exp Services Inc  
Client Project #: BRM-00235695-A0  
Site Location: FORMER OAKVILLE HOSPITAL  
Your P.O. #: BRM-ENV  
Sampler Initials: KM

**GENERAL COMMENTS**

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

Package 1	10.3°C
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**Results relate only to the items tested.**

Maxxam Job #: B6O6195  
Report Date: 2016/11/14

### QUALITY ASSURANCE REPORT

exp Services Inc  
Client Project #: BRM-00235695-A0  
Site Location: FORMER OAKVILLE HOSPITAL  
Your P.O. #: BRM-ENV  
Sampler Initials: KM

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4745673	o-Terphenyl	2016/11/14	103	60 - 130	103	60 - 130	102	%		
4745673	F2 (C10-C16 Hydrocarbons)	2016/11/14	103	50 - 130	98	60 - 130	<100	ug/L	NC	30
4745673	F3 (C16-C34 Hydrocarbons)	2016/11/14	NC	50 - 130	105	60 - 130	<200	ug/L	NC	30
4745673	F4 (C34-C50 Hydrocarbons)	2016/11/14	102	50 - 130	101	60 - 130	<200	ug/L	NC	30

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

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

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

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

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

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of 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 (one or both samples < 5x RDL).

Maxxam Job #: B6O6195  
Report Date: 2016/11/14

exp Services Inc  
Client Project #: BRM-00235695-A0  
Site Location: FORMER OAKVILLE HOSPITAL  
Your P.O. #: BRM-ENV  
Sampler Initials: KM

### VALIDATION SIGNATURE PAGE

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

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Your P.O. #: BRM-ENV  
 Your Project #: BRM-00235695-A0  
 Site Location: FORMER OAKVILLE HOSPITAL  
 Your C.O.C. #: 581304-06-01

**Attention:Stephanie Hsia**

exp Services Inc  
 Hamilton Branch  
 80 Bancroft St  
 Hamilton, ON  
 L8E 2W5

**Report Date: 2016/11/15**  
 Report #: R4247900  
 Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B607210**

**Received: 2016/11/14, 15:22**

Sample Matrix: Water  
 # Samples Received: 2

Analyses	Quantity	Date	Date	Laboratory Method	Reference
		Extracted	Analyzed		
1,3-Dichloropropene Sum	1	N/A	2016/11/15		EPA 8260C m
Chloride by Automated Colourimetry	1	N/A	2016/11/15	CAM SOP-00463	EPA 325.2 m
Petroleum Hydro. CCME F1 & BTEX in Water	2	N/A	2016/11/15	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Water (1)	2	2016/11/14	2016/11/15	CAM SOP-00316	CCME PHC-CWS m
Dissolved Metals Analysis by ICP	1	2016/11/15	2016/11/15	CAM SOP-00408	EPA 6010C m
Dissolved Metals by ICPMS	1	N/A	2016/11/15	CAM SOP-00447	EPA 6020B m
Volatile Organic Compounds in Water	1	N/A	2016/11/15	CAM SOP-00228	EPA 8260C m

**Remarks:**

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

Your P.O. #: BRM-ENV  
Your Project #: BRM-00235695-A0  
Site Location: FORMER OAKVILLE HOSPITAL  
Your C.O.C. #: 581304-06-01

**Attention:Stephanie Hsia**

exp Services Inc  
Hamilton Branch  
80 Bancroft St  
Hamilton, ON  
L8E 2W5

**Report Date: 2016/11/15**  
Report #: R4247900  
Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B607210**  
**Received: 2016/11/14, 15:22**

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.  
Sara Singh, B.Sc, Senior Project Manager  
Email: sarasingh@maxxam.ca  
Phone# (905)817-5730

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**RESULTS OF ANALYSES OF WATER**

Maxxam ID		DLG425		
Sampling Date		2016/11/14 14:40		
COC Number		581304-06-01		
	<b>UNITS</b>	<b>MW16-220</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Inorganics</b>				
Dissolved Chloride (Cl)	mg/L	2200	20	4745912
RDL = Reportable Detection Limit				
QC Batch = Quality Control Batch				

**ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)**

Maxxam ID		DLG424	DLG424	DLG425	DLG425		
Sampling Date		2016/11/14 13:40	2016/11/14 13:40	2016/11/14 14:40	2016/11/14 14:40		
COC Number		581304-06-01	581304-06-01	581304-06-01	581304-06-01		
	<b>UNITS</b>	<b>MW16-221</b>	<b>MW16-221 Lab-Dup</b>	<b>MW16-220</b>	<b>MW16-220 Lab-Dup</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Metals</b>							
Dissolved Sodium (Na)	mg/L			1100	1100	5	4748060
Dissolved Antimony (Sb)	ug/L	1.3	1.3			0.50	4747649
Dissolved Arsenic (As)	ug/L	1.1	1.1			1.0	4747649
Dissolved Barium (Ba)	ug/L	160	160			2.0	4747649
Dissolved Beryllium (Be)	ug/L	<0.50	<0.50			0.50	4747649
Dissolved Boron (B)	ug/L	300	310			10	4747649
Dissolved Cadmium (Cd)	ug/L	<0.10	0.11			0.10	4747649
Dissolved Chromium (Cr)	ug/L	<5.0	<5.0			5.0	4747649
Dissolved Cobalt (Co)	ug/L	3.0	3.1			2.5	4747649
Dissolved Copper (Cu)	ug/L	1.0	1.4			1.0	4747649
Dissolved Lead (Pb)	ug/L	<0.50	<0.50			0.50	4747649
Dissolved Molybdenum (Mo)	ug/L	7.9	7.9			0.50	4747649
Dissolved Nickel (Ni)	ug/L	8.3	8.3			5.0	4747649
Dissolved Selenium (Se)	ug/L	<2.0	<2.0			2.0	4747649
Dissolved Silver (Ag)	ug/L	<0.10	<0.10			0.10	4747649
Dissolved Sodium (Na)	ug/L	1000000	1000000			500	4747649
Dissolved Thallium (Tl)	ug/L	0.16	0.17			0.050	4747649
Dissolved Uranium (U)	ug/L	14	14			0.10	4747649
Dissolved Vanadium (V)	ug/L	<2.5 (1)	<2.5			2.5	4747649
Dissolved Zinc (Zn)	ug/L	9.7	11			5.0	4747649

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

(1) Metal Analysis: Detection Limit was raised due to matrix interferences.

**VOLATILE ORGANICS BY GC/MS (WATER)**

Maxxam ID		DLG424		
Sampling Date		2016/11/14 13:40		
COC Number		581304-06-01		
	<b>UNITS</b>	<b>MW16-221</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Calculated Parameters</b>				
1,3-Dichloropropene (cis+trans)	ug/L	<0.50	0.50	4742361
<b>Volatile Organics</b>				
Acetone (2-Propanone)	ug/L	<10	10	4742361
Benzene	ug/L	<0.20	0.20	4742361
Bromodichloromethane	ug/L	<0.50	0.50	4742361
Bromoform	ug/L	<1.0	1.0	4742361
Bromomethane	ug/L	<0.50	0.50	4742361
Carbon Tetrachloride	ug/L	<0.20	0.20	4742361
Chlorobenzene	ug/L	<0.20	0.20	4742361
Chloroform	ug/L	<0.20	0.20	4742361
Dibromochloromethane	ug/L	<0.50	0.50	4742361
1,2-Dichlorobenzene	ug/L	<0.50	0.50	4742361
1,3-Dichlorobenzene	ug/L	<0.50	0.50	4742361
1,4-Dichlorobenzene	ug/L	<0.50	0.50	4742361
Dichlorodifluoromethane (FREON 12)	ug/L	<1.0	1.0	4742361
1,1-Dichloroethane	ug/L	<0.20	0.20	4742361
1,2-Dichloroethane	ug/L	<0.50	0.50	4742361
1,1-Dichloroethylene	ug/L	<0.20	0.20	4742361
cis-1,2-Dichloroethylene	ug/L	<0.50	0.50	4742361
trans-1,2-Dichloroethylene	ug/L	<0.50	0.50	4742361
1,2-Dichloropropane	ug/L	<0.20	0.20	4742361
cis-1,3-Dichloropropene	ug/L	<0.30	0.30	4742361
trans-1,3-Dichloropropene	ug/L	<0.40	0.40	4742361
Ethylbenzene	ug/L	<0.20	0.20	4742361
Ethylene Dibromide	ug/L	<0.20	0.20	4742361
Hexane	ug/L	<1.0	1.0	4742361
Methylene Chloride(Dichloromethane)	ug/L	<2.0	2.0	4742361
Methyl Ethyl Ketone (2-Butanone)	ug/L	<10	10	4742361
Methyl Isobutyl Ketone	ug/L	<5.0	5.0	4742361
Methyl t-butyl ether (MTBE)	ug/L	<0.50	0.50	4742361
Styrene	ug/L	<0.50	0.50	4742361
1,1,1,2-Tetrachloroethane	ug/L	<0.50	0.50	4742361
1,1,2,2-Tetrachloroethane	ug/L	<0.50	0.50	4742361
RDL = Reportable Detection Limit				
QC Batch = Quality Control Batch				



**VOLATILE ORGANICS BY GC/MS (WATER)**

Maxxam ID		DLG424		
Sampling Date		2016/11/14 13:40		
COC Number		581304-06-01		
	<b>UNITS</b>	<b>MW16-221</b>	<b>RDL</b>	<b>QC Batch</b>
Tetrachloroethylene	ug/L	<0.20	0.20	4742361
Toluene	ug/L	<0.20	0.20	4742361
1,1,1-Trichloroethane	ug/L	<0.20	0.20	4742361
1,1,2-Trichloroethane	ug/L	<0.50	0.50	4742361
Trichloroethylene	ug/L	<0.20	0.20	4742361
Trichlorofluoromethane (FREON 11)	ug/L	<0.50	0.50	4742361
Vinyl Chloride	ug/L	<0.20	0.20	4742361
p+m-Xylene	ug/L	<0.20	0.20	4742361
o-Xylene	ug/L	<0.20	0.20	4742361
Total Xylenes	ug/L	<0.20	0.20	4742361
<b>Surrogate Recovery (%)</b>				
4-Bromofluorobenzene	%	96		4742361
D4-1,2-Dichloroethane	%	101		4742361
D8-Toluene	%	94		4742361
RDL = Reportable Detection Limit QC Batch = Quality Control Batch				

**PETROLEUM HYDROCARBONS (CCME)**

Maxxam ID		DLG424	DLG425	DLG425		
Sampling Date		2016/11/14 13:40	2016/11/14 14:40	2016/11/14 14:40		
COC Number		581304-06-01	581304-06-01	581304-06-01		
	<b>UNITS</b>	<b>MW16-221</b>	<b>MW16-220</b>	<b>MW16-220 Lab-Dup</b>	<b>RDL</b>	<b>QC Batch</b>
<b>BTEX &amp; F1 Hydrocarbons</b>						
Benzene	ug/L		<0.20	<0.20	0.20	4747560
Toluene	ug/L		<0.20	<0.20	0.20	4747560
Ethylbenzene	ug/L		<0.20	<0.20	0.20	4747560
o-Xylene	ug/L		<0.20	<0.20	0.20	4747560
p+m-Xylene	ug/L		<0.40	<0.40	0.40	4747560
Total Xylenes	ug/L		<0.40	<0.40	0.40	4747560
F1 (C6-C10)	ug/L	<25	<25	<25	25	4747560
F1 (C6-C10) - BTEX	ug/L	<25	<25	<25	25	4747560
<b>F2-F4 Hydrocarbons</b>						
F2 (C10-C16 Hydrocarbons)	ug/L	<100	<100	<100	100	4747755
F3 (C16-C34 Hydrocarbons)	ug/L	<200	<200	<200	200	4747755
F4 (C34-C50 Hydrocarbons)	ug/L	<200	<200	<200	200	4747755
Reached Baseline at C50	ug/L	Yes	Yes	Yes		4747755
<b>Surrogate Recovery (%)</b>						
1,4-Difluorobenzene	%	100	101	100		4747560
4-Bromofluorobenzene	%	99	100	100		4747560
D10-Ethylbenzene	%	104	105	103		4747560
D4-1,2-Dichloroethane	%	97	95	97		4747560
o-Terphenyl	%	90	93	91		4747755
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate						

Maxxam Job #: B607210  
Report Date: 2016/11/15

exp Services Inc  
Client Project #: BRM-00235695-A0  
Site Location: FORMER OAKVILLE HOSPITAL  
Your P.O. #: BRM-ENV  
Sampler Initials: KM

### TEST SUMMARY

**Maxxam ID:** DLG424  
**Sample ID:** MW16-221  
**Matrix:** Water

**Collected:** 2016/11/14  
**Shipped:**  
**Received:** 2016/11/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
1,3-Dichloropropene Sum	CALC	4746691	N/A	2016/11/15	Automated Statchk
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	4747560	N/A	2016/11/15	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	4747755	2016/11/14	2016/11/15	Barbara Wowk
Dissolved Metals by ICPMS	ICP/MS	4747649	N/A	2016/11/15	Cristina Petran
Volatile Organic Compounds in Water	GC/MS	4742361	N/A	2016/11/15	Anna Gabrielyan

**Maxxam ID:** DLG424 Dup  
**Sample ID:** MW16-221  
**Matrix:** Water

**Collected:** 2016/11/14  
**Shipped:**  
**Received:** 2016/11/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Metals by ICPMS	ICP/MS	4747649	N/A	2016/11/15	Cristina Petran

**Maxxam ID:** DLG425  
**Sample ID:** MW16-220  
**Matrix:** Water

**Collected:** 2016/11/14  
**Shipped:**  
**Received:** 2016/11/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chloride by Automated Colourimetry	KONE	4745912	N/A	2016/11/15	Deonarine Ramnarine
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	4747560	N/A	2016/11/15	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	4747755	2016/11/14	2016/11/15	Barbara Wowk
Dissolved Metals Analysis by ICP	ICP	4748060	2016/11/15	2016/11/15	Azita Fazaeli

**Maxxam ID:** DLG425 Dup  
**Sample ID:** MW16-220  
**Matrix:** Water

**Collected:** 2016/11/14  
**Shipped:**  
**Received:** 2016/11/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	4747560	N/A	2016/11/15	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	4747755	2016/11/14	2016/11/15	Barbara Wowk
Dissolved Metals Analysis by ICP	ICP	4748060	2016/11/15	2016/11/15	Azita Fazaeli

Maxxam Job #: B607210  
Report Date: 2016/11/15

exp Services Inc  
Client Project #: BRM-00235695-A0  
Site Location: FORMER OAKVILLE HOSPITAL  
Your P.O. #: BRM-ENV  
Sampler Initials: KM

**GENERAL COMMENTS**

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

Package 1	13.7°C
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**Results relate only to the items tested.**

**QUALITY ASSURANCE REPORT**

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4742361	4-Bromofluorobenzene	2016/11/13	104	70 - 130	103	70 - 130	102	%		
4742361	D4-1,2-Dichloroethane	2016/11/13	94	70 - 130	92	70 - 130	94	%		
4742361	D8-Toluene	2016/11/13	102	70 - 130	101	70 - 130	94	%		
4747560	1,4-Difluorobenzene	2016/11/15	99	70 - 130	100	70 - 130	100	%		
4747560	4-Bromofluorobenzene	2016/11/15	100	70 - 130	100	70 - 130	99	%		
4747560	D10-Ethylbenzene	2016/11/15	95	70 - 130	99	70 - 130	101	%		
4747560	D4-1,2-Dichloroethane	2016/11/15	97	70 - 130	98	70 - 130	97	%		
4747755	o-Terphenyl	2016/11/15	92	60 - 130	91	60 - 130	91	%		
4742361	1,1,1,2-Tetrachloroethane	2016/11/13	106	70 - 130	100	70 - 130	<0.50	ug/L		
4742361	1,1,1-Trichloroethane	2016/11/13	95	70 - 130	93	70 - 130	<0.20	ug/L		
4742361	1,1,2,2-Tetrachloroethane	2016/11/13	106	70 - 130	97	70 - 130	<0.50	ug/L		
4742361	1,1,2-Trichloroethane	2016/11/13	98	70 - 130	92	70 - 130	<0.50	ug/L		
4742361	1,1-Dichloroethane	2016/11/13	93	70 - 130	91	70 - 130	<0.20	ug/L		
4742361	1,1-Dichloroethylene	2016/11/13	92	70 - 130	91	70 - 130	<0.20	ug/L		
4742361	1,2-Dichlorobenzene	2016/11/13	103	70 - 130	98	70 - 130	<0.50	ug/L		
4742361	1,2-Dichloroethane	2016/11/13	90	70 - 130	87	70 - 130	<0.50	ug/L		
4742361	1,2-Dichloropropane	2016/11/13	95	70 - 130	93	70 - 130	<0.20	ug/L		
4742361	1,3-Dichlorobenzene	2016/11/13	102	70 - 130	98	70 - 130	<0.50	ug/L		
4742361	1,4-Dichlorobenzene	2016/11/13	104	70 - 130	100	70 - 130	<0.50	ug/L		
4742361	Acetone (2-Propanone)	2016/11/13	88	60 - 140	82	60 - 140	<10	ug/L		
4742361	Benzene	2016/11/13	96	70 - 130	94	70 - 130	<0.20	ug/L		
4742361	Bromodichloromethane	2016/11/13	102	70 - 130	99	70 - 130	<0.50	ug/L		
4742361	Bromoform	2016/11/13	107	70 - 130	98	70 - 130	<1.0	ug/L		
4742361	Bromomethane	2016/11/13	62	60 - 140	76	60 - 140	<0.50	ug/L		
4742361	Carbon Tetrachloride	2016/11/13	101	70 - 130	99	70 - 130	<0.20	ug/L		
4742361	Chlorobenzene	2016/11/13	103	70 - 130	99	70 - 130	<0.20	ug/L		
4742361	Chloroform	2016/11/13	94	70 - 130	91	70 - 130	<0.20	ug/L		
4742361	cis-1,2-Dichloroethylene	2016/11/13	96	70 - 130	93	70 - 130	<0.50	ug/L	NC	30
4742361	cis-1,3-Dichloropropene	2016/11/13	91	70 - 130	96	70 - 130	<0.30	ug/L		
4742361	Dibromochloromethane	2016/11/13	105	70 - 130	98	70 - 130	<0.50	ug/L		

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

exp Services Inc  
Client Project #: BRM-00235695-A0  
Site Location: FORMER OAKVILLE HOSPITAL  
Your P.O. #: BRM-ENV  
Sampler Initials: KM

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4742361	Dichlorodifluoromethane (FREON 12)	2016/11/13	89	60 - 140	85	60 - 140	<1.0	ug/L		
4742361	Ethylbenzene	2016/11/13	101	70 - 130	98	70 - 130	<0.20	ug/L		
4742361	Ethylene Dibromide	2016/11/13	101	70 - 130	96	70 - 130	<0.20	ug/L		
4742361	Hexane	2016/11/13	96	70 - 130	95	70 - 130	<1.0	ug/L		
4742361	Methyl Ethyl Ketone (2-Butanone)	2016/11/13	90	60 - 140	84	60 - 140	<10	ug/L		
4742361	Methyl Isobutyl Ketone	2016/11/13	102	70 - 130	96	70 - 130	<5.0	ug/L		
4742361	Methyl t-butyl ether (MTBE)	2016/11/13	94	70 - 130	92	70 - 130	<0.50	ug/L		
4742361	Methylene Chloride(Dichloromethane)	2016/11/13	100	70 - 130	97	70 - 130	<2.0	ug/L		
4742361	o-Xylene	2016/11/13	96	70 - 130	96	70 - 130	<0.20	ug/L		
4742361	p+m-Xylene	2016/11/13	101	70 - 130	98	70 - 130	<0.20	ug/L		
4742361	Styrene	2016/11/13	104	70 - 130	98	70 - 130	<0.50	ug/L		
4742361	Tetrachloroethylene	2016/11/13	103	70 - 130	99	70 - 130	<0.20	ug/L		
4742361	Toluene	2016/11/13	96	70 - 130	92	70 - 130	<0.20	ug/L		
4742361	Total Xylenes	2016/11/13					<0.20	ug/L		
4742361	trans-1,2-Dichloroethylene	2016/11/13	92	70 - 130	90	70 - 130	<0.50	ug/L	NC	30
4742361	trans-1,3-Dichloropropene	2016/11/13	93	70 - 130	94	70 - 130	<0.40	ug/L		
4742361	Trichloroethylene	2016/11/13	101	70 - 130	98	70 - 130	<0.20	ug/L		
4742361	Trichlorofluoromethane (FREON 11)	2016/11/13	99	70 - 130	96	70 - 130	<0.50	ug/L		
4742361	Vinyl Chloride	2016/11/13	93	70 - 130	90	70 - 130	<0.20	ug/L	NC	30
4745912	Dissolved Chloride (Cl)	2016/11/15	NC	80 - 120	102	80 - 120	<1.0	mg/L	0.24	20
4747560	Benzene	2016/11/15	93	70 - 130	95	70 - 130	<0.20	ug/L	NC	30
4747560	Ethylbenzene	2016/11/15	96	70 - 130	97	70 - 130	<0.20	ug/L	NC	30
4747560	F1 (C6-C10) - BTEX	2016/11/15					<25	ug/L	NC	30
4747560	F1 (C6-C10)	2016/11/15	76	70 - 130	89	70 - 130	<25	ug/L	NC	30
4747560	o-Xylene	2016/11/15	99	70 - 130	103	70 - 130	<0.20	ug/L	NC	30
4747560	p+m-Xylene	2016/11/15	89	70 - 130	90	70 - 130	<0.40	ug/L	NC	30
4747560	Toluene	2016/11/15	91	70 - 130	92	70 - 130	<0.20	ug/L	NC	30
4747560	Total Xylenes	2016/11/15					<0.40	ug/L	NC	30
4747649	Dissolved Antimony (Sb)	2016/11/15	101	80 - 120	100	80 - 120	<0.50	ug/L	NC	20
4747649	Dissolved Arsenic (As)	2016/11/15	98	80 - 120	99	80 - 120	<1.0	ug/L	NC	20

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

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4747649	Dissolved Barium (Ba)	2016/11/15	93	80 - 120	98	80 - 120	<2.0	ug/L	0.0057	20
4747649	Dissolved Beryllium (Be)	2016/11/15	96	80 - 120	99	80 - 120	<0.50	ug/L	NC	20
4747649	Dissolved Boron (B)	2016/11/15	NC	80 - 120	100	80 - 120	<10	ug/L	2.5	20
4747649	Dissolved Cadmium (Cd)	2016/11/15	96	80 - 120	99	80 - 120	<0.10	ug/L	NC	20
4747649	Dissolved Chromium (Cr)	2016/11/15	98	80 - 120	100	80 - 120	<5.0	ug/L	NC	20
4747649	Dissolved Cobalt (Co)	2016/11/15	94	80 - 120	100	80 - 120	<0.50	ug/L	NC	20
4747649	Dissolved Copper (Cu)	2016/11/15	94	80 - 120	99	80 - 120	<1.0	ug/L	NC	20
4747649	Dissolved Lead (Pb)	2016/11/15	87	80 - 120	94	80 - 120	<0.50	ug/L	NC	20
4747649	Dissolved Molybdenum (Mo)	2016/11/15	105	80 - 120	99	80 - 120	<0.50	ug/L	0.51	20
4747649	Dissolved Nickel (Ni)	2016/11/15	91	80 - 120	98	80 - 120	<1.0	ug/L	NC	20
4747649	Dissolved Selenium (Se)	2016/11/15	95	80 - 120	98	80 - 120	<2.0	ug/L	NC	20
4747649	Dissolved Silver (Ag)	2016/11/15	92	80 - 120	97	80 - 120	<0.10	ug/L	NC	20
4747649	Dissolved Sodium (Na)	2016/11/15	NC	80 - 120	99	80 - 120	<100	ug/L	1.6	20
4747649	Dissolved Thallium (Tl)	2016/11/15	86	80 - 120	93	80 - 120	<0.050	ug/L	NC	20
4747649	Dissolved Uranium (U)	2016/11/15	98	80 - 120	102	80 - 120	<0.10	ug/L	0.31	20
4747649	Dissolved Vanadium (V)	2016/11/15	99	80 - 120	98	80 - 120	<0.50	ug/L	NC	20
4747649	Dissolved Zinc (Zn)	2016/11/15	93	80 - 120	98	80 - 120	<5.0	ug/L	NC	20
4747755	F2 (C10-C16 Hydrocarbons)	2016/11/15	89	50 - 130	92	60 - 130	<100	ug/L	NC	30
4747755	F3 (C16-C34 Hydrocarbons)	2016/11/15	83	50 - 130	87	60 - 130	<200	ug/L	NC	30
4747755	F4 (C34-C50 Hydrocarbons)	2016/11/15	86	50 - 130	89	60 - 130	<200	ug/L	NC	30
4748060	Dissolved Sodium (Na)	2016/11/15	NC	80 - 120	104	80 - 120	<0.5	mg/L	0.46	25

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 spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of 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 (one or both samples < 5x RDL).

### VALIDATION SIGNATURE PAGE

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

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

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