



## Phase Two Environmental Site Assessment 116 Beech Street, Ottawa, Ontario

**Client:**

Katasa Groupe

**Type of Document:**

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Phase Two Environmental Site Assessment

**Project Number:**

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**Date Submitted:**

2023-07-14

*Katasa Groupe.  
Phase Two Environmental Site Assessment  
116 Beech Street, Ottawa, Ontario  
OTT-23005943-C0  
July 14, 2023*

## Legal Notification

This report was prepared by EXP Services Inc. for the account of **Katasa Groupe**.

Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. EXP Services Inc. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this project.

## Executive Summary

EXP Services Inc. (EXP) was retained by Katasa Groupe to conduct a Phase Two Environmental Site Assessment (ESA) at 116 Beech Street in Ottawa, Ontario (hereinafter referred to as the 'Phase Two property'). At the time of the investigation, the Phase Two property was occupied by a three-storey apartment building.

The objective of the Phase Two ESA investigation was to assess the quality of the soil conditions within the area of potential environmental concern (APEC) identified in a Phase One ESA prepared by EXP. It is understood that the report will be used to support a site zoning amendment with the City of Ottawa.

This report has been prepared in accordance with the Phase Two ESA standard as defined by Ontario Regulation 153/04 (as amended), and in accordance with generally accepted professional practices. Subject to this standard of care, EXP makes no express or implied warranties regarding its services and no third-party beneficiaries are intended. Limitation of liability, scope of report and third-party reliance are outlined in Section 8 of this report.

The Phase Two property has the municipal address 116 Beech Street. The Phase Two property is located on the south side of Beech Street, between Loretta Avenue and Champagne Street in Ottawa. The Phase Two property is rectangular in shape with an area of approximately 0.50 hectares.

The Phase Two property is currently occupied by a three-storey apartment building with a basement level. There are 58 residential units in the building. A parking lot is present on the east side of the building. The remainder of the Phase Two property is landscaped. The legal description of the Phase Two property is Lots 33-37, 60-64, Plan131037, Part Lane, Plan 131037, as closed by order CR227792, as in N682088; Ottawa/Nepean. The property identification number (PIN) is 041020089.

The Phase Two property, and all other properties located, in whole or in part, within 250 metres of the boundaries of the Phase Two property, are supplied by a municipal drinking water system provided by the City of Ottawa. Further, the Phase Two property is not located in an area designated in the municipal official plan as a well-head protection area and no properties within the Phase Two study area have a well that is being used or is intended for use as a source of potable water. Thus, in accordance with Section 35 of Ontario Regulation 153/04, non-potable water standards apply to the Phase Two property.

In accordance with Section 41 of Ontario Regulation 153/04, the Phase Two property is not an environmentally sensitive area. In addition, the Phase Two property is not located within an area of natural significance, and it does not include land that is within 30 metres of an area of natural significance. The Phase Two property is not a shallow soil property as defined in Section 43.1 of the regulation. It does not include all or part of a water body or is adjacent to a water body or includes land that is within 30 metres of a water body.

Bedrock in the general area of the Phase One property consists of limestone and shale of the Simcoe Group. Native surficial soil consists of sand and silt glacial till. The ground surface is approximately 63 metres above sea level (masl).

All of the well records in the area were for monitoring wells. Well records indicate surficial soil consists of silty clay. Limestone bedrock was present approximately 2.5 to 3.0 metres below ground surface. The inferred groundwater flow direction is to the southeast towards Dow's Lake. Based on the results of the geotechnical investigation, the depth to bedrock ranges from 1.7 m to 5.2 m depths and consists of limestone with shale partings. The groundwater flow direction was calculated to be to the east.

The following PCA were identified in the Phase One study area:

- **PCA #1** – 100 Champagne Avenue; Hutchins & Patrick Ltd., former commercial printing operation with on-site fuel oil underground storage tank (UST) (PCA #28 – Gasoline and associated products in fixed tanks, PCA #31 – Ink manufacturing, processing and bulk storage);
- **PCA #2** – 95 Beech Street; Mortimer Ltd. Printing & Lithographs, former commercial printing operation (PCA #31 – Ink manufacturing, processing and bulk storage);

- **PCA #3** – 402 Preston Street; repair garage and former gas station (PCA #10 – Commercial autobody shop, PCA #28 – Gasoline and associated products storage in fixed tanks);
- **PCA #4** – 140 Hickory Street/855 Carling Avenue; former fuel depot (PCA #28 – Gasoline and associated products storage in fixed tanks);
- **PCA #5** – 350 Loretta Avenue; former Bell Canada service garage with UST (PCA #10 – Commercial autobody shop, PCA #28 – Gasoline and associated products in fixed tanks);
- **PCA #6** – 265 Breezehill Avenue; former repair garage (PCA #10 – Commercial autobody shop);
- **PCA #7** – 125 Hickory Street; former repair garage, former on-site USTs (PCA #10 – Commercial autobody shop, PCA #28 – Gasoline and associated products in fixed tanks);
- **PCA #8** – 75 Aberdeen Street; repair garage and former gas station (PCA #10 – Commercial autobody shop, PCA #28 – Gasoline and associated products storage in fixed tanks);
- **PCA #9** – 875 Carling Avenue; former repair garage with waste oil and gasoline USTs (PCA #10 – Commercial autobody shop, PCA #28 – Gasoline and associated products storage in fixed tanks);
- **PCA #10** – 95 Norman Street; former repair garage (PCA #10 – Commercial autobody shop);
- **PCA #11** – 235 Breezehill Avenue former commercial printing operation (PCA #31 – Ink manufacturing, processing and bulk storage);
- **PCA #12** – 146-148 Beech Street; former on-site UST (PCA #28 – Gasoline and associated products storage in fixed tanks);
- **PCA #13** – 175 Beech Street; fuel oil UST installed in the 1960s (PCA #28 – Gasoline and associated products in fixed tanks);
- **PCA #14** – 424 George Street; former gas station (PCA #28 – Gasoline and associated products storage in fixed tanks);
- **PCA #15** – 75 Young Street; former fuel oil UST (PCA #28 – Gasoline and associated products in fixed tanks);
- **PCA #16** – 6 Champagne Avenue; former dry cleaner (PCA #37 – Operation of dry-cleaning equipment (where chemicals are used));
- **PCA #17** – 845 Carling Avenue; car dealership and service garage (PCA #10 – Commercial autobody shop); and,
- **PCA #18** – 116 Beech Street; former fuel oil AST (PCA #28 – Gasoline and associated products storage in fixed tanks).
- **PCA #19** – 116 Beech Street; fill material of unknown quality (PCA #30 – Importation of fill material of unknown quality).

Records identified USTs installed in the 1930s at the municipal address 116 Beech Street, located 30 m west of the Phase Two property. It is noted that the civic address in the Phase Two study area have changed since the study area was first developed. The Phase Two property was undeveloped prior to the construction of the existing building which was constructed circa 1950. Therefore, none of the records identified for 116 Beech Street prior to this time pertain to the Phase Two property. The property currently listed as 146 and 146 Beech Street, was historically listed as 116 Beech Street.

Multiple PCAs were identified in the Phase Two study area including repair garages, commercial printers, gas stations, and fuel storage tanks. Due to the separation distance and/or the down/cross-gradient location of the PCAs relative to the Phase Two property, none of the PCAs identified in the Phase Two study area were determined to contribute to areas of potential environmental concern on the Phase Two property.

The Phase Two study area slopes down to the southeast towards Dow's Lake. It is possible that fill material was brought to the Phase Two property to level the site when the building was constructed (**PCA #19:** (PCA #30 – Importation of fill material of unknown quality)). This PCA results in an APECs on the Phase One property.

Ontario Regulation 153/04 defines an APEC as an area on a property where one or more contaminants are potentially present. The following APEC were identified on the Phase Two property, as shown in Table EX-1:

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

Area of Potential Environmental Concern (APEC)	Location of APEC on Phase One Property	Potentially Contaminating Activity (PCA)	Location of PCA (On-Site or Off-Site)	Contaminants of Potential Concern	Media Potentially Impacted (Groundwater, Soil and/or Sediment)
<b>APEC #1</b>	Entire Phase One property	PCA#30 – Importation of Fill Material of Unknown Quality	On-Site	Benzene, toluene, ethylbenzene, xylene (BTEX), petroleum hydrocarbons (PHC), polycyclic aromatic hydrocarbons (PAH), metals	Soil

The site investigative activities consisted of the drilling of five boreholes to facilitate the collection of soil samples for visual inspection and chemical analysis. On June 6 and June 7, 2023, five boreholes (BH-1 to BH-5) were advanced at the Phase Two property by George Downing Estate Drilling (Downing) under the full-time supervision of EXP staff. The boreholes were advanced to auger refusal or termination depths ranging from 3.1 to 9.2 m below existing grade.

Three soil samples and a duplicate were collected from the fill material, and one samples was collected from the native material and submitted for laboratory analysis of PHC, PAH, BTEX, and metals. Results were compared to Regulation 153/04 Table 3 standards for residential/parkland/institutional property use and coarse textured soils in a non-potable groundwater condition.

The fill samples (and duplicate) collected from BH-2 exceeded the Table 3 SCS for PHC F4, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, fluoranthene, indeno(1,2,3,-cd)pyrene, lead, zinc, and sodium adsorption ratio. The elevated concentrations could be partly due to the presence of some asphalt in the soil sample due to its shallow depth.

The remaining samples met the Table 3 SCS for all parameters analysed with the exception of sodium adsorption ratio, which exceeded the Table 3 SCS in all of the soil samples analysed. However, as all of the soil samples were collected from boreholes drilled in the parking lot in accordance with Section 49.1 of O.Reg. 153/04 if, in the opinion of the Qualified Person, the applicable SCS at the Phase Two property are exceeded solely due to the application of a substance to surfaces for the safety of vehicular or pedestrian traffic under conditions of snow or ice or both, the applicable SCS is deemed not to be exceeded. Road salt is considered to have been applied to the driving and parking surfaces on the Phase Two property. Therefore, for the purpose of this investigation, the elevated SAR in the soil samples collected from the site are deemed not to exceed the Table 3 SCS.

PAH impacted soil was identified in one fill sample from TP22-6 and is associated with poor fill quality, miscellaneous debris was also observed in the fill material at this location. The depth of fill at this location was 0.2 to 1.5 m bgs. Only a small part of the Phase Two property appears to be impacted and the contaminants do not appear to be migrating. It is recommended that the impacted soil be removed from the Phase Two property when the property is re-developed.

The Qualified Person can confirm that the Phase Two Environmental Site Assessment was conducted per the requirements of Ontario Regulation 153/04, as amended, and in accordance with generally accepted professional practices.

*This executive summary is a brief synopsis of the report and should not be read in lieu of reading the report in its entirety.*

*Katasa Groupe.  
Phase Two Environmental Site Assessment  
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## 1.0 Introduction

EXP Services Inc. (EXP) was retained by Katasa Groupe to conduct a Phase Two Environmental Site Assessment (ESA) at 116 Beech Street in Ottawa, Ontario (hereinafter referred to as the 'Phase Two property'). At the time of the investigation, the Phase Two property was occupied by a three-storey apartment building.

The objective of the Phase Two ESA investigation was to assess the quality of the soil conditions within the area of potential environmental concern (APEC) identified in a Phase One ESA prepared by EXP. It is understood that the report will be used to support a site plan application with the City of Ottawa.

This report has been prepared in accordance with the Phase Two ESA standard as defined by Ontario Regulation 153/04 (as amended), and in accordance with generally accepted professional practices. Subject to this standard of care, EXP makes no express or implied warranties regarding its services and no third-party beneficiaries are intended. Limitation of liability, scope of report and third-party reliance are outlined in Section 8 of this report.

### 1.1 Site Description

The Phase Two property has the municipal address 116 Beech Street. The Phase Two property is located on the south side of Beech Street, between Loretta Avenue and Champagne Street in Ottawa. The Phase Two property is rectangular in shape with an area of approximately 0.50 hectares.

The Phase Two property is currently occupied by a three-storey apartment building with a basement level. There are 58 residential units in the building. A parking lot is present on the east side of the building. The remainder of the Phase Two property is landscaped.

The legal description of the Phase Two property is Lots 33-37, 60-64, Plan131037, Part Lane, Plan 131037, as closed by order CR227792, as in N682088; Ottawa/Nepean. The property identification number (PIN) is 041020089.

The approximate Universal Transverse Mercator (UTM) coordinates for the Phase Two property are Zone 18, 444219 m E and 5027560 m N. The UTM coordinates are based on measurements from Google Earth Pro, published by the Google Limited Liability Company (LLC). The accuracy of the centroid is estimated to be less than 10 m.

Refer to Table 1.1 for the Site identification information.

**Table 1.1: Site Identification Details**

<b>Civic Address</b>	116 Beech Street, Ottawa, Ontario
<b>Current Land Use</b>	Residential
<b>Proposed Future Land Use</b>	Residential
<b>Property Identification Number</b>	041020089
<b>UTM Coordinates</b>	Zone 18, 444219 m E and 5027560 m N
<b>Site Area</b>	0.50 hectares
<b>Property Owner</b>	Katasa Groupe

## 1.2 Property Ownership

The registered owner of the Phase Two property is Katasa Groupe. Authorization to proceed with this investigation on behalf of the property owner was provided by Ms. Chaxu Baria of Katasa Groupe. Contact information for Mr. Baria is 69, rue Jean-Proulx, Unit 301, Gatineau, Quebec, J8Z 1W2.

## 1.3 Current and Proposed Future Use

The current property use is residential and the proposed future use of the property is also residential. As the proposed use is the same as the current use, a Record of Site Condition (RSC) is not required.

## 1.4 Applicable Site Condition Standards

Analytical results obtained for soil samples were compared to Site Condition Standards (SCS) established under subsection 169.4(1) of the Environmental Protection Act, and presented in the document entitled *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, 2011*. This document provides tabulated background SCS (Table 1) applicable to environmentally sensitive sites and effects-based generic SCS (Tables 2 to 9) applicable to non-environmentally sensitive sites. The effects-based SCS (Tables 2 to 9) are protective of human health and the environment for different groundwater conditions (potable and non-potable), land use scenarios (residential, parkland, institutional, commercial, industrial, community and agricultural/other), soil texture (coarse or medium/fine) and restoration depth (full or stratified).

Table 1 to 9 SCS are summarized as follows:

- Table 1 – applicable to sites where background concentrations must be met (full depth), such as sensitive sites where site-specific criteria have not been derived
- Table 2 – applicable to sites with potable groundwater and full depth restoration
- Table 3 – applicable to sites with non-potable groundwater and full depth restoration
- Table 4 – applicable to sites with potable groundwater and stratified restoration
- Table 5 – applicable to sites with non-potable groundwater and stratified restoration
- Table 6 – applicable to sites with potable groundwater and shallow soils (bedrock encountered at depths of 2 metres or less across one-third or more of the site)
- Table 7 – applicable to sites with non-potable groundwater and shallow soils (bedrock encountered at depths of 2 metres or less across one-third or more of the site)
- Table 8 – applicable to sites with potable groundwater and that are within 30 m of a water body
- Table 9 – applicable to sites with non-potable groundwater and that are within 30 m of a water body

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

For assessment purposes, EXP selected the 2011 Table 3 SCS in a non-potable groundwater condition for residential/parkland/institutional property use. Analytical results were also compared to Table 1 background SCS.

The selection of these categories was based on the following factors:

- Bedrock is greater than 2 metres below grade across at least 2/3 of the subject property;
- The Phase Two property is not located within 30 metres of a waterbody;

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- The Phase Two property is not located within an area of natural significance, does not include nor is adjacent to an area of natural significance, and does not include land that is within 30 metres of an area of natural significance;
- Potable water for the Phase Two property is provided by the City of Ottawa through its water distribution system;
- The Phase Two property is not located in an area designated in a municipal official plan as a well-head protection area;
- The proposed building is planned for residential use; and
- It is the opinion of the Qualified Person who oversaw this work that the Phase Two property is not a sensitive site.

## 2.0 Background Information

### 2.1 Physical Setting

The Phase Two property has the municipal address 116 Beech Street. The Phase Two property is located on the south side of Beech Street, between Loretta Avenue and Champagne Street in Ottawa. The Phase Two property is rectangular in shape with an area of approximately 0.50 hectares. At the time of the investigation, the Phase Two property was occupied by a three-storey apartment building.

A site plan showing the Phase Two property is presented as Figure 2 in Appendix A.

The Phase Two property, and all other properties located, in whole or in part, within 250 metres of the boundaries of the Phase Two property, are supplied by a municipal drinking water system provided by the City of Ottawa. Further, the Phase Two property is not located in an area designated in the municipal official plan as a well-head protection area and no properties within the Phase Two study area have a well that is being used or is intended for use as a source of potable water. Thus, in accordance with Section 35 of Ontario Regulation 153/04, non-potable water standards apply to the Phase Two property.

In accordance with Section 41 of Ontario Regulation 153/04, the Phase Two property is not an environmentally sensitive area. In addition, the Phase Two property is not located within an area of natural significance, and it does not include land that is within 30 metres of an area of natural significance. The Phase Two property is not a shallow soil property as defined in Section 43.1 of the regulation. It does not include all or part of a water body or is adjacent to a water body or includes land that is within 30 metres of a water body.

Bedrock in the general area of the Phase One property consists of limestone and shale of the Simcoe Group. Native surficial soil consists of sand and silt glacial till. The ground surface is approximately 63 metres above sea level (masl).

All of the well records in the area were for monitoring wells. Well records indicate surficial soil consists of silty clay. Limestone bedrock was present approximately 2.5 to 3.0 metres below ground surface. The inferred groundwater flow direction is to the southeast towards Dow's Lake.

### 2.2 Past Investigations

EXP prepared a report entitled *Phase One Environmental Site Assessment, 116 Beech Street, Ottawa, Ontario*, dated June 16, 2023. The Phase One study area included the entire Phase Two property as well properties within 250 m of the Phase Two property. Based on the results of the Phase One ESA, EXP identified one area of potential environmental concern (APEC) within the Phase One study area. A summary is provided in Table 2.1.

**Table 2.1: Findings of Phase One ESA**

Area of Potential Environmental Concern (APEC)	Location of APEC on Phase One Property	Potentially Contaminating Activity (PCA)	Location of PCA (On-Site or Off-Site)	Contaminants of Potential Concern	Media Potentially Impacted (Groundwater, Soil and/or Sediment)
<b>APEC #1</b>	Entire Phase One property	PCA#30 – Importation of Fill Material of Unknown Quality	On-Site	Benzene, toluene, ethylbenzene, xylene (BTEX), petroleum hydrocarbons (PHC), polycyclic aromatic hydrocarbons (PAH), metals	Soil

The locations of the APEC are shown on Figures 2 and 3 in Appendix A.

The Phase One ESA was conducted per the requirements of Ontario Regulation 153/04, as amended, and in accordance with generally accepted professional practices. A copy of the Phase One conceptual site model is provided as Figure 3 in Appendix A.

## 3.0 Scope of the Investigation

### 3.1 Overview of Site Investigation

The objective of the Phase Two ESA was to assess the quality of soil on the Phase Two property. The investigation was conducted in conjunction with a geotechnical investigation.

### 3.2 Scope of Work

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

- Drill five boreholes on the subject property during a Geotechnical Investigation;
- Submit soil samples for laboratory analysis of benzene, toluene, ethylbenzene, xylene (BTEX), petroleum hydrocarbons (PHC), polycyclic aromatic hydrocarbons (PAH), and metals;
- Compare the results of the soil and groundwater chemical analyses to applicable criteria, as set out by the Ontario Ministry of the Environment, Conservation and Parks (MECP);
- Conduct an elevation survey of the boreholes;
- Prepare a report summarizing the results of the assessment activities.

This report has been prepared in accordance with the Phase Two ESA standard as defined by Ontario Regulation 153/04 (as amended), and in accordance with generally accepted professional practices. Subject to this standard of care, EXP makes no express or implied warranties regarding its services and no third-party beneficiaries are intended. Limitation of liability, scope of report and third-party reliance are outlined in Section 8 of this report.

### 3.3 Media Investigated

The Phase Two ESA included the investigation of soil on the Phase Two property. Based on the nature of the APEC identified in the Phase One ESA, groundwater was not investigated. As there are no water bodies on the Phase Two property, no surface water or sediment sampling was required.

The contaminants of potential concern (COPC) identified in the Phase One ESA were identified as target parameters for this Phase Two ESA. The APEC and COPC identified in the Phase One ESA are outlined in Section 2.2.

### 3.4 Phase One Conceptual Site Model

The Phase One conceptual site model (CSM) was developed by considering the following physical characteristics and pathways. The CSM showing the topography of the site, inferred groundwater flow, general site features, APEC, and PCA is shown in Figures 2 and 3 in Appendix A.

#### 3.4.1 Buildings and Structures

The Phase Two property was occupied by a three-storey apartment building with one basement level. The basement level of the east side of the building was occupied by apartment units. The basement level of the west side of the building was occupied by laundry, storage, and mechanical rooms.

### 3.4.2 Water Bodies and Groundwater Flow Direction

There are no water bodies on the Phase Two property. The closest body of water is Dow's Lake approximately 600 m to the southeast. The inferred groundwater flow direction is to the southeast towards Dow's Lake.

### 3.4.3 Areas of Natural Significance

There are no ANSI within the Phase Two study area.

### 3.4.4 Water Wells

Nineteen well records were identified within the Phase Two study area. All of the well records were for monitoring wells. Well records indicate surficial soil consists of silty clay. Limestone bedrock was present approximately 2.5 to 3.0 metres below ground surface.

### 3.4.5 Potentially Contaminating Activity

The following PCA were identified in the Phase One study area:

- **PCA #1** – 100 Champagne Avenue; Hutchins & Patrick Ltd., former commercial printing operation with on-site fuel oil underground storage tanks (UST) (PCA #28 – Gasoline and associated products in fixed tanks, PCA #31 – Ink manufacturing, processing and bulk storage);
- **PCA #2** – 95 Beech Street; Mortimer Ltd. Printing & Lithographs, former commercial printing operation (PCA #31 – Ink manufacturing, processing and bulk storage);
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- **PCA #4** – 140 Hickory Street/855 Carling Avenue; former fuel depot (PCA #28 – Gasoline and associated products storage in fixed tanks);
- **PCA #5** – 350 Loretta Avenue; former Bell Canada service garage with UST (PCA #10 – Commercial autobody shop, PCA #28 – Gasoline and associated products in fixed tanks);
- **PCA #6** – 265 Breezehill Avenue; former repair garage (PCA #10 – Commercial autobody shop);
- **PCA #7** – 125 Hickory Street; former repair garage, former on-site USTs (PCA #10 – Commercial autobody shop, PCA #28 – Gasoline and associated products in fixed tanks);
- **PCA #8** – 75 Aberdeen Street; repair garage and former gas station (PCA #10 – Commercial autobody shop, PCA #28 – Gasoline and associated products storage in fixed tanks);
- **PCA #9** – 875 Carling Avenue; former repair garage with waste oil and gasoline USTs (PCA #10 – Commercial autobody shop, PCA #28 – Gasoline and associated products storage in fixed tanks);
- **PCA #10** – 95 Norman Street; former repair garage (PCA #10 – Commercial autobody shop);
- **PCA #11** – 235 Breezehill Avenue former commercial printing operation (PCA #31 – Ink manufacturing, processing and bulk storage);
- **PCA #12** – 146-148 Beech Steet; former on-site UST (PCA #28 – Gasoline and associated products storage in fixed tanks);

- **PCA #13** – 175 Beech Street; fuel oil UST installed in the 1960s (PCA #28 – Gasoline and associated products in fixed tanks);
- **PCA #14** – 424 George Street; former gas station (PCA #28 – Gasoline and associated products storage in fixed tanks);
- **PCA #15** – 75 Young Street; former fuel oil UST (PCA #28 – Gasoline and associated products in fixed tanks);
- **PCA #16** – 6 Champagne Avenue; former dry cleaner (PCA #37 – Operation of dry-cleaning equipment (where chemicals are used));
- **PCA #17** – 845 Carling Avenue; car dealership and service garage (PCA #10 – Commercial autobody shop); and,
- **PCA #18** – 116 Beech Street; former fuel oil AST (PCA #28 – Gasoline and associated products storage in fixed tanks).
- **PCA #19** – 116 Beech Street; fill material of unknown quality (PCA #30 – Importation of fill material of unknown quality).

Records identified USTs installed in the 1930s at the municipal address 116 Beech Street, located 30 m west of the Phase Two property. It is noted that the civic address in the Phase Two study area have changed since the study area was first developed. The Phase Two property was undeveloped prior to the construction of the existing building which was constructed circa 1950. Therefore, none of the records identified for 116 Beech Street prior to this time pertain to the Phase Two property. The property currently listed as 146 and 146 Beech Street, was historically listed as 116 Beech Street.

Multiple PCAs were identified in the Phase Two study area including repair garages, commercial printers, gas stations, and fuel storage tanks. Due to the separation distance and/or the down/cross-gradient location of the PCAs relative to the Phase Two property, none of the PCAs identified in the Phase Two study area were determined to contribute to areas of potential environmental concern on the Phase Two property.

The Phase Two study area slopes down to the southeast towards Dow's Lake. It is possible that fill material was brought to the Phase Two property to level the site when the building was constructed (**PCA #19**: (PCA #30 – Importation of fill material of unknown quality)). This PCA results in an APECs on the Phase One property.

### 3.4.6 Areas of Potential Environmental Concern

The APEC identified are summarized in Table 3.1.

**Table 3.1: Areas of Potential Environmental Concern**

Area of Potential Environmental Concern (APEC)	Location of APEC on Phase One Property	Potentially Contaminating Activity (PCA)	Location of PCA (On-Site or Off-Site)	Contaminants of Potential Concern	Media Potentially Impacted (Groundwater, Soil and/or Sediment)
<b>APEC #1</b>	Entire Phase One property	PCA #30 – Importation of fill material of unknown quality	On-site	BTEX, PHC, PAH, and metals	Soil

### 3.4.7 Underground Utilities

The Phase Two property is connected to municipal water and sewer, natural gas, and overhead hydro.

### 3.4.8 Subsurface Stratigraphy

Bedrock in the general area of the Phase Two property consists of limestone and shale of the Simcoe Group. Native surficial soil consists of sand and silt glacial till. The ground surface is approximately 63 metres above sea level (masl). Bedrock is anticipated approximately 1.5 to 3 metres below ground surface. The general topography of the Phase Two property and study area slopes down to the southeast towards Dow's Lake.

### 3.4.9 Uncertainty Analysis

The CSM is a simplification of reality, which aims to provide a description and assessment of any areas where potentially contaminating activity that occurred within the Phase Two study area may have adversely affected the Phase Two property. All information collected during this investigation, including records, interviews, and site reconnaissance, has contributed to the formulation of the CSM.

Information was assessed for consistency, however EXP has confirmed neither the completeness nor the accuracy of any of the records that were obtained or of any of the statements made by others. All reasonable inquiries to obtain accessible information were made, as required by Schedule D, Table 1, Mandatory Requirements for Phase Two Environmental Site Assessment Reports. The CSM reflects our best interpretation of the information that was available during this investigation.

## 3.5 Deviations from Sampling and Analysis Plan

The field investigative and sampling program was carried out following the requirements of the Phase Two property, as described in Section 4.

No significant deviations from the SAAP, as provided in Appendix B, were reported that affected the sampling and data quality objectives for the Phase Two property. One native sample was submitted for chemical analysis, due to field observations of odour and staining.

## 3.6 Impediments

No impediments were encountered during this investigation.

## 4.0 Investigation Method

### 4.1 General

The current investigation was performed following requirements given under Ontario Regulation 153/04 and in accordance with generally accepted professional practices.

The site investigative activities consisted of drilling five boreholes to facilitate the collection of soil samples for visual inspection and chemical analysis. The investigation was conducted in conjunction with a geotechnical investigation.

### 4.2 Borehole Drilling

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

On June 6 and June 7, 2023, five boreholes (BH-1 to BH-5) were advanced at the Phase Two property by George Downing Estate Drilling (Downing) under the full-time supervision of EXP staff. The boreholes were advanced to auger refusal or termination depths ranging from 3.1 to 9.2 m below existing grade.

The boreholes were drilled with a CME-75 truck-mounted drill rig equipped with continuous flight hollow-stem auger equipment. Augers were advanced until the asphaltic concrete layer was fully penetrated and standard penetration tests (SPTs) were performed at a 0.6 m to 0.75 m depth interval and the soil samples were retrieved by the split-barrel sampler. All soil samples were visually examined in the field for textural classification, logged, preserved in plastic bags and identified.

The bedrock was cored in boreholes BH-1, BH-2, and BH-4 by conventional rock coring method using NQ core barrel. A careful record of any sudden drops of the core barrel, colour of the wash water and wash water return were recorded during the rock coring operations.

EXP staff continuously monitored the drilling activities to log the stratigraphy observed from the boreholes, to record the depth of the samples, to record total depths of excavation, and to screen the samples by recording visual or olfactory observations of potential impacts.

The locations of the boreholes are shown on Figure 2 in Appendix A.

### 4.3 Soil Sampling

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

Soil samples were selected for laboratory analysis based on combustible vapour measurements and visual and olfactory evidence of impacts, where observed. Soil samples identified for possible laboratory analysis were placed directly into pre-cleaned, laboratory-supplied glass sample jars/vials. Samples to be analysed for PHC fraction F1 and BTEX were collected using a soil core sampler and placed into vials containing methanol as a preservative. The jars and vials were sealed with Teflon-lined lids to minimize headspace and reduce the potential for induced volatilization during storage/transport prior to analysis. All soil samples were placed in clean coolers containing ice prior to and during transportation to the subcontract laboratory, Caduceon Environmental Laboratories (Caduceon) of Ottawa, Ontario. The samples were transported/submitted within 24 hours of collection to the laboratory following chain of custody protocols for chemical analysis. Soil samples were submitted for laboratory analysis of BTEX, PHC, PAH, and metals.

EXP staff continuously monitored the excavating activities to log the stratigraphy observed, to record the depth of soil sample collection, to record total depths of excavation, and to record visual or olfactory observations of potential impacts. Field observations are summarized on the borehole logs provided in Appendix C.

#### 4.4 Analytical Testing

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

#### 4.5 Residue Management

The drill cuttings from drilling activities were used to backfill the boreholes.

#### 4.6 Elevation Surveying

A geodetic elevation survey was conducted by EXP. The boreholes ground surface elevations were surveyed relative to a geodetic elevation provided by Farley, Smith & Denis Surveying Limited.

#### 4.7 Quality Assurance and Quality Control Measures

All soil and groundwater samples were placed in coolers containing ice packs prior to and during transportation to the contract laboratory, Bureau Veritas Laboratories (BVL). BVL is accredited to the ISO/IEC 17025:2005 standard - *General Requirements for the Competence of Testing and Calibration Laboratories*.

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

- Collecting and analysing field duplicate samples to ensure analytical precision;
- Using dedicated and/or disposable sampling equipment;
- Following proper decontamination protocols to minimize cross-contamination;
- Maintaining field notes and completing field forms to document field activities; and
- Using only laboratory-supplied sample containers and following prescribed sample protocols, including using proper preservation techniques, meeting sample hold times, and documenting sample transmission on chains of custody, to ensure the integrity of the samples is maintained.

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

## 5.0 Review and Evaluation

### 5.1 Geology

The pavement structure encountered in BH-1 to BH-3, drilled in the existing parking lot, consists of a 50 mm to 100 mm thick surficial asphaltic concrete layer underlain by a 100 mm to 360 mm thick granular fill layer that extends to depths ranging from 0.2 m to 0.46 m below the existing grade. The granular fill layer generally consists of silty sand with gravel. A 225 to 250 mm thick topsoil layer was surficially contacted in BH-4 and BH-5, drilled in the grass covered landscaped areas.

Silty sand to sandy silt was contacted below the fill in BH-1, BH-3 and BH-4 at depths of 1.4 m to 1.8 m. A silty clay layer was encountered in BH-4 and BH-5 underlying the fill or silty sand/sandy silt layer. The silty clay extends to depths of 2.7 m to 3.6 m.

Glacial till was contacted below the fill, silty sand/sandy silt or the silty clay/clayey silt BH-2 to BH-5 at depths of 0.7 m to 3.5 m. The composition of the glacial till contains varying amounts of gravel, sand, silt and clay, as well as cobbles and boulders.

Auger refusal was met in all the borehole at 1.7 m to 5.2 m depths. The presence of the bedrock was proven in BH-1, BH-2, and BH-4 by coring the bedrock. Based on a review of the bedrock cores, the bedrock is considered to be limestone with shale partings.

There were no odours or staining observed in the fill or native material in any of the boreholes with the exception of BH-3. Minor odours and staining were observed in this borehole at approximately 1.5 to 2.1 metres below ground surface.

A plan view showing cross-sections is provided as Figure 5 in Appendix A, while the Phase Two property geology is depicted in cross-sections on Figure 6 in Appendix A.

### 5.2 Groundwater: Elevations and Flow Direction

On February 22, 2023, the depth to groundwater in the geotechnical standpipes were measured. The bedrock groundwater monitoring and elevation data are provided below.

**Table 5.1: Monitoring and Elevation Data**

Borehole (BH) /Monitoring Well (MW) No.	Ground Surface Elevation (m)	Date of Measurement (Elapsed Time in Days from Date of Installation)	Screened Material	Groundwater Depth Below Ground Surface (Elevation), m
BH-1	65.31	June 22, 2023 (16 Days)	Limestone	3.5 (61.81)
BH-2	64.83	June 22, 2023 (15 Days)	Limestone	1.8 (63.03)
BH-4	67.75	June 22, 2023 (16 Days)	Limestone	3.1 (64.65)

Notes: Elevations were measured to a geodetic datum

mbgs – metres below ground surface

masl – metres above sea level

mbTOC – metres below top of monitor casing

N/A – not applicable

Based on the groundwater elevations, the limestone bedrock groundwater flow direction was determined to be to the east. A groundwater contour plan is shown on Figure 4 in Appendix A.

### 5.3 Soil: Quality

In accordance with the scope of work, chemical analyses were performed on selected soil samples recovered from the boreholes. Three soil samples and a duplicate were collected from the fill material, and one samples was collected from the native material and submitted to BVL for analysis of BTEX, PHC, PAH, and metals.

The fill samples (and duplicate) collected from BH-2 exceeded the Table 3 SCS for PHC F4, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, fluoranthene, indeno(1,2,3,-cd)pyrene, lead, zinc, and sodium adsorption ratio. The elevated concentrations could be partly due to the presence of some asphalt particles in the soil sample due to its shallow depth.

The remaining samples met the Table 3 SCS for all parameters analysed with the exception of sodium adsorption ratio, which exceeded the Table 3 SCS in all of the soil samples analysed. However, as all of the soil samples were collected from boreholes drilled in the parking lot in accordance with Section 49.1 of O.Reg. 153/04 if, in the opinion of the Qualified Person, the applicable SCS at the Phase Two property are exceeded solely due to the application of a substance to surfaces for the safety of vehicular or pedestrian traffic under conditions of snow or ice or both, the applicable SCS is deemed not to be exceeded. Road salt is considered to have been applied to the driving and parking surfaces on the Phase Two property. Therefore, for the purpose of this investigation, the elevated SAR in the soil samples collected from the site are deemed not to exceed the Table 3 SCS.

The soil results are provided in Tables 1 to 3 in Appendix D. They are shown in plan view on Figures 7 to 9 and on cross-sections on Figures 10 to 12 in Appendix A.

Copies of the laboratory Certificates of Analysis are provided in Appendix E.

#### 5.3.1 Chemical Transformation and Contaminant Sources

A variety of physical, chemical and biochemical mechanisms affect the fate and transport of the potential COC in soil and groundwater, the contribution of which is dependent on the soil and groundwater conditions at the Phase Two property, as well as the chemical/physical properties of the COC. 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.

PHC and PAH impacted soil was identified in one fill sample (and duplicate) from BH-2 and is associated with poor fill quality, miscellaneous debris (likely small pieces of asphalt) was also observed in the fill material at this location. The depth of fill at this location was 0.1 to 0.6 m bgs.

Only a small part of the Phase Two property appears to be impacted and the contaminants do not appear to be migrating. It is recommended that the impacted soil be removed from the Phase Two property when the property is re-developed.

Based on the results of the soil sampling, groundwater sampling was not determined to be required at the Phase Two property.

#### 5.3.2 Maximum Concentrations

Contaminants that exceeded the Table 3 SCS for residential land use were:

**Soil:** PHC F4, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, fluoranthene, indeno(1,2,3,-cd)pyrene, lead, and zinc.

Its is noted that all of the soil samples also exceeded the Table 3 SCS for sodium adsorption ratio, however, it was the opinion of the Qualified Person that the exceedances were due to the application of road salt to the driving and parking surfaces on the Phase Two property. Therefore, for the purpose of this investigation, the elevated SAR in the soil samples collected from the site are deemed not to exceed the Table 3 SCS.

Maximum soil concentrations are provided in Table 4 in Appendix C.

## 5.4 Quality Assurance and Quality Control Results

Quality assurance and quality control measures were taken during the field activities to meet the objectives of the sampling and quality assurance plan to collect unbiased and representative samples to characterize existing conditions in the fill materials and groundwater at the site. QA/QC measures, included:

- Collection and analysis of blind duplicate soil and groundwater samples to ensure sample collection precision;
- Analysis of a groundwater field blank for all parameters that were analysed to assess potential impact during sampling;
- Using dedicated and/or disposable sampling equipment;
- Following proper decontamination protocols to minimize cross-contamination;
- Maintaining field notes and completing field forms to document on-site activities; and
- Using only laboratory supplied sample containers and following prescribed sample protocols, including proper preservation, meeting sample hold times, proper chain of custody documentation, to ensure integrity of the samples.

BVL's QA/QC program consisted of the preparation and analysis of laboratory duplicate samples to assess precision and sample homogeneity, method blanks to assess analytical bias, spiked blanks and QC standards to evaluate analyte recovery, matrix spikes to evaluate matrix interferences and surrogate compound recoveries to evaluate extraction efficiency. The laboratory QA/QC results are presented in the Quality Assurance Report provided in the Certificates of Analysis prepared by Caduceon. The QA/QC results are reported as percent recoveries for matrix spikes, spiked blanks and QC standards, relative percent difference for laboratory duplicates and analyte concentrations for method blanks. Review of the laboratory QA/QC results reported indicated that they were within acceptable control limits or below applicable alert criteria for the sampled media and analytical test groups.

For QA/QC purposes, the analytical sample results are quantitatively evaluated by calculating the relative percent difference (RPD) between the samples and their duplicates. To accurately calculate a statistically valid RPD, the concentration of the analytes found in both the original and duplicate sample must be greater than five times the reporting detection limit (RDL).

The results of the RPD calculations are provided in Appendix D in Tables 5 to 7. All of the RPD for soil were either not calculable or within the applicable alert limits.

## 5.5 Phase Two Conceptual Site Model

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

### 5.5.1 Introduction

EXP Services Inc. (EXP) was retained by Katasa Groupe to conduct a Phase Two Environmental Site Assessment (ESA) at 116 Beech Street in Ottawa, Ontario (hereinafter referred to as the 'Phase Two property'). At the time of the investigation, the Phase Two property was occupied by a three-storey apartment building.

The objective of the Phase Two ESA investigation was to assess the quality of the soil conditions within the area of potential environmental concern (APEC) identified in a Phase One ESA prepared by EXP. It is understood that the report will be used to support a site plan application with the City of Ottawa.

The most recent use of the property was residential. The proposed future use of the property will likely be residential.

### 5.5.2 Physical Site Description

The Phase Two property has the municipal address 116 Beech Street. The Phase Two property is located on the south side of Beech Street, between Loretta Avenue and Champagne Street in Ottawa, Ontario. The Phase Two property is rectangular in shape with an area of approximately 0.50 hectares.

The Phase Two property is currently occupied by a three-storey apartment building with a basement level. There are 58 residential units in the building. A parking lot is present on the east side of the building. The remainder of the Phase Two property is landscaped.

The legal description of the Phase Two property is Lots 33-37, 60-64, Plan131037, Part Lane, Plan 131037, as closed by order CR227792, as in N682088; Ottawa/Nepean. The property identification number (PIN) is 041020089.

Refer to Table 5.7 for the Site identification information.

**Table 5.2: Site Identification Details**

<b>Civic Address</b>	116 Beech Street, Ottawa, Ontario
<b>Current Land Use</b>	Residential
<b>Proposed Future Land Use</b>	Residential
<b>Property Identification Number</b>	041020089
<b>UTM Coordinates</b>	Zone 18, 444219 m E and 5027560 m N
<b>Site Area</b>	0.50 hectares
<b>Property Owner</b>	Katasa Groupe

The Phase One Conceptual Site Model is provided as Figure 3.

The Phase Two property, and all other properties located, in whole or in part, within 250 metres of the boundaries of the Phase Two property, are supplied by a municipal drinking water system provided by the City of Ottawa. Further, the Phase Two property is not located in an area designated in the municipal official plan as a well-head protection area and no properties within the Phase Two study area have a well that is being used or is intended for use as a source of potable water. Thus, in accordance with Section 35 of Ontario Regulation 153/04, non-potable water standards apply to the Phase Two property.

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

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

Bedrock in the general area of the Phase One property consists of limestone and shale of the Simcoe Group. Native surficial soil consists of sand and silt glacial till. The ground surface is approximately 63 metres above sea level (masl).

All of the well records in the area were for monitoring wells. Well records indicate surficial soil consists of silty clay. Limestone bedrock was present approximately 2.5 to 3.0 metres below ground surface. The inferred groundwater flow direction is to the southeast towards Dow's Lake. Based on the results of the geotechnical investigation, the depth to bedrock ranges from 1.7 m to 5.2 m depths and consists of limestone with shale partings. The groundwater flow direction was calculated to be to the east.

### 5.5.3 Geological and Hydrogeological

Soil at the Phase Two property generally consisted of 100 mm to 360 mm thick granular fill layer that extended to depths ranging from 0.2 m to 0.46 m below the existing grade. The granular fill layer generally consisted of silty sand with gravel. A 225 to 250 mm thick topsoil layer was surficially contacted in BH 4 and BH-5, drilled in the grass covered landscaped areas.

Silty sand to sandy silt was contacted below the fill in BH-1, BH-3 and BH-4 at depths of 1.4 m to 1.8 m. A silty clay layer was encountered in BH-4 and BH-5 underlying the fill or silty sand/sandy silt layer. The silty clay extends to depths of 2.7 m to 3.6 m. Glacial till was contacted below the fill, silty sand/sandy silt or the silty clay/clayey silt BH-2 to BH-5 at depths of 0.7 m to 3.5 m. The composition of the glacial till contains varying amounts of gravel, sand, silt and clay, as well as cobbles and boulders. Auger refusal was met in all the borehole at 1.7 m to 5.2 m depths. The presence of the bedrock was proven in BH-1, BH-2, and BH-4 by coring the bedrock. Based on a review of the bedrock cores, the bedrock is considered to be limestone with shale partings.

There were no odours or staining observed in the fill or native material in any of the boreholes with the exception of BH-3. Minor odours and staining were observed in this borehole at approximately 1.5 to 2.1 metres below ground surface.

A plan view showing cross-sections is provided as Figure 5, while the Phase Two property geology is depicted in cross-sections on Figure 6.

A summary of factors that apply to the Phase Two property is provided in Table 5.8.

**Table 5.3: Site Characteristics**

Characteristic	Description
Minimum Depth to Bedrock	1.7 metres below ground surface
Minimum Depth to Groundwater	1.8 m
Shallow Soil Property	No, bedrock is greater than 2.0 mbgs
Proximity to water body or ANSI	Approximately 0.5 km – Dows Lake
Soil Texture	Coarse
Current Property Use	Residential
Future Property Use	Residential
Areas Containing Suspected Fill	Entire Phase Two property

### 5.5.4 Utilities and Impediments

The Phase Two property is connected to municipal water and sewer, natural gas, and overhead hydro.

### 5.5.5 Potentially Contaminating Activities

The following PCA were identified in the Phase One study area:

- **PCA #1** – 100 Champagne Avenue; Hutchins & Patrick Ltd., former commercial printing operation with on-site fuel oil USTs (PCA #28 – Gasoline and associated products in fixed tanks, PCA #31 – Ink manufacturing, processing and bulk storage);
- **PCA #2** – 95 Beech Street; Mortimer Ltd. Printing & Lithographs, former commercial printing operation (PCA #31 – Ink manufacturing, processing and bulk storage);
- **PCA #3** – 402 Preston Street; repair garage and former gas station (PCA #10 – Commercial autobody shop, PCA #28 – Gasoline and associated products storage in fixed tanks);
- **PCA #4** – 140 Hickory Street/855 Carling Avenue; former fuel depot (PCA #28 – Gasoline and associated products storage in fixed tanks);
- **PCA #5** – 350 Loretta Avenue; former Bell Canada service garage with UST (PCA #10 – Commercial autobody shop, PCA #28 – Gasoline and associated products in fixed tanks);
- **PCA #6** – 265 Breezehill Avenue; former repair garage (PCA #10 – Commercial autobody shop);
- **PCA #7** – 125 Hickory Street; former repair garage, former on-site USTs (PCA #10 – Commercial autobody shop, PCA #28 – Gasoline and associated products in fixed tanks);
- **PCA #8** – 75 Aberdeen Street; repair garage and former gas station (PCA #10 – Commercial autobody shop, PCA #28 – Gasoline and associated products storage in fixed tanks);
- **PCA #9** – 875 Carling Avenue; former repair garage with waste oil and gasoline USTs (PCA #10 – Commercial autobody shop, PCA #28 – Gasoline and associated products storage in fixed tanks);
- **PCA #10** – 95 Norman Street; former repair garage (PCA #10 – Commercial autobody shop);
- **PCA #11** – 235 Breezehill Avenue former commercial printing operation (PCA #31 – Ink manufacturing, processing and bulk storage);
- **PCA #12** – 146-148 Beech Street; former on-site UST (PCA #28 – Gasoline and associated products storage in fixed tanks);
- **PCA #13** – 175 Beech Street; fuel oil UST installed in the 1960s (PCA #28 – Gasoline and associated products in fixed tanks);
- **PCA #14** – 424 George Street; former gas station (PCA #28 – Gasoline and associated products storage in fixed tanks);
- **PCA #15** – 75 Young Street; former fuel oil UST (PCA #28 – Gasoline and associated products in fixed tanks);
- **PCA #16** – 6 Champagne Avenue; former dry cleaner (PCA #37 – Operation of dry-cleaning equipment (where chemicals are used));
- **PCA #17** – 845 Carling Avenue; car dealership and service garage (PCA #10 – Commercial autobody shop); and,
- **PCA #18** – 116 Beech Street; former fuel oil AST (PCA #28 – Gasoline and associated products storage in fixed tanks).
- **PCA #19** – 116 Beech Street; fill material of unknown quality (PCA #30 – Importation of fill material of unknown quality).

Records identified USTs installed in the 1930s at the municipal address 116 Beech Street, located 30 m west of the Phase Two property. It is noted that the civic address in the Phase Two study area have changed since the study area was first developed. The Phase Two property was undeveloped prior to the construction of the existing building which was constructed circa 1950.

Therefore, none of the records identified for 116 Beech Street prior to this time pertain to the Phase Two property. The property currently listed as 146 and 146 Beech Street, was historically listed as 116 Beech Street.

Multiple PCAs were identified in the Phase Two study area including repair garages, commercial printers, gas stations, and fuel storage tanks. Due to the separation distance and/or the down/cross-gradient location of the PCAs relative to the Phase Two property, none of the PCAs identified in the Phase Two study area were determined to contribute to areas of potential environmental concern on the Phase Two property.

The Phase Two study area slopes down to the southeast towards Dow's Lake. It is possible that fill material was brought to the Phase Two property to level the site when the building was constructed (**PCA #19:** (PCA #30 – Importation of fill material of unknown quality)). This PCA results in an APECs on the Phase One property.

### 5.5.6 Areas of Potential Environmental Concern/Potential Contaminates of Concern

Ontario Regulation 153/04 defines an APEC as an area on a property where one or more contaminants are potentially present. The following APEC were identified on the Phase Two property, as shown on Figure 2 and Table 5.9 below:

**Table 5.4: Areas of Potential Environmental Concern**

Area of Potential Environmental Concern (APEC)	Location of APEC on Phase One Property	Potentially Contaminating Activity (PCA)	Location of PCA (On-Site or Off-Site)	Contaminants of Potential Concern	Media Potentially Impacted (Groundwater, Soil and/or Sediment)
<b>APEC #1</b>	Entire Phase One property	PCA #30 – Importation of fill material of unknown quality	On-site	BTEX, PHC, PAH, and metals	Soil

### 5.5.7 Investigation

The site investigative activities consisted of the drilling of five boreholes to facilitate the collection of soil samples for visual inspection and chemical analysis. Prior to the commencement of drilling, the locations of underground public utilities including telephone, natural gas and electrical lines were marked at the subject property by public locating companies. A private utility locating contractor was also retained to clear the individual borehole locations.

On June 6 and June 7, 2023, five boreholes (BH-1 to BH-5) were advanced at the Phase Two property by George Downing Estate Drilling (Downing) under the full-time supervision of EXP staff. The boreholes were advanced to auger refusal or termination depths ranging from 3.1 to 9.2 m below existing grade. Dedicated nitrile gloves (one pair per sample) were used during sample handling. No petroleum-based greases or solvents were used during excavation activities. EXP staff continuously monitored the drilling activities to log the stratigraphy observed from the boreholes, to record the depth of the samples, to record total depths of the boreholes, and to screen the samples by recording visual or olfactory observations of potential impacts and measuring petroleum vapours.

The locations of the boreholes are shown on Figure 2 in Appendix A.

### 5.5.8 Soil Sampling

Soil samples were selected for laboratory analysis based on visual and olfactory evidence of impacts, where observed. Soil samples identified for possible laboratory analysis were placed directly into pre-cleaned, laboratory-supplied glass sample jars/vials. Samples to be analyzed for PHC fraction F1 and BTEX were collected using a soil core sampler and placed into vials containing methanol as a preservative. The jars and vials were sealed with Teflon-lined lids to minimize headspace and reduce the potential for induced volatilization during storage/transport prior to analysis. All soil samples were placed in clean coolers containing ice prior to and during transportation to the subcontract laboratory, Bureau Veritas Laboratories (BVL) of Ottawa,

Ontario. The samples were transported/submitted within 24 hours of collection to the laboratory following chain of custody protocols for chemical analysis.

Three soil samples and a duplicate were collected from the fill material, and one samples was collected from the native material and submitted for laboratory analysis of PHC, PAH, BTEX, and metals.

The fill samples (and duplicate) collected from BH-2 exceeded the Table 3 SCS for PHC F4, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, fluoranthene, indeno(1,2,3,-cd)pyrene, lead, zinc, and sodium adsorption ratio. The elevated concentrations could be partly due to the presence of some asphalt in the soil sample due to its shallow depth.

The remaining samples met the Table 3 SCS for all parameters analysed with the exception of sodium adsorption ratio, which exceeded the Table 3 SCS in all of the soil samples analysed. However, as all of the soil samples were collected from boreholes drilled in the parking lot in accordance with Section 49.1 of O.Reg. 153/04 if, in the opinion of the Qualified Person, the applicable SCS at the Phase Two property are exceeded solely due to the application of a substance to surfaces for the safety of vehicular or pedestrian traffic under conditions of snow or ice or both, the applicable SCS is deemed not to be exceeded. Road salt is considered to have been applied to the driving and parking surfaces on the Phase Two property. Therefore, for the purpose of this investigation, the elevated SAR in the soil samples collected from the site are deemed not to exceed the Table 3 SCS.

The soil results are provided in Tables 1 to 3 in Appendix D. They are shown in plan view on Figures 7 to 9 and on cross-sections on Figures 10 to 12 in Appendix A.

### 5.5.9 Contaminants of Concern

Contaminants that exceeded the Table 3 SCS for residential land use were:

**Soil:** PHC F4, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, fluoranthene, indeno(1,2,3,-cd)pyrene, lead, and zinc

### 5.5.10 Contaminant Fate and Transport

A variety of physical, chemical and biochemical mechanisms affect the fate and transport of the potential COC in soil and groundwater, the contribution of which is dependent on the soil and groundwater conditions at the Phase Two property, as well as the chemical/physical properties of the COC. 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.

PAH impacted soil was identified in one fill sample from TP22-6 and is associated with poor fill quality, miscellaneous debris was also observed in the fill material at this location. The depth of fill at this location was 0.2 to 1.5 m bgs.

Only a small part of the Phase Two property appears to be impacted and the contaminants do not appear to be migrating. It is recommended that the impacted soil be removed from the Phase Two property when the property is re-developed.

Based on the results of the soil sampling, groundwater sampling was not determined to be required at the Phase Two property.

## 6.0 Conclusion

During the current investigation, the soil quality at the Phase Two property was investigated. The investigation included a soil sampling program. Results were compared to Regulation 153/04 Table 3 standards for residential/parkland/institutional property use and coarse textured soils in a non-potable groundwater condition.

PAH impacted soil was identified in one fill sample from TP22-6 and is associated with poor fill quality, miscellaneous debris was also observed in the fill material at this location. The depth of fill at this location was 0.2 to 1.5 m bgs. Only a small part of the Phase Two property appears to be impacted and the contaminants do not appear to be migrating. It is recommended that the impacted soil be removed from the Phase Two property when the property is re-developed.

The Qualified Person can confirm that the Phase Two Environmental Site Assessment was conducted per the requirements of Ontario Regulation 153/04, as amended, and in accordance with generally accepted professional practices.

Leah Wells, P.Eng.  
Environmental Engineer  
Earth and Environment

Mark McCalla, P.Geo.  
Team Lead/Senior Project Manager  
Earth and Environment



## 7.0 References

This study was conducted in accordance with the applicable Regulations, Guidelines, Policies, Standards, Protocols and Objectives. Specific reference is made to the following documents.

- EXP Services Inc., *Phase One Environmental Site Assessment, 116 Beech Street, Ottawa, Ontario, June 26, 2023.*
- Freeze and Cherry, *Groundwater*, Prentice Hall, 1979.
- Ontario Ministry of the Environment, Conservation and Parks, *Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario*, December 1996.
- Ontario Ministry of the Environment, Conservation and Parks, *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*, April 15, 2011.
- Ontario Ministry of the Environment, Conservation and Parks, *Guide for Completing Phase Two Environmental Site Assessments under Ontario Regulation 153/04*, June 2011.
- Ontario Ministry of the Environment, Conservation and Parks, *Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act*, July 1, 2011.
- Ontario Ministry of the Environment, Conservation and Parks, *Management of Excess Soil – A Guide for Best Management Practices*, January 2014.
- Ontario Regulation 153/04, made under the *Environmental Protection Act*, as amended.
- Ontario R.R.O. 1990, Regulation 347, made under the *Environmental Protection Act*, as amended.
- Ontario R.R.O. 1990, Regulation 903, made under the *Water Resources Act*, as amended.

## 8.0 General Limitations

### Basis of Report

This report ("Report") is based on site conditions known or inferred by the investigation undertaken as of the date of the Report. Should changes occur which potentially impact the condition of the site the recommendations of EXP may require re-evaluation. Where special concerns exist, or Katasa Groupe ("the Client") has special considerations or requirements, these should be disclosed to EXP to allow for additional or special investigations to be undertaken not otherwise within the scope of investigation conducted for the purpose of the Report.

### Reliance on Information Provided

The evaluation and conclusions contained in the Report are based on conditions in evidence at the time of site inspections and information provided to EXP by the Client and others. The Report has been prepared for the specific site, development, building, design or building assessment objectives and purpose as communicated by the Client. EXP has relied in good faith upon such representations, information and instructions and accepts no responsibility for any deficiency, misstatement or inaccuracy contained in the Report as a result of any misstatements, omissions, misrepresentation or fraudulent acts of persons providing information. Unless specifically stated otherwise, the applicability and reliability of the findings, recommendations, suggestions or opinions expressed in the Report are only valid to the extent that there has been no material alteration to or variation from any of the information provided to exp. If new information about the environmental conditions at the Site is found, the information should be provided to EXP so that it can be reviewed and revisions to the conclusions and/or recommendations can be made, if warranted.

### Standard of Care

The Report has been prepared in a manner consistent with the degree of care and skill exercised by engineering consultants currently practicing under similar circumstances and locale. No other warranty, expressed or implied, is made. Unless specifically stated otherwise, the Report does not contain environmental consulting advice.

### Complete Report

All documents, records, data and files, whether electronic or otherwise, generated as part of this assignment form part of the Report. This material includes, but is not limited to, the terms of reference given to EXP by the Client, communications between EXP and the Client, other reports, proposals or documents prepared by EXP for the Client in connection with the site described in the Report. In order to properly understand the suggestions, recommendations and opinions expressed in the Report, reference must be made to the Report in its entirety. EXP is not responsible for use by any party of portions of the Report.

### Use of Report

The information and opinions expressed in the Report, or any document forming part of the Report, are for the sole benefit of the Client. No other party may use or rely upon the Report in whole or in part without the written consent of EXP. Any use of the Report, or any portion of the Report, by a third party are the sole responsibility of such third party. EXP is not responsible for damages suffered by any third party resulting from unauthorised use of the Report.

### Report Format

Where EXP has submitted both electronic file and a hard copy of the Report, or any document forming part of the Report, only the signed and sealed hard copy shall be the original documents for record and working purposes. In the event of a dispute or discrepancy, the hard copy shall govern. Electronic files transmitted by EXP utilize specific software and hardware systems. EXP makes no representation about the compatibility of these files with the Client's current or future software and hardware systems. Regardless of format, the documents described herein are EXP's instruments of professional service and shall not be altered without the written consent of EXP.

EXP Services Inc.

*Katasa Groupe.*

*Phase Two Environmental Site Assessment*

*116 Beech Street, Ottawa, Ontario*

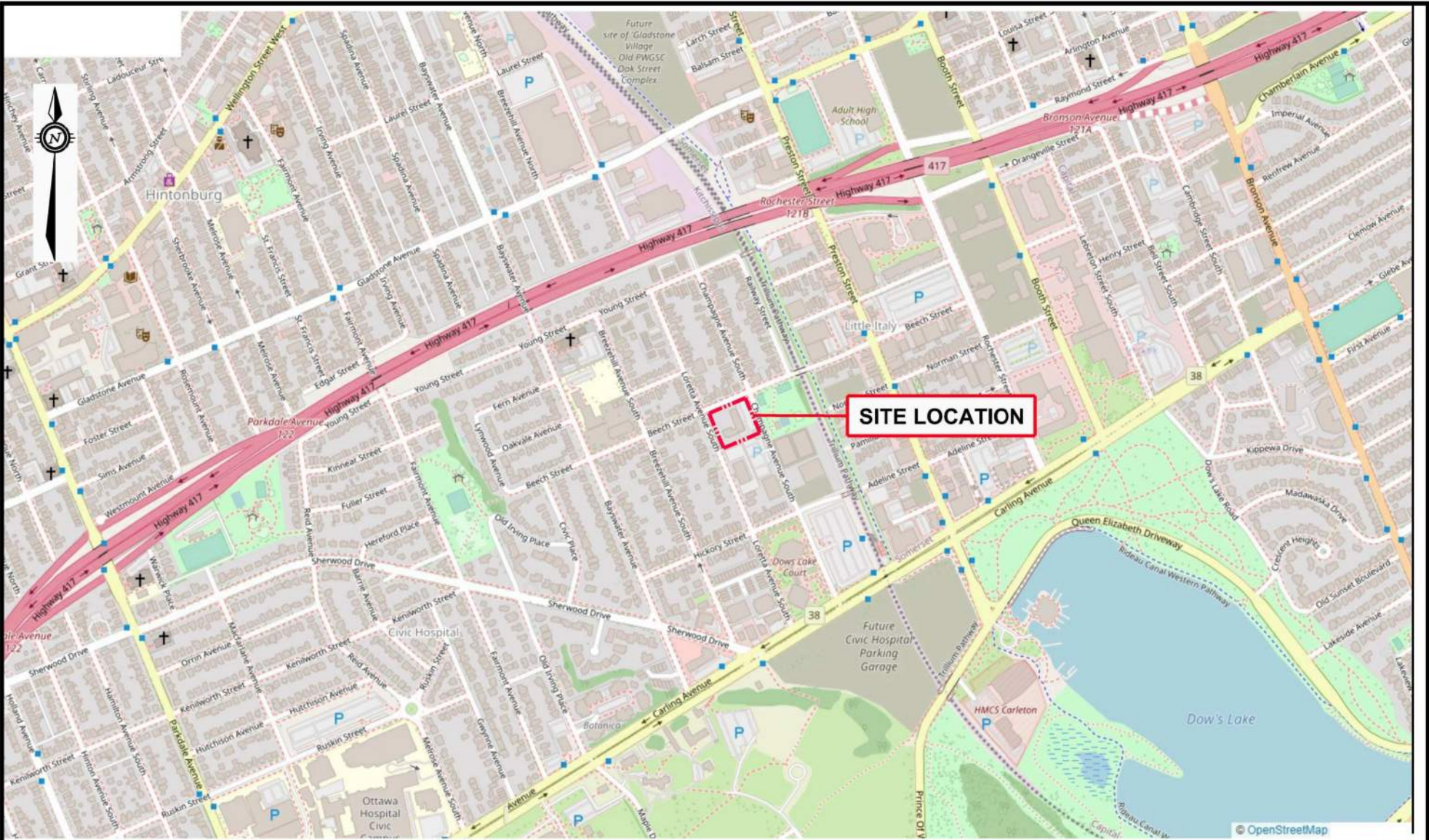
*OTT-23005843-C0*

*July 14, 2023*

## Appendix A: Figures

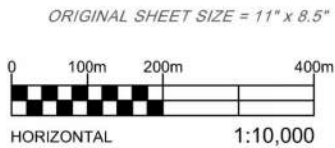


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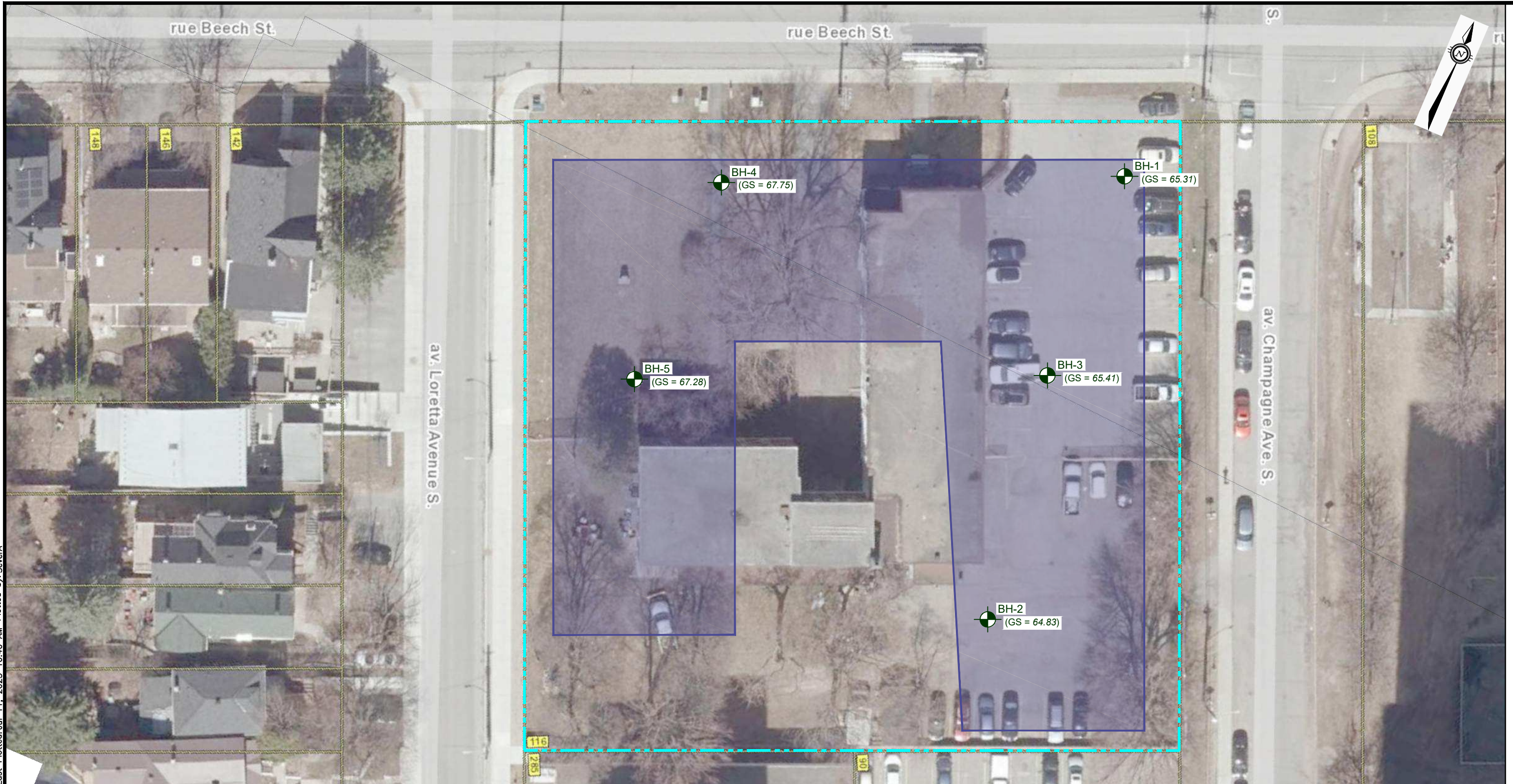
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DESIGN LW	CHECKED MM
DRAWN BY AS	

**PROPOSED HIGH RISE DEVELOPMENT**  
 116 BEECH STREET, OTTAWA, ONTARIO




**PHASE TWO ENVIRONMENTAL SITE ASSESSMENT**  
**SITE LOCATION PLAN**

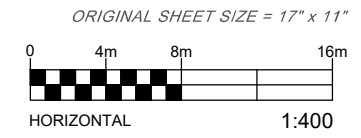
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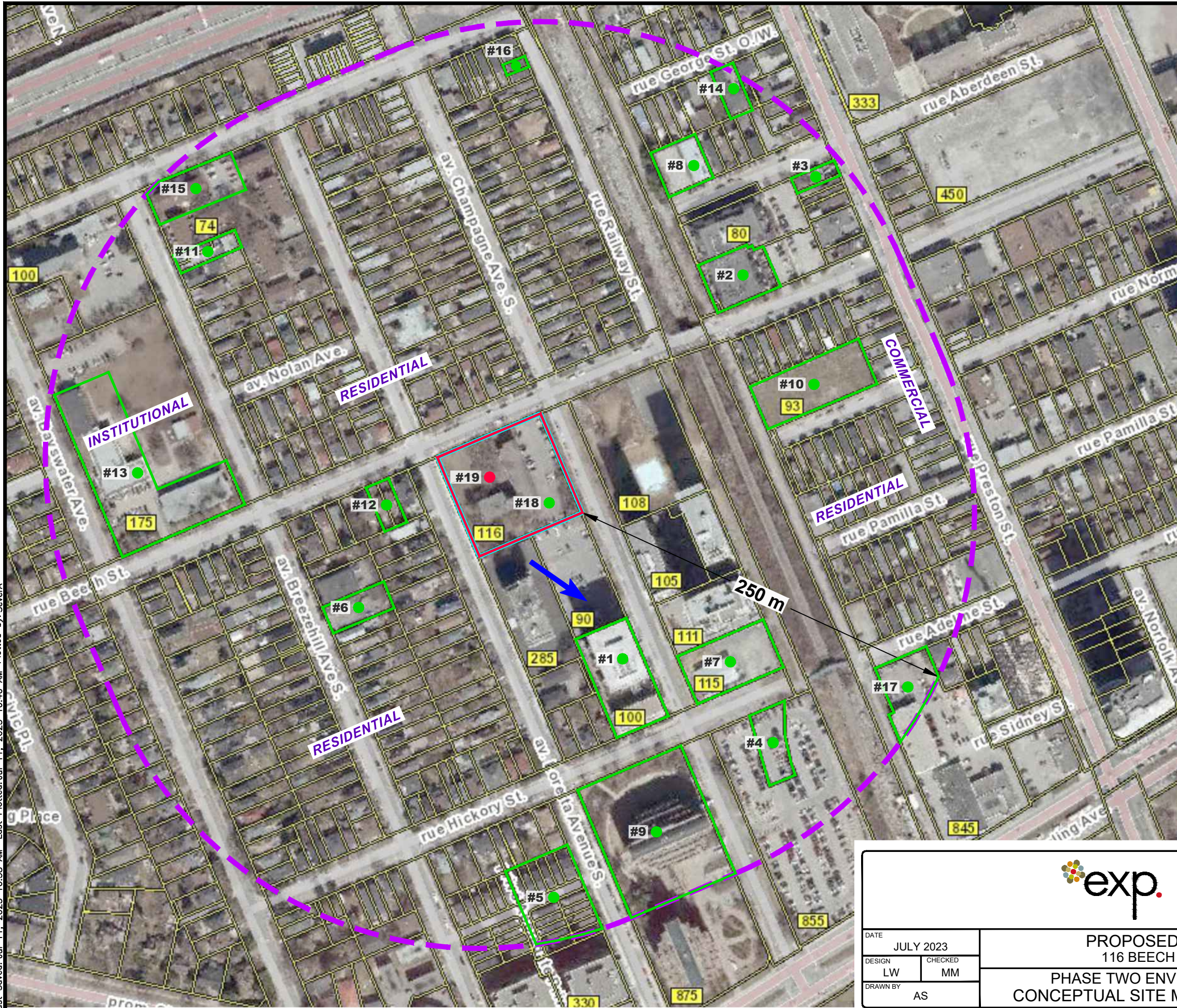
**LEGEND**

	PROPERTY BOUNDARIES
	PROPOSED HIGH RISE BUILDINGS FOOTPRINT
	BOREHOLE NO. AND LOCATION (EXP, 2023) GROUND SURFACE ELEVATION (m) ACCORDING TO FARLEY, SMITH & DENIS SURVEYING LTD. SURVEY (DATED: 16/09/2022)








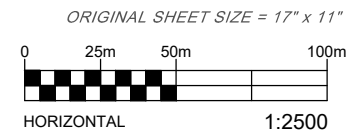
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 Ottawa, ON K2B 8H6, Canada

DATE JULY 2023	<b>PROPOSED HIGH RISE DEVELOPMENT</b> 116 BEECH STREET, OTTAWA, ONTARIO  <b>PHASE TWO ENVIRONMENTAL SITE ASSESSMENT</b> BOREHOLE LOCATION PLAN	project no. OTT-23005943-C0
DESIGN LW		scale 1:400
CHECKED MM		FIG 2
DRAWN BY AS		



**LEGEND**

-  APPROXIMATE SITE BOUNDARY
-  PHASE TWO STUDY AREA
-  INFERRED GROUNDWATER FLOW DIRECTION
-  **PCA #1** POTENTIALLY CONTAMINATING ACTIVITY (PCA) NOT RESULTING IN APEC
-  **PCA #19** POTENTIALLY CONTAMINATING ACTIVITY (PCA) RESULTING IN APEC

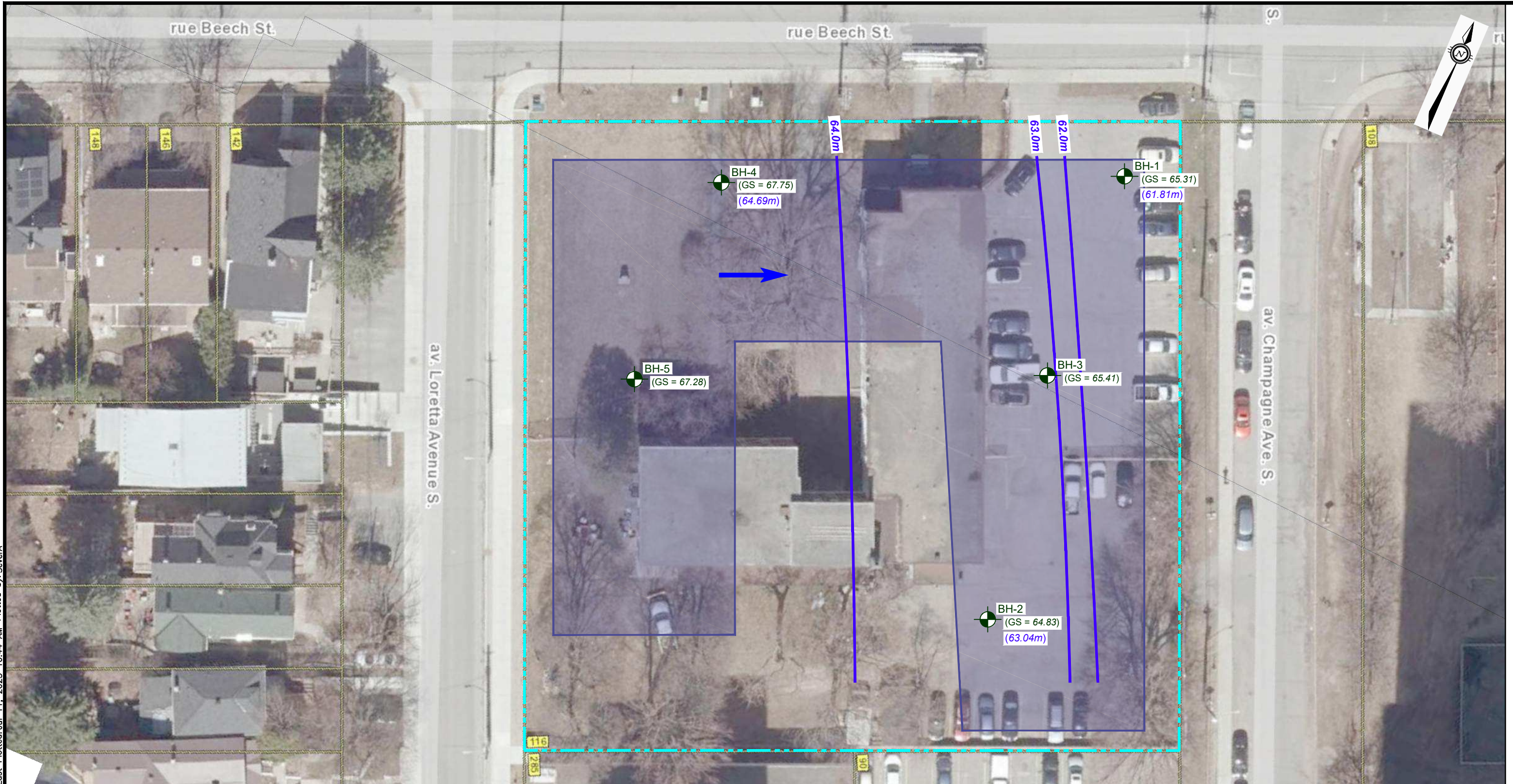


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 Ottawa, ON K2B 8H6, Canada

DATE	JULY 2023	<b>PROPOSED HIGH RISE DEVELOPMENT</b> 116 BEECH STREET, OTTAWA, ONTARIO  <b>PHASE TWO ENVIRONMENTAL SITE ASSESSMENT</b> <b>CONCEPTUAL SITE MODEL – PHASE TWO STUDY AREA</b>	project no.	OTT-23005943-C0
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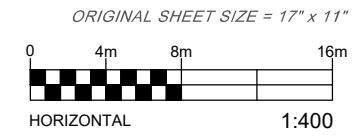
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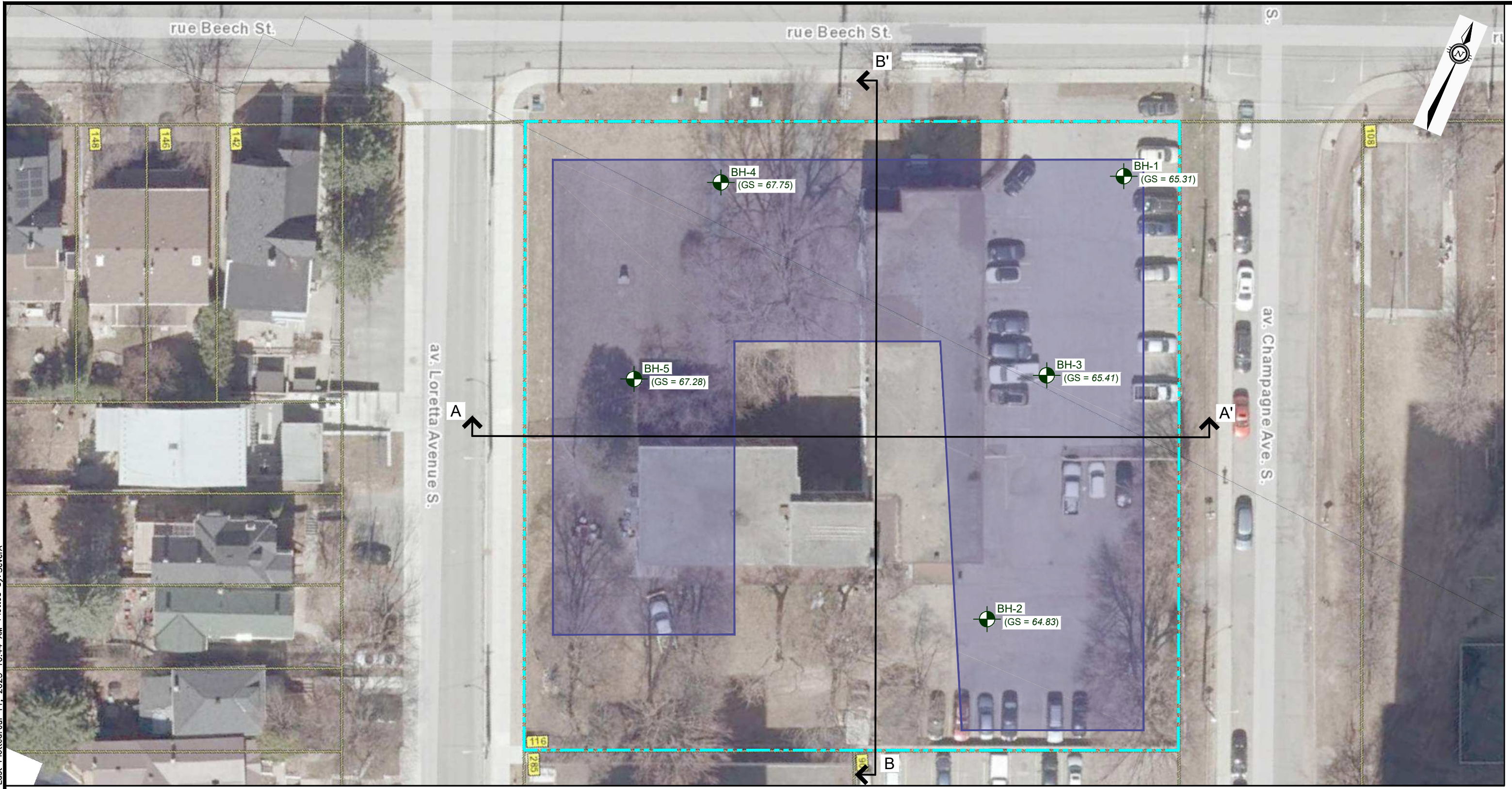
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- PROPOSED HIGH RISE BUILDINGS FOOTPRINT
- BOREHOLE NO. AND LOCATION (EXP, 2023)
- GROUND SURFACE ELEVATION (m)  
 ACCORDING TO FARLEY, SMITH & DENIS SURVEYING LTD.  
 SURVEY (DATED: 16/09/2022)
- (61.81m) GROUNDWATER LEVEL (m)
- 62.0m GROUNDWATER ELEVATION CONTOUR
- INFERRED GROUNDWATER FLOW DIRECTION



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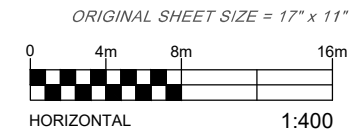
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DESIGN	CHECKED		scale	1:400
DRAWN BY	AS			<b>FIG 4</b>

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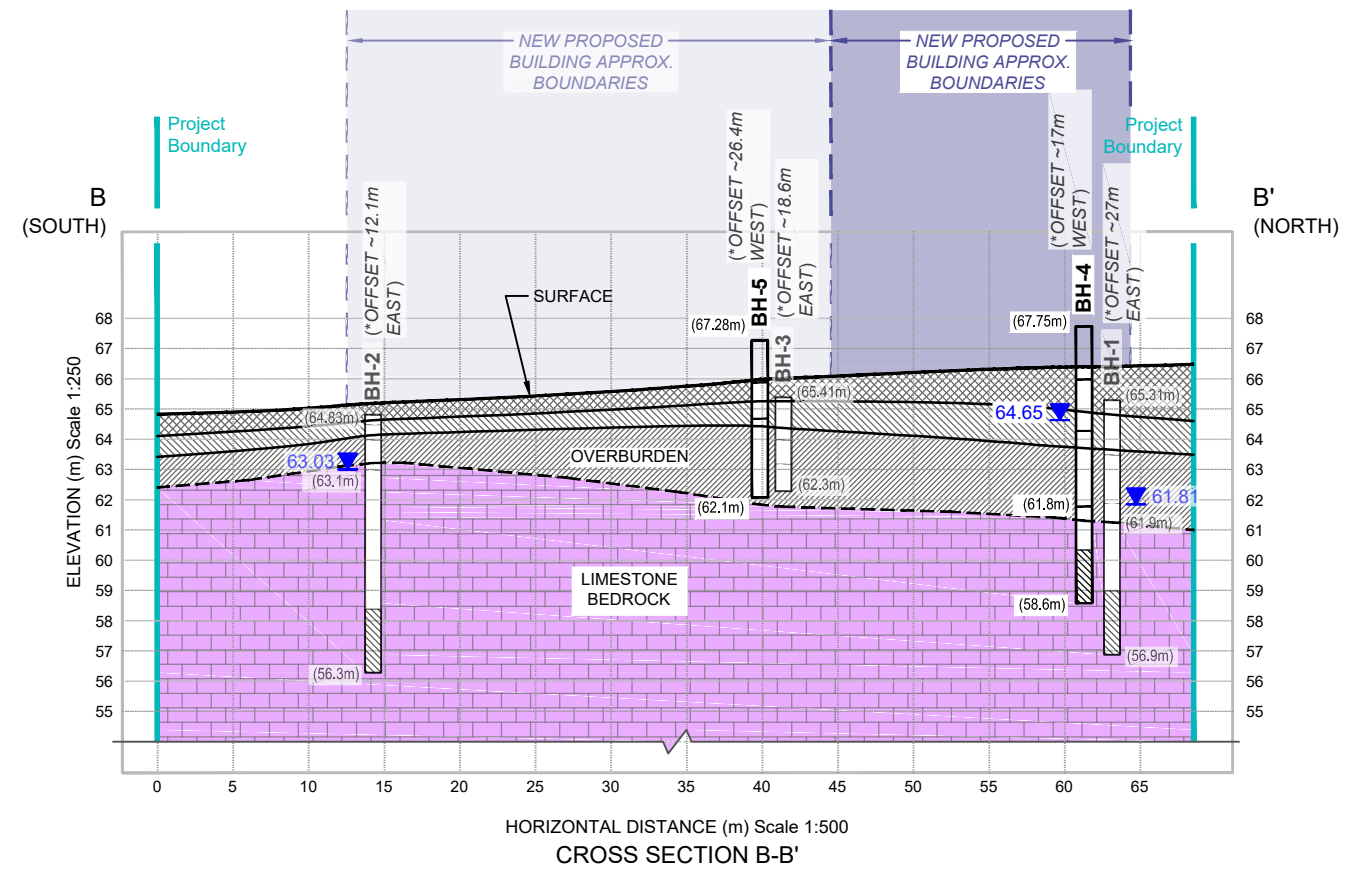
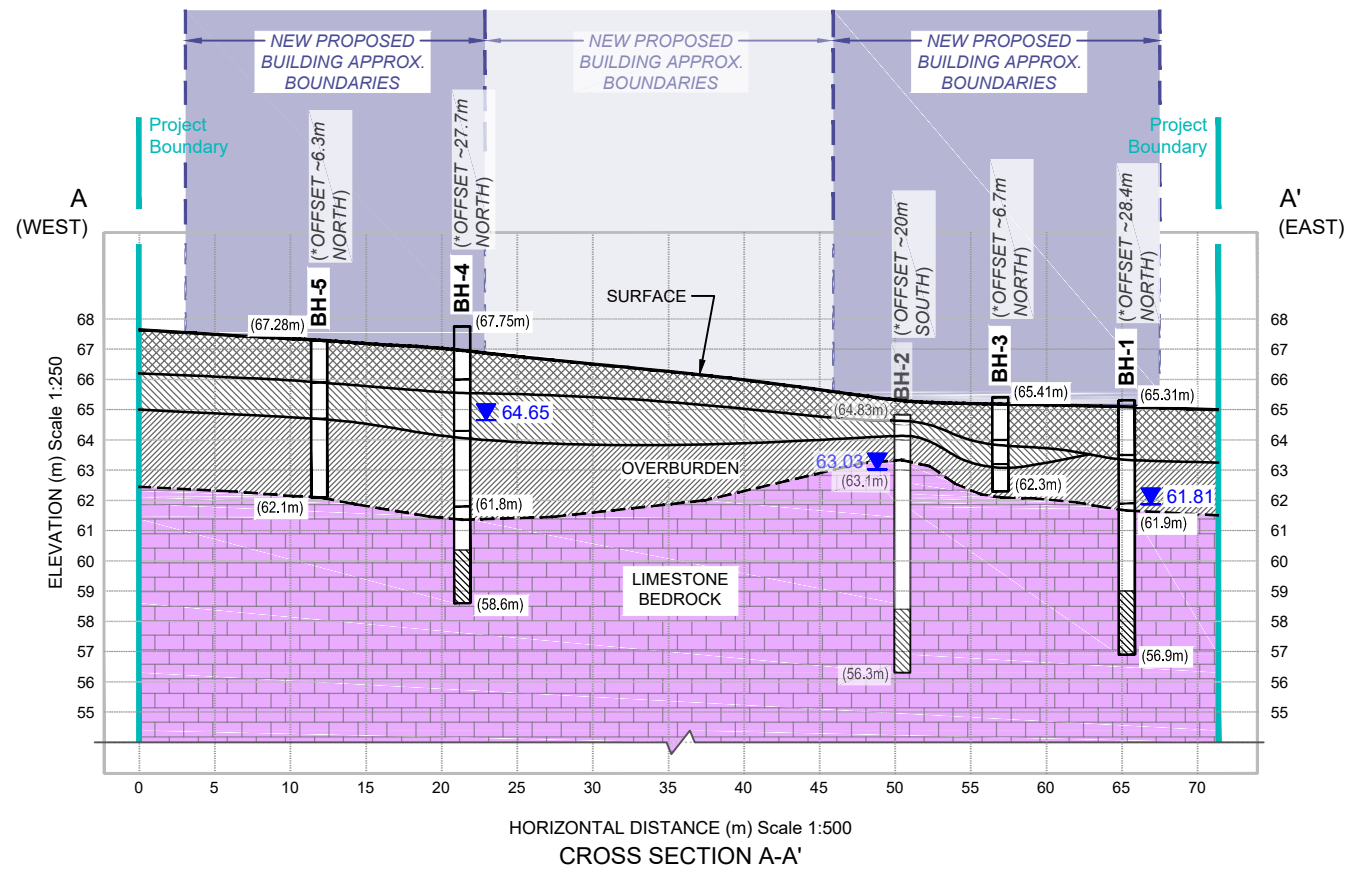
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	PROPERTY BOUNDARIES
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	BOREHOLE NO. AND LOCATION (EXP, 2023)
	GROUND SURFACE ELEVATION (m)
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	SURVEY (DATED: 16/09/2022)



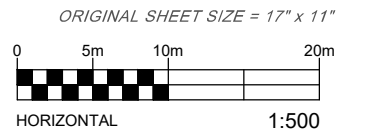
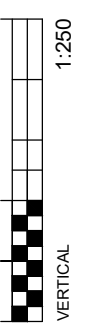
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DATE	JULY 2023	<b>PROPOSED HIGH RISE DEVELOPMENT</b> 116 BEECH STREET, OTTAWA, ONTARIO <b>PHASE TWO ENVIRONMENTAL SITE ASSESSMENT</b> CROSS SECTION PLAN	project no.	OTT-23005943-C0		
DESIGN	LW		checked	MM	scale	1:400
DRAWN BY	AS				FIG 5	



**LEGEND**

- APPROXIMATE PROPERTY BOUNDARY
- OVERBURDEN (TOPSOIL, FILL, etc.)
- OVERBURDEN (CLAY, SILT, SAND, TILL etc.)
- BEDROCK
- BOREHOLE/MONITORING WELL:**
  - Ground Surface Elevation (m)
  - Bedrock Elevation (m)
  - Screen
  - BH/MW Bottom Elevation (m)
- 61.81 GROUNDWATER ELEVATION AT BOREHOLE

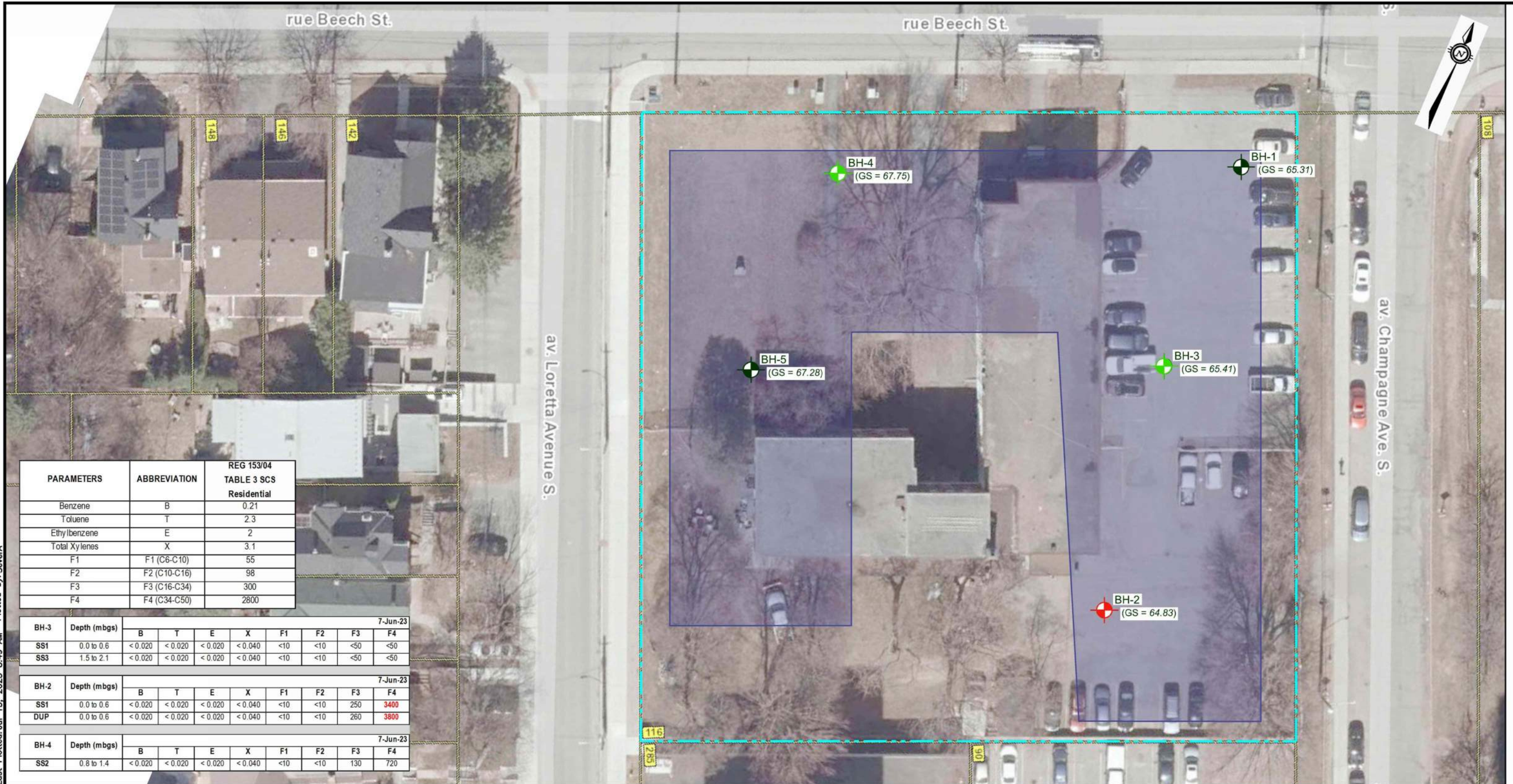


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 2650 Queensview Drive, Suite 100  
 Ottawa, ON K2B 8H6, Canada

DATE	JULY 2023	<b>PROPOSED HIGH RISE DEVELOPMENT</b> 116 BEECH STREET, OTTAWA, ONTARIO <b>PHASE TWO ENVIRONMENTAL SITE ASSESSMENT</b> CROSS SECTIONS A-A' & B-B'	project no.	OTT-23005943-C0
DESIGN	LW		scale	1:500 / 1:250
DRAWN BY	AS			<b>FIG 6</b>

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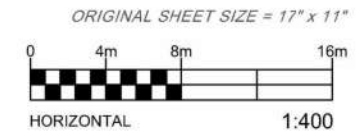
PARAMETERS	ABBREVIATION	REG 153/04 TABLE 3 SCS Residential
Benzene	B	0.21
Toluene	T	2.3
Ethylbenzene	E	2
Total Xylenes	X	3.1
F1	F1 (C6-C10)	55
F2	F2 (C10-C16)	98
F3	F3 (C16-C34)	300
F4	F4 (C34-C50)	2800

Borehole	Depth (mbgs)	7-Jun-23							
		B	T	E	X	F1	F2	F3	F4
BH-3	SS1 0.0 to 0.6	< 0.020	< 0.020	< 0.020	< 0.040	<10	<10	<50	<50
	SS3 1.5 to 2.1	< 0.020	< 0.020	< 0.020	< 0.040	<10	<10	<50	<50
BH-2	7-Jun-23								
	SS1 0.0 to 0.6	< 0.020	< 0.020	< 0.020	< 0.040	<10	<10	250	3400
	DUP 0.0 to 0.6	< 0.020	< 0.020	< 0.020	< 0.040	<10	<10	260	3800
BH-4	7-Jun-23								
	SS2 0.8 to 1.4	< 0.020	< 0.020	< 0.020	< 0.040	<10	<10	130	720

**LEGEND**

- PROPERTY BOUNDARIES
- PROPOSED HIGH RISE BUILDINGS FOOTPRINT
- BOREHOLE NO. AND LOCATION (EXP, 2023)
- SOIL CONCENTRATION EXCEEDS MECP TABLE 3 STANDARD
- SOIL CONCENTRATION MEETS MECP TABLE 3 STANDARD

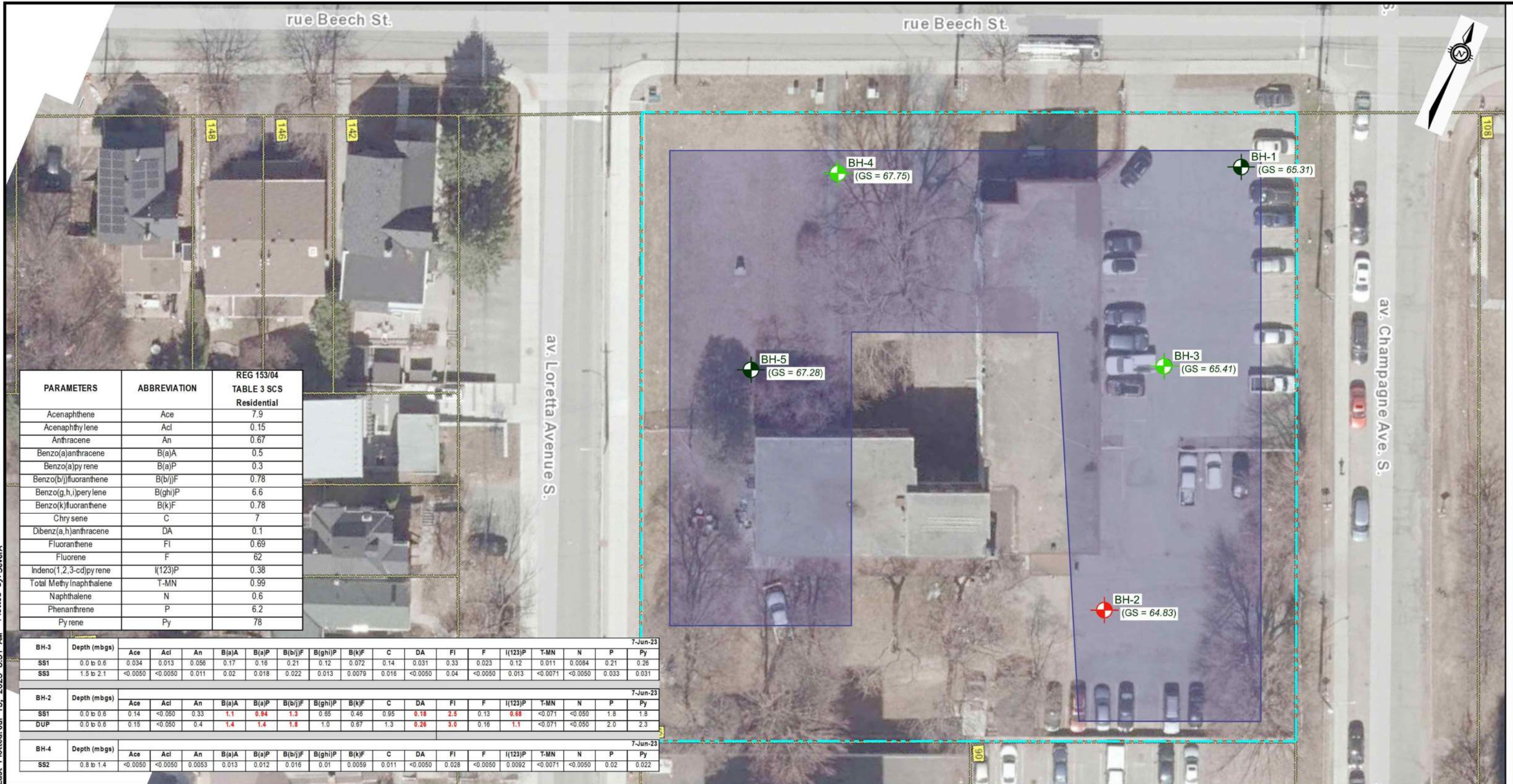
GROUND SURFACE ELEVATION (m)  
 ACCORDING TO FARLEY, SMITH & DENIS SURVEYING LTD.  
 SURVEY (DATED: 16/09/2022)



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DATE	JULY 2023		<b>PROPOSED HIGH RISE DEVELOPMENT</b> 116 BEECH STREET, OTTAWA, ONTARIO	project no.	OTT-23005943-CO
DESIGN	LW	CHECKED		MM	scale
DRAWN BY	AS		<b>PHASE TWO ENVIRONMENTAL SITE ASSESSMENT</b> <b>SOIL ANALYTICAL RESULTS – PHC &amp; VOC</b>	<b>FIG 7</b>	

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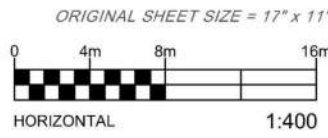
PARAMETERS	ABBREVIATION	REG 153/04 TABLE 3 SCS Residential
Acenaphthene	Ace	7.9
Acenaphthylene	Acl	0.15
Anthracene	An	0.67
Benzo(a)anthracene	B(a)A	0.5
Benzo(a)pyrene	B(a)P	0.3
Benzo(b)fluoranthene	B(b)F	0.78
Benzo(g,h,i)perylene	B(ghi)P	6.6
Benzo(k)fluoranthene	B(k)F	0.78
Chrysene	C	7
Dibenz(a,h)anthracene	DA	0.1
Fluoranthene	Fl	0.69
Fluorene	F	62
Indeno(1,2,3-cd)pyrene	I(123)P	0.38
Total Methyl naphthalene	T-MN	0.99
Naphthalene	N	0.6
Phenanthrene	P	6.2
Pyrene	Py	78

Borehole	Depth (mbgs)	7-Jun-23																
		Ace	Acl	An	B(a)A	B(a)P	B(b)F	B(ghi)P	B(k)F	C	DA	Fl	F	I(123)P	T-MN	N	P	Py
BH-3	SS1 0.0 to 0.6	0.034	0.013	0.058	0.17	0.16	0.21	0.12	0.072	0.14	0.031	0.33	0.023	0.12	0.011	0.0084	0.21	0.28
	SS3 1.5 to 2.1	<0.0050	<0.0050	0.011	0.02	0.018	0.022	0.013	0.0079	0.016	<0.0050	0.04	<0.0050	0.013	<0.0071	<0.0050	0.033	0.031
BH-2	SS1 0.0 to 0.6	0.14	<0.050	0.33	1.1	0.94	1.3	0.65	0.46	0.95	0.18	2.5	0.13	0.68	<0.071	<0.050	1.8	1.8
	DUP 0.0 to 0.6	0.15	<0.050	0.4	1.4	1.4	1.8	1.0	0.67	1.3	0.26	3.0	0.16	1.1	<0.071	<0.050	2.0	2.3
	SS2 0.8 to 1.4	<0.0050	<0.0050	0.0053	0.013	0.012	0.016	0.01	0.0059	0.011	<0.0050	0.028	<0.0050	0.0092	<0.0071	<0.0050	0.02	0.022

**LEGEND**

- PROPERTY BOUNDARIES
- PROPOSED HIGH RISE BUILDINGS FOOTPRINT
- BOREHOLE NO. AND LOCATION (EXP, 2023)
- SOIL CONCENTRATION EXCEEDS MECP TABLE 3 STANDARD
- SOIL CONCENTRATION MEETS MECP TABLE 3 STANDARD

GROUND SURFACE ELEVATION (m)  
 ACCORDING TO FARLEY, SMITH & DENIS SURVEYING LTD.  
 SURVEY (DATED: 16/09/2022)



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**PROPOSED HIGH RISE DEVELOPMENT**  
 116 BEECH STREET, OTTAWA, ONTARIO

**PHASE TWO ENVIRONMENTAL SITE ASSESSMENT**  
 SOIL ANALYTICAL RESULTS – PAH

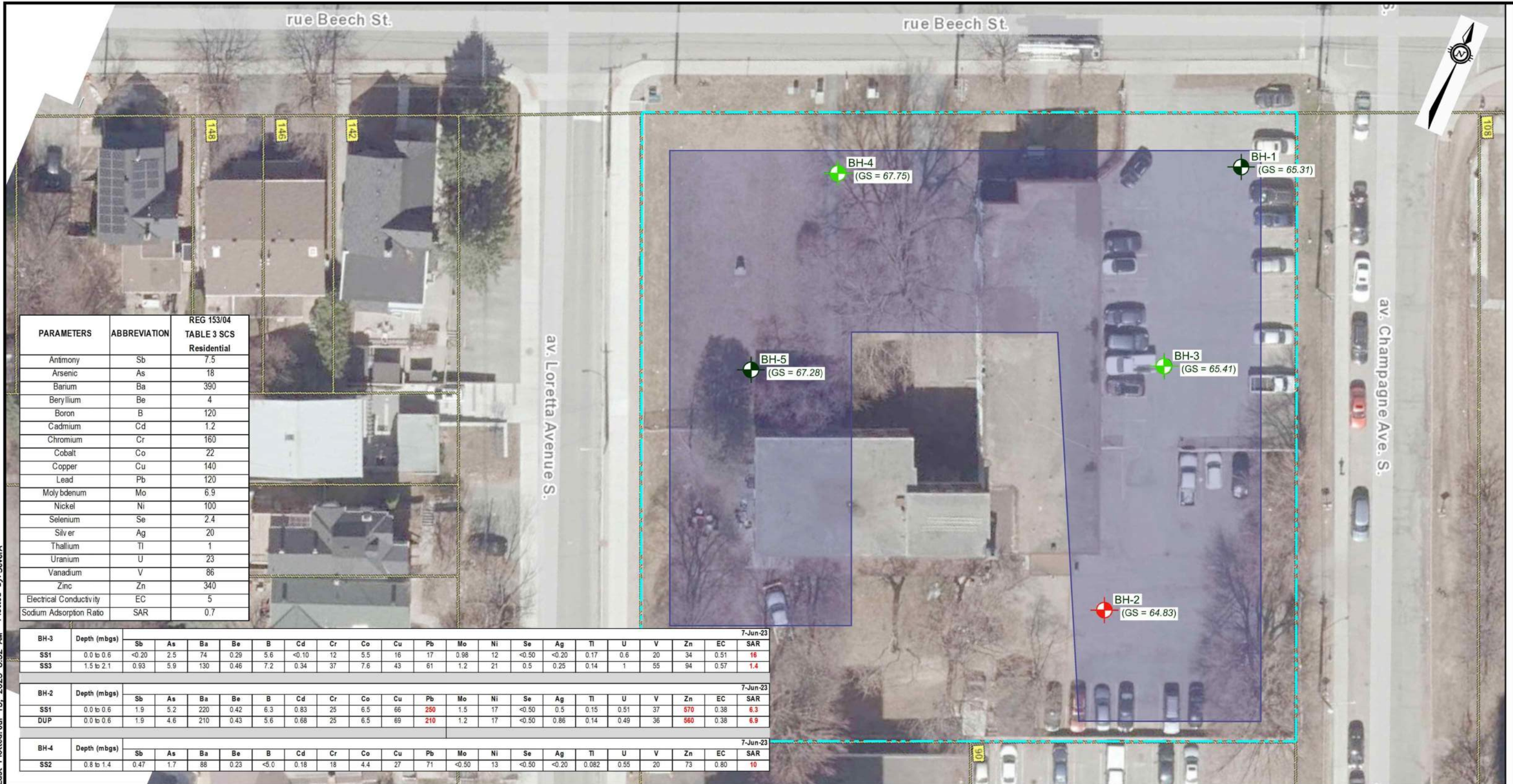
project no.  
OTT-23005943-CO

scale  
1:400

**FIG 8**

DATE	JULY 2023	
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		MM
DRAWN BY	AS	

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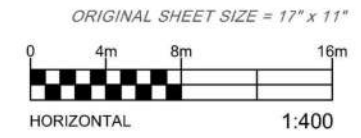


PARAMETERS	ABBREVIATION	REG 153/04 TABLE 3 SCS Residential
Antimony	Sb	7.5
Arsenic	As	18
Barium	Ba	390
Beryllium	Be	4
Boron	B	120
Cadmium	Cd	1.2
Chromium	Cr	160
Cobalt	Co	22
Copper	Cu	140
Lead	Pb	120
Molybdenum	Mo	6.9
Nickel	Ni	100
Selenium	Se	2.4
Silver	Ag	20
Thallium	Tl	1
Uranium	U	23
Vanadium	V	86
Zinc	Zn	340
Electrical Conductivity	EC	5
Sodium Adsorption Ratio	SAR	0.7

Borehole	Depth (mbgs)	7-Jun-23																			
		Sb	As	Ba	Be	B	Cd	Cr	Co	Cu	Pb	Mo	Ni	Se	Ag	Tl	U	V	Zn	EC	SAR
BH-3	SS1 0.0 to 0.6	<0.20	2.5	74	0.29	5.6	<0.10	12	5.5	16	17	0.98	12	<0.50	<0.20	0.17	0.6	20	34	0.51	1.6
	SS3 1.5 to 2.1	0.93	5.9	130	0.46	7.2	0.34	37	7.6	43	61	1.2	21	0.5	0.25	0.14	1	55	94	0.57	1.4
BH-2	7-Jun-23																				
	SS1 0.0 to 0.6	1.9	5.2	220	0.42	6.3	0.83	25	6.5	66	250	1.5	17	<0.50	0.5	0.15	0.51	37	570	0.38	6.3
	DUP 0.0 to 0.6	1.9	4.6	210	0.43	5.6	0.68	25	6.5	69	210	1.2	17	<0.50	0.86	0.14	0.49	36	560	0.38	6.9
BH-4	7-Jun-23																				
	SS2 0.8 to 1.4	0.47	1.7	88	0.23	<5.0	0.18	18	4.4	27	71	<0.50	13	<0.50	<0.20	0.082	0.55	20	73	0.80	1.0

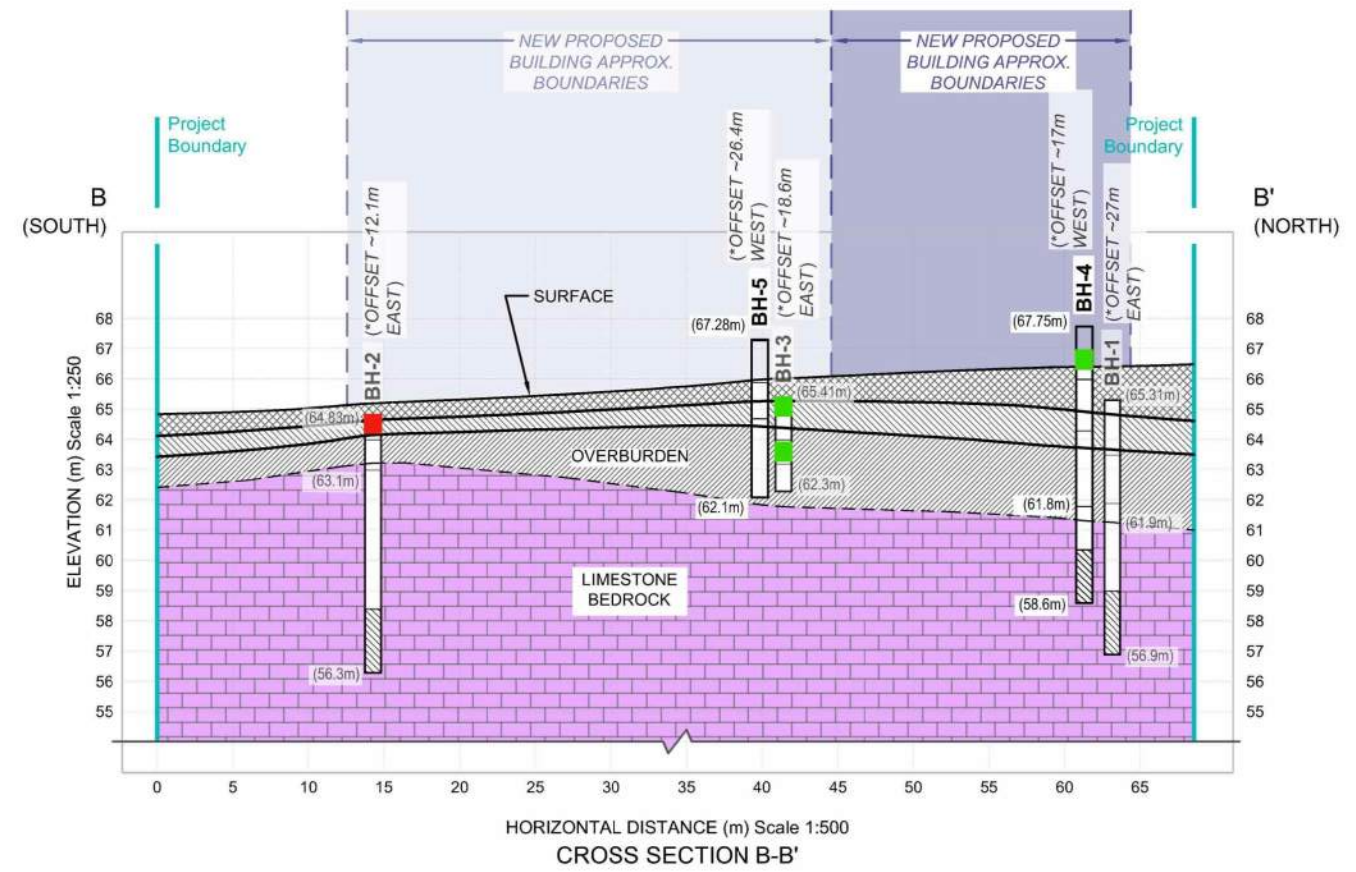
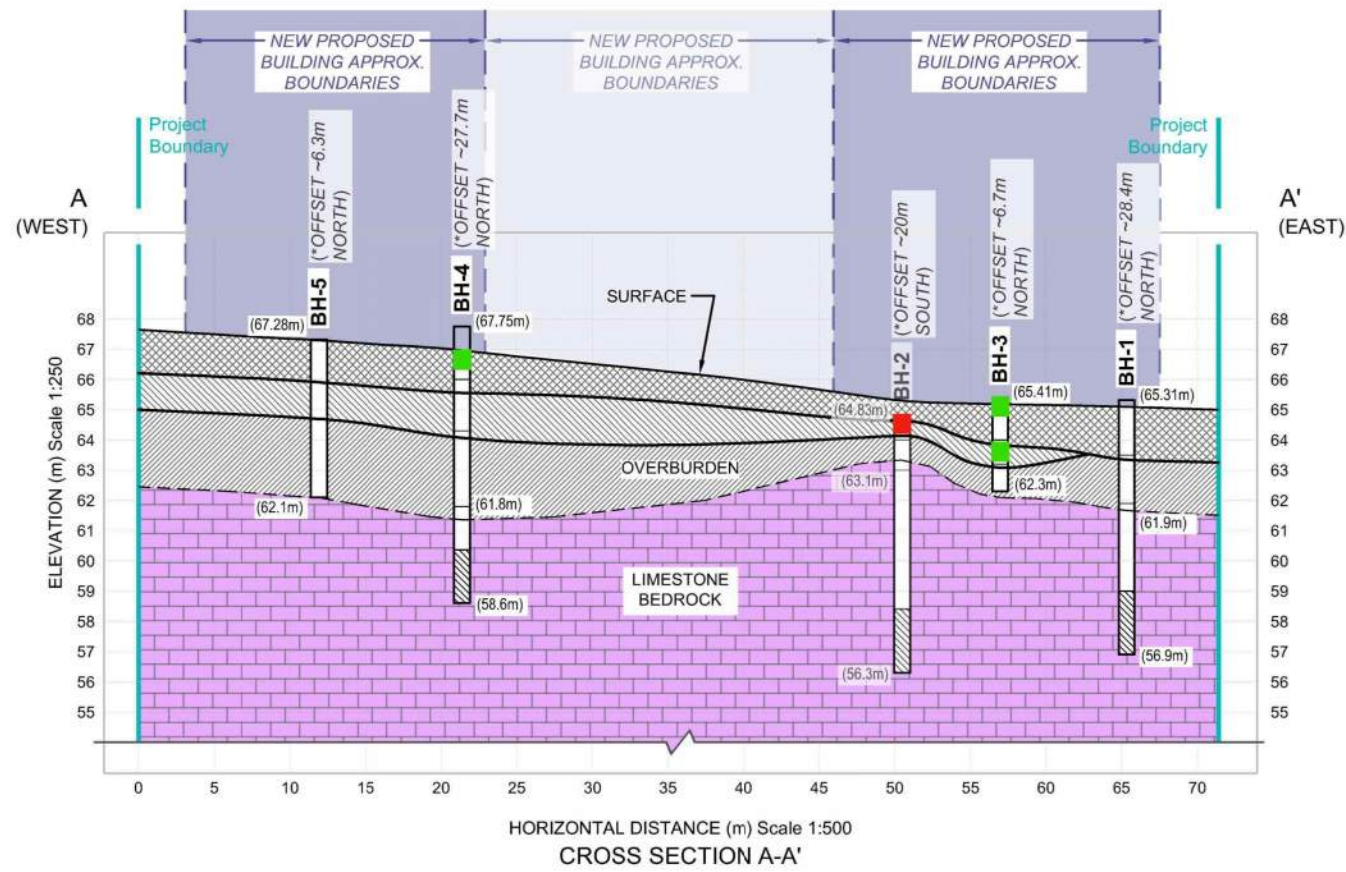
**LEGEND**

- PROPERTY BOUNDARIES
- PROPOSED HIGH RISE BUILDINGS FOOTPRINT
- BOREHOLE NO. AND LOCATION (EXP, 2023)
- GROUND SURFACE ELEVATION (m) ACCORDING TO FARLEY, SMITH & DENIS SURVEYING LTD. SURVEY (DATED: 16/09/2022)
- SOIL CONCENTRATION EXCEEDS MECP TABLE 3 STANDARD
- SOIL CONCENTRATION MEETS MECP TABLE 3 STANDARD



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DATE	JULY 2023	<b>PROPOSED HIGH RISE DEVELOPMENT</b> 116 BEECH STREET, OTTAWA, ONTARIO <b>PHASE TWO ENVIRONMENTAL SITE ASSESSMENT</b> <b>SOIL ANALYTICAL RESULTS – INORGANICS</b>	project no.	OTT-23005943-CO		
DESIGN	LW		CHECKED	MM	scale	1:400
DRAWN BY	AS				FIG 9	

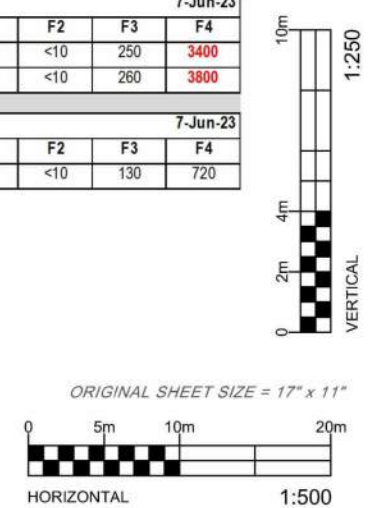


**LEGEND**

- APPROXIMATE PROPERTY BOUNDARY
- OVERBURDEN (TOPSOIL, FILL, etc.)
- OVERBURDEN (CLAY, SILT, SAND, TILL etc.)
- BEDROCK
- BOREHOLE/MONITORING WELL:**
  - Ground Surface Elevation (m)
  - Bedrock Elevation (m)
  - Screen
  - BH/MW Bottom Elevation (m)
- SOIL CONCENTRATION EXCEEDS MECP TABLE 3 STANDARD
- SOIL CONCENTRATION MEETS MECP TABLE 3 STANDARD

PARAMETERS	ABBREVIATION	REG 153/04 TABLE 3 SCS Residential
Benzene	B	0.21
Toluene	T	2.3
Ethylbenzene	E	2
Total Xylenes	X	3.1
F1	F1 (C6-C10)	55
F2	F2 (C10-C16)	98
F3	F3 (C16-C34)	300
F4	F4 (C34-C50)	2800

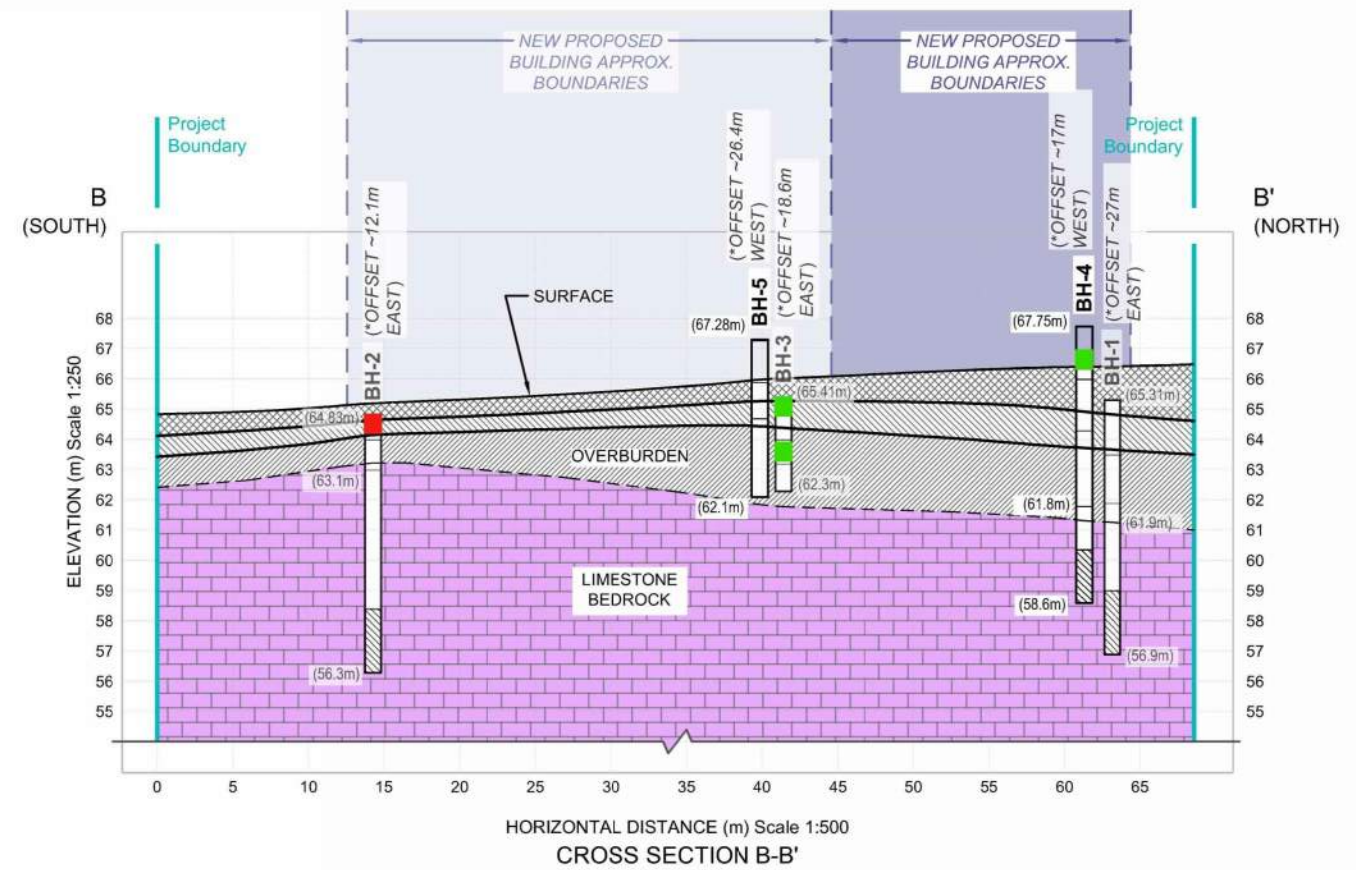
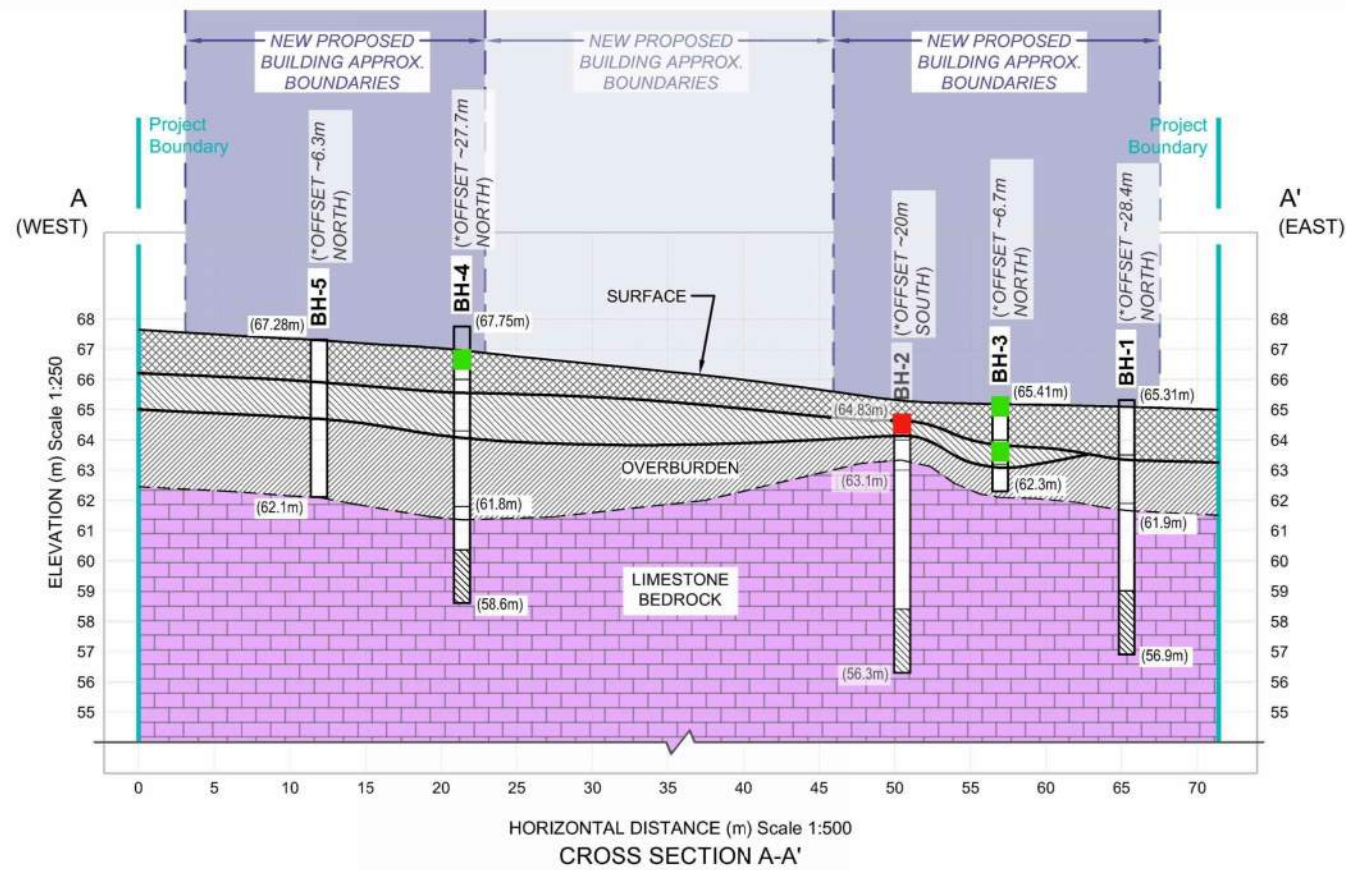
Borehole	Depth (mbgs)	7-Jun-23								
		B	T	E	X	F1	F2	F3	F4	
BH-3	SS1	0.0 to 0.6	< 0.020	< 0.020	< 0.020	< 0.040	<10	<10	<50	<50
	SS3	1.5 to 2.1	< 0.020	< 0.020	< 0.020	< 0.040	<10	<10	<50	<50
	DUP	0.0 to 0.6	< 0.020	< 0.020	< 0.020	< 0.040	<10	<10	260	3800
BH-2	SS1	0.0 to 0.6	< 0.020	< 0.020	< 0.020	< 0.040	<10	<10	250	3400
	DUP	0.0 to 0.6	< 0.020	< 0.020	< 0.020	< 0.040	<10	<10	260	3800
	DUP	0.0 to 0.6	< 0.020	< 0.020	< 0.020	< 0.040	<10	<10	260	3800
BH-4	SS2	0.8 to 1.4	< 0.020	< 0.020	< 0.020	< 0.040	<10	<10	130	720
	DUP	0.8 to 1.4	< 0.020	< 0.020	< 0.020	< 0.040	<10	<10	130	720



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DATE JULY 2023	<b>PROPOSED HIGH RISE DEVELOPMENT 116 BEECH STREET, OTTAWA, ONTARIO</b>	project no. OTT-23005943-C0
DESIGN LW		scale 1:500 / 1:250
DRAWN BY AS		<b>PHASE TWO ENVIRONMENTAL SITE ASSESSMENT SOIL CROSS SECTIONS A-A' &amp; B-B' – PHC &amp; VOC</b>
		<b>FIG 10</b>

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 Last Plotted: Jul 13, 2023 9:01 AM  
 Plotted by: Severa

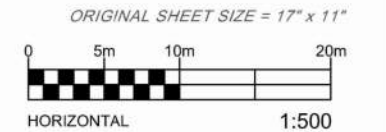


**LEGEND**

- APPROXIMATE PROPERTY BOUNDARY
- OVERBURDEN (TOPSOIL, FILL, etc.)
- OVERBURDEN (CLAY, SILT, SAND, TILL etc.)
- BEDROCK
- BOREHOLE/MONITORING WELL:**
  - Ground Surface Elevation (m)
  - Bedrock Elevation (m)
  - Screen
  - BH/MW Bottom Elevation (m)
- SOIL CONCENTRATION EXCEEDS MECP TABLE 3 STANDARD
- SOIL CONCENTRATION MEETS MECP TABLE 3 STANDARD

PARAMETERS	ABBREVIATION	REG 153/04 TABLE 3 SCS Residential
Acenaphthene	Ace	7.9
Acenaphthylene	Acl	0.15
Anthracene	An	0.67
Benzo(a)anthracene	B(a)A	0.5
Benzo(a)pyrene	B(a)P	0.3
Benzo(b)fluoranthene	B(b)F	0.78
Benzo(g,h,i)perylene	B(ghi)P	6.6
Benzo(k)fluoranthene	B(k)F	0.78
Chrysene	C	7
Dibenz(a,h)anthracene	DA	0.1
Fluoranthene	Fl	0.69
Fluorene	F	62
Indeno(1,2,3-cd)pyrene	I(123)P	0.38
Total Methylnaphthalene	T-MN	0.99
Naphthalene	N	0.6
Phenanthrene	P	6.2
Pyrene	Py	78

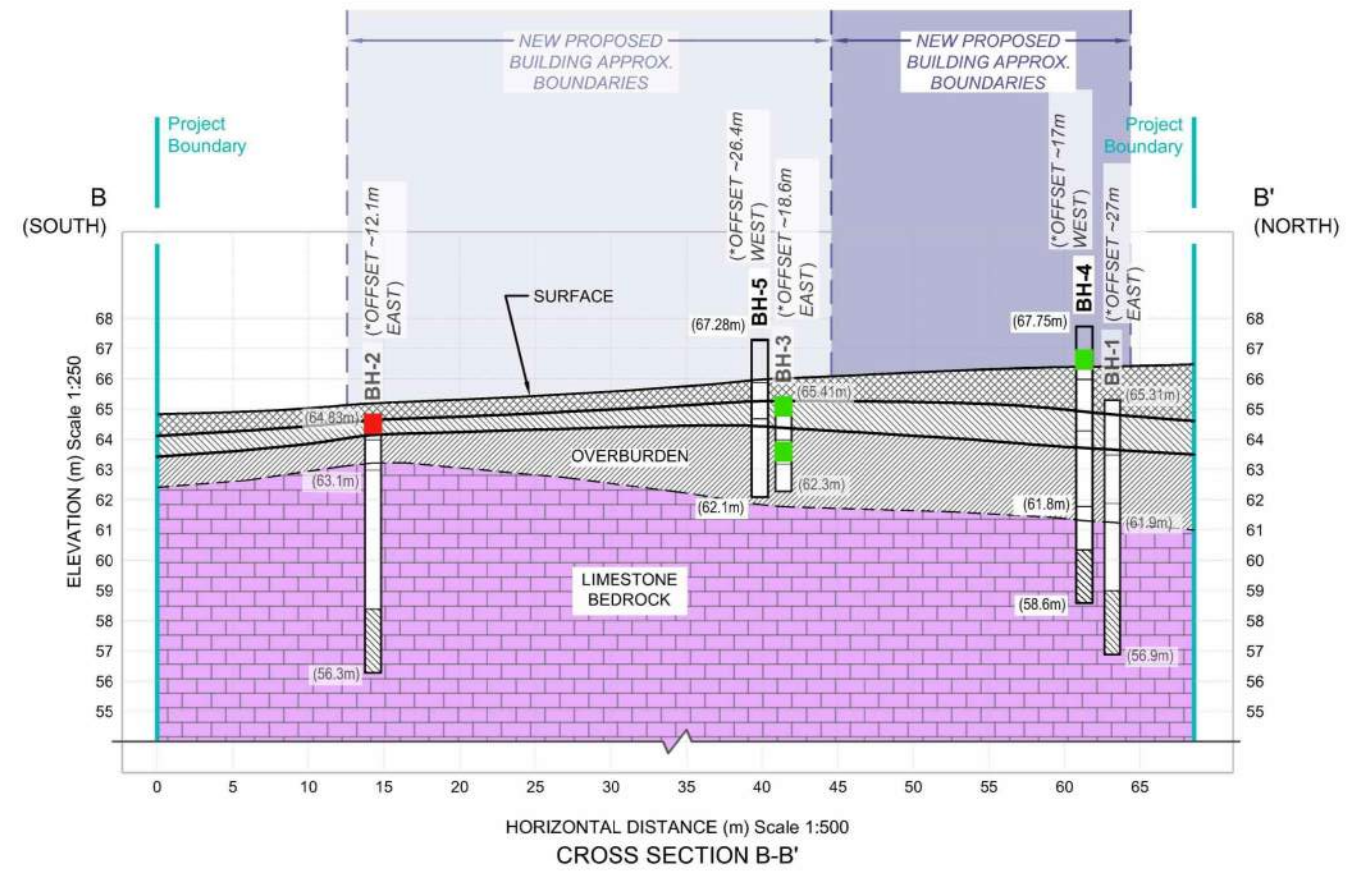
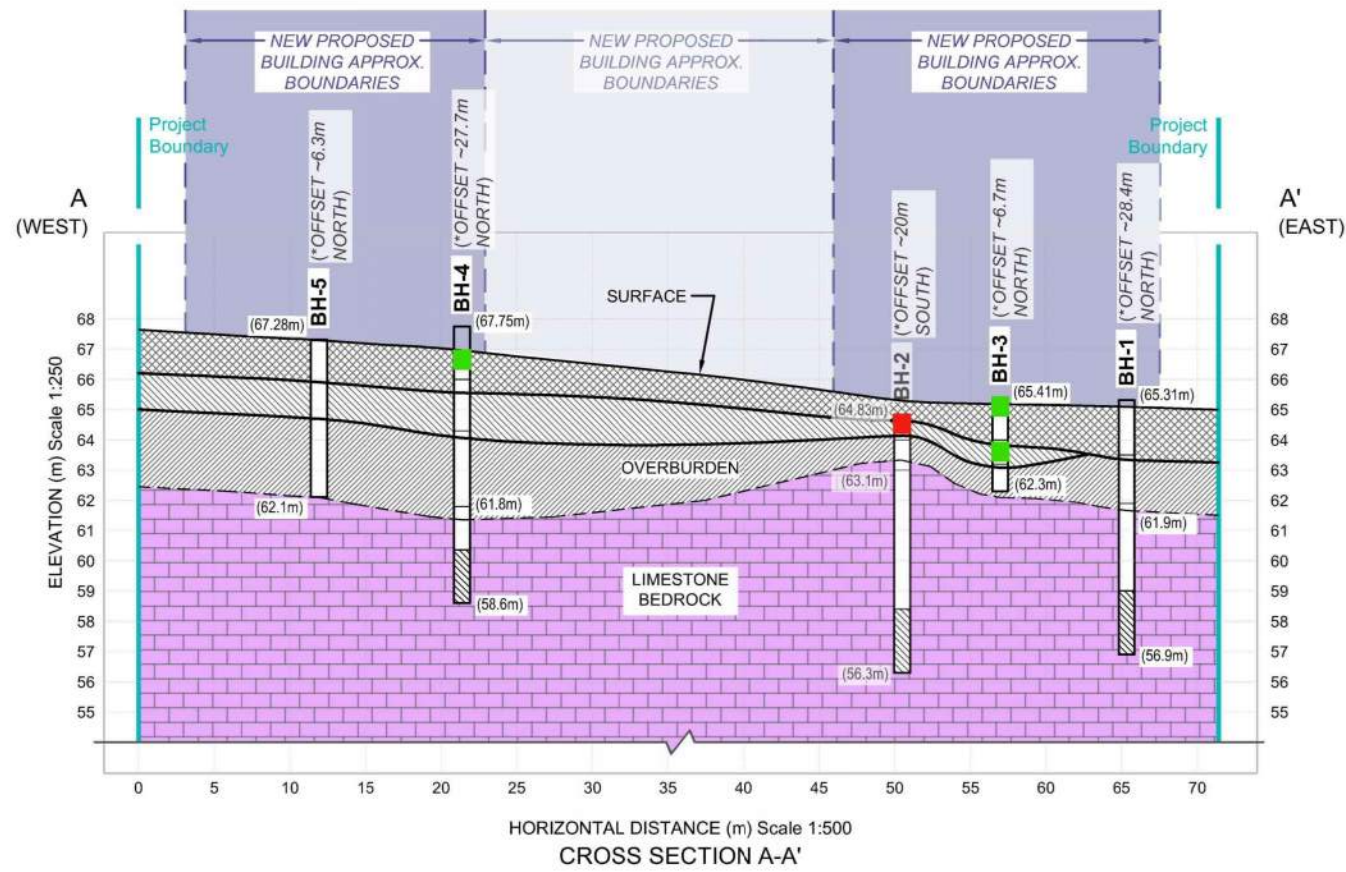
Borehole	Depth (mbgs)	7-Jun-23																	
		Ace	Acl	An	B(a)A	B(a)P	B(b)F	B(ghi)P	B(k)F	C	DA	Fl	F	I(123)P	T-MN	N	P	Py	
BH-3	SS1	0.0 to 0.6	0.034	0.013	0.056	0.17	0.16	0.21	0.12	0.072	0.14	0.031	0.33	0.023	0.12	0.011	0.0084	0.21	0.26
	SS3	1.5 to 2.1	<0.0050	<0.0050	0.011	0.02	0.018	0.022	0.013	0.0079	0.016	<0.0050	0.04	<0.0050	0.013	<0.0071	<0.0050	0.033	0.031
BH-2	SS1	0.0 to 0.6	0.14	<0.050	0.33	1.1	0.94	1.3	0.65	0.46	0.95	0.18	2.5	0.13	0.68	<0.071	<0.050	1.8	1.8
	DUP	0.0 to 0.6	0.15	<0.050	0.4	1.4	1.4	1.8	1.0	0.67	1.3	0.26	3.0	0.16	1.1	<0.071	<0.050	2.0	2.3
BH-4	SS2	0.8 to 1.4	<0.0050	<0.0050	0.0053	0.013	0.012	0.016	0.01	0.0059	0.011	<0.0050	0.028	<0.0050	0.0092	<0.0071	<0.0050	0.02	0.022



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DATE JULY 2023	<b>PROPOSED HIGH RISE DEVELOPMENT</b> 116 BEECH STREET, OTTAWA, ONTARIO <b>PHASE TWO ENVIRONMENTAL SITE ASSESSMENT</b> SOIL CROSS SECTIONS A-A' & B-B' – PAH	project no. OTT-23005943-C0
DESIGN LW		scale 1:500 / 1:250
DRAWN BY AS		FIG 11

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 Last Saved: Jul 13, 2023 8:59 AM  
 Last Plotted: Jul 13, 2023 9:00 AM  
 Plotted by: Severa



**LEGEND**

- APPROXIMATE PROPERTY BOUNDARY
- OVERBURDEN (TOPSOIL, FILL, etc.)
- OVERBURDEN (CLAY, SILT, SAND, TILL etc.)
- BEDROCK
- BOREHOLE/MONITORING WELL:**
  - Ground Surface Elevation (m)
  - Bedrock Elevation (m)
  - Screen
  - BH/MW Bottom Elevation (m)
- SOIL CONCENTRATION EXCEEDS MECP TABLE 3 STANDARD
- SOIL CONCENTRATION MEETS MECP TABLE 3 STANDARD

PARAMETERS	ABBREVIATION	REG 153/04 TABLE 3 SCS Residential
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Barium	Ba	390
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Chromium	Cr	160
Cobalt	Co	22
Copper	Cu	140
Lead	Pb	120
Molybdenum	Mo	6.9
Nickel	Ni	100
Selenium	Se	2.4
Silver	Ag	20
Thallium	Tl	1
Uranium	U	23
Vanadium	V	86
Zinc	Zn	340
Electrical Conductivity	EC	5
Sodium Adsorption Ratio	SAR	0.7

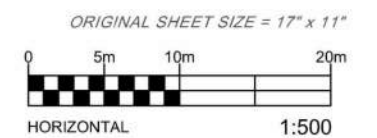
BH-3	Depth (mbgs)	7-Jun-23																			
		Sb	As	Ba	Be	B	Cd	Cr	Co	Cu	Pb	Mo	Ni	Se	Ag	Tl	U	V	Zn	EC	SAR
SS1	0.0 to 0.6	<0.20	2.5	74	0.29	5.6	<0.10	12	5.5	16	17	0.98	12	<0.50	<0.20	0.17	0.6	20	34	0.51	16
SS3	1.5 to 2.1	0.93	5.9	130	0.46	7.2	0.34	37	7.6	43	61	1.2	21	0.5	0.25	0.14	1	55	94	0.57	1.4

BH-2	Depth (mbgs)	7-Jun-23																			
		Sb	As	Ba	Be	B	Cd	Cr	Co	Cu	Pb	Mo	Ni	Se	Ag	Tl	U	V	Zn	EC	SAR
SS1	0.0 to 0.6	1.9	5.2	220	0.42	6.3	0.83	25	6.5	66	250	1.5	17	<0.50	0.5	0.15	0.51	37	570	0.38	6.3
DUP	0.0 to 0.6	1.9	4.6	210	0.43	5.6	0.68	25	6.5	69	210	1.2	17	<0.50	0.86	0.14	0.49	36	560	0.38	6.9

BH-4	Depth (mbgs)	7-Jun-23																			
		Sb	As	Ba	Be	B	Cd	Cr	Co	Cu	Pb	Mo	Ni	Se	Ag	Tl	U	V	Zn	EC	SAR
SS2	0.8 to 1.4	0.47	1.7	88	0.23	<5.0	0.18	18	4.4	27	71	<0.50	13	<0.50	<0.20	0.082	0.55	20	73	0.80	10



ORIGINAL SHEET SIZE = 17" x 11"



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DATE JULY 2023	<b>PROPOSED HIGH RISE DEVELOPMENT</b> 116 BEECH STREET, OTTAWA, ONTARIO  <b>PHASE TWO ENVIRONMENTAL SITE ASSESSMENT</b> <b>SOIL CROSS SECTIONS A-A' &amp; B-B' – INORGANICS</b>	project no. OTT-23005943-C0
DESIGN LW		scale 1:500 / 1:250
DRAWN BY AS		FIG 12

File name: E:\OTT\23005943-C0\60 Execution\65 Drawings\23005943-C0\_Ph-2.dwg  
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 Last Plotted: Jul 13, 2023 8:59 AM  
 Plotted by: Severa

EXP Services Inc.

*Katasa Groupe.*

*Phase Two Environmental Site Assessment*

*116 Beech Street, Ottawa, Ontario*

*OTT-23005843-C0*

*July 14, 2023*

## **Appendix B: Sampling and Analysis Plan**

**OTT-23005943-C0**  
**116 Beech Street, Ottawa, Ontario**  
**Sampling and Analysis Plan**

**Project Objective**

The site is current occupied by a residential apartment building. It is proposed that the current building be demolished, and a new residential apartment building be constructed. The Phase Two ESA is required to support a site plan application with the City of Ottawa.

**Boreholes**

Based on the previous uses of the Phase Two property, the following on-site potentially contaminating activities (PCA) were identified:

- PCA #30 – Importation of Fill of Unknown Quality

Consequently, the following areas of potential environmental concern (APEC) were identified:

- APEC #1 – Entirety of Phase Two property

Boreholes will be advanced in conjunction with a geotechnical investigation.

Investigative requirements are as follows:

- Advance five boreholes on the property, two to bedrock surface and three to approximately nine metres below ground surface.
- Install piezometers in three of the boreholes.
- Bedrock is expected to be present at approximately 2.0 mbgs.
- As drilling progresses, log stratigraphy, describing soil type, colour, staining, odour.

**Locates**

- See project folder and HASP binder.

**Soil Sampling**

- Soil samples should be submitted to Bureau Veritas Laboratories
- Four fill samples and a duplicate shall be submitted for analysis of metals, PHC, PAH, and BTEX

EXP Services Inc.

*Katasa Groupe.*

*Phase Two Environmental Site Assessment*

*116 Beech Street, Ottawa, Ontario*

*OTT-23005843-C0*

*July 14, 2023*

## Appendix C: Borehole Logs

# Explanation of Terms Used on Borehole Records

## SOIL DESCRIPTION

Terminology describing common soil genesis:

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

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

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

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

Terminology describing soil structure:

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

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

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

*Fissured:* material breaks along plane of fracture.

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

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

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

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

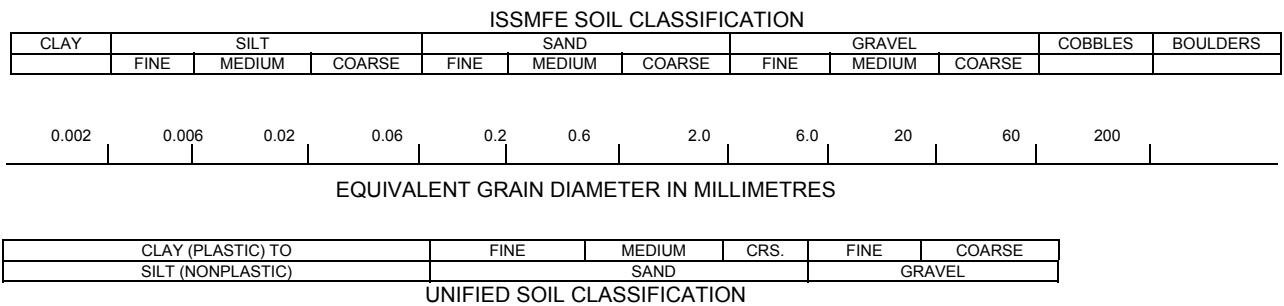
*Seam:* a thin, confined layer of soil having different particle size, texture, or color from materials above and below.

*Homogeneous:* same color and appearance throughout.

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

*Uniformly Graded:* predominantly on grain size.

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



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

Table a: Percent or Proportion of Soil, Pp

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

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

Table b: Apparent Density of Cohesionless Soil

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

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

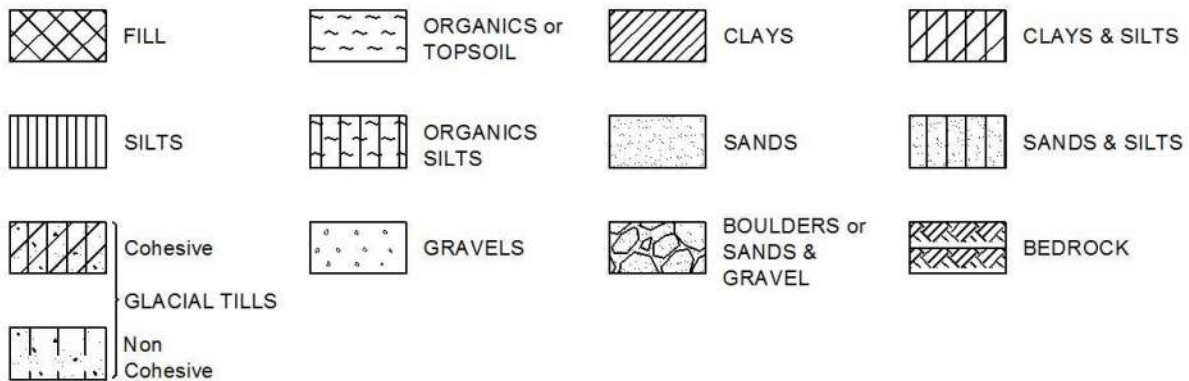
Table c: Consistency of Cohesive Soil

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

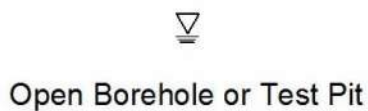
Note: 'N' Value - The Standard Penetration Test records the number of blows of a 140 pound (64kg) hammer falling 30 inches (760mm), required to drive a 2 inch (50.8mm) O.D. split spoon sampler 1 foot (305mm). For split spoon samples where full penetration is not achieved, the number of blows is reported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

## STRATA PLOT

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



## WATER LEVEL MEASUREMENT



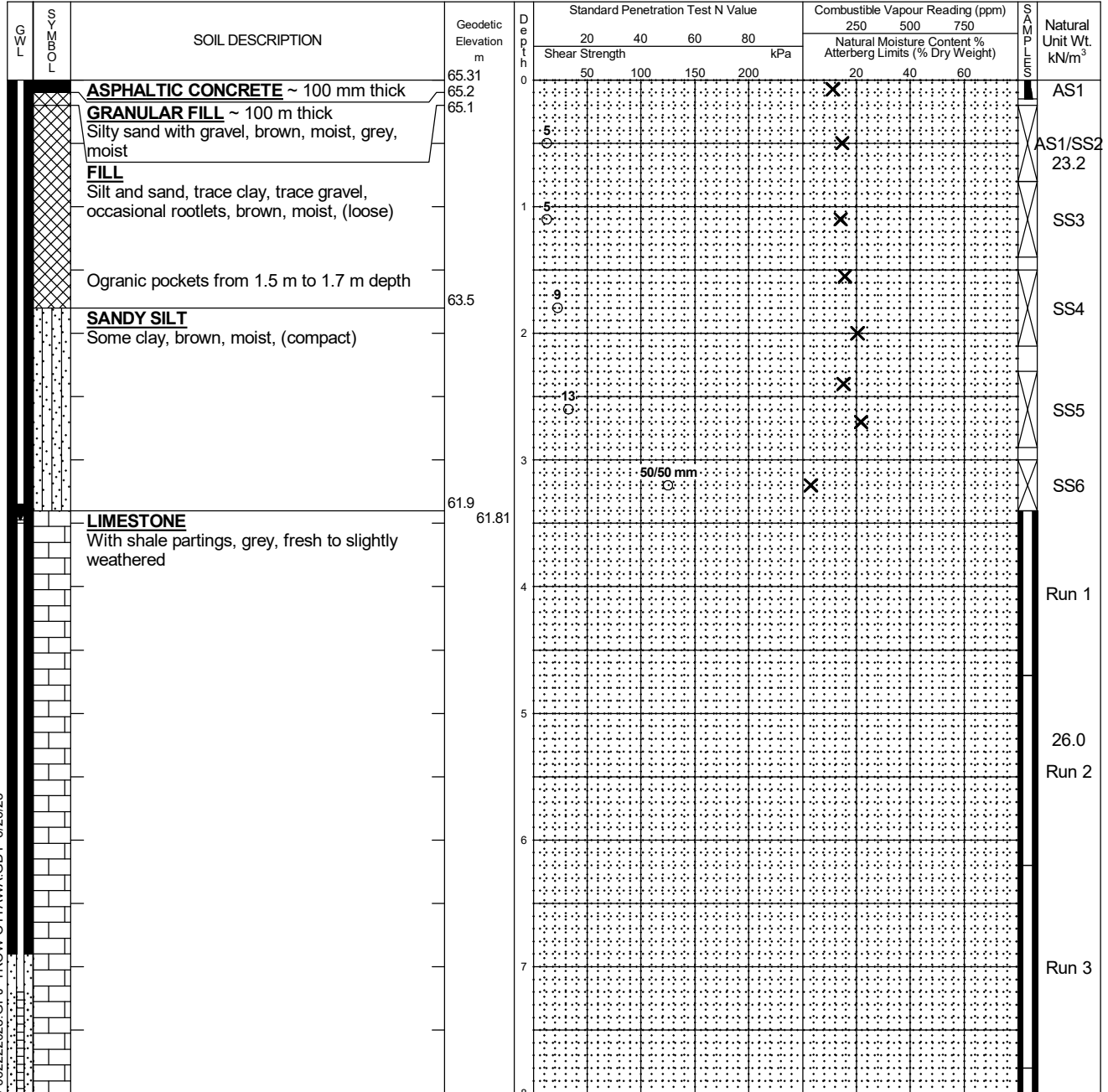
# Log of Borehole BH-01



Project No: OTT-23005943-A0  
 Project: Proposed High-Rise Redevelopment  
 Location: 116 Beech Street, Ottawa, Ontario  
 Date Drilled: June 6, 2023  
 Drill Type: CME-75 Track-Mounted Drill Rig  
 Datum: Geodetic Elevation  
 Logged by: MD Checked by: DW

Figure No. 3  
 Page. 1 of 2

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



LOG OF BOREHOLE GINT LOGS\_0622222023.GPJ TROW OTTAWA.GDT 6/26/23

Continued Next Page

- NOTES:
- Borehole data requires interpretation by EXP before use by others
  - 32 mm well installed upon completion
  - Field work supervised by an exp representative.
  - See Notes on Sample Descriptions
  - Log to be read with EXP Report OTT-23005943-A0

WATER LEVEL RECORDS		
Date	Water Level (m)	Hole Open To (m)
6/22/2023	3.5	

CORE DRILLING RECORD			
Run No.	Depth (m)	% Rec.	RQD %
1	3.4 - 4.7	100	91
2	4.7 - 6.2	100	90
3	6.2 - 7.8	100	87
4	7.8 - 8.4	100	100

# Log of Borehole BH-01



Project No: OTT-23005943-A0

Figure No. 3

Project: Proposed High-Rise Redevelopment

Page. 2 of 2

S O B Y L	SOIL DESCRIPTION	Geodetic Elevation m	D e p t h s	Standard Penetration Test N Value				Combustible Vapour Reading (ppm)			S I M P L E S	Natural Unit Wt. kN/m <sup>3</sup>
				20	40	60	80	250	500	750		
				Shear Strength kPa				Natural Moisture Content % Atterberg Limits (% Dry Weight)				
		57.31	8	50	100	150	200	20	40	60		Run 4
	<b>Borehole Terminated at 8.4 m Depth</b>	56.9										

LOG OF BOREHOLE GINT LOGS 0622222023.GPJ TROW OTTAWA.GDT 6/26/23

- NOTES:
- Borehole data requires interpretation by EXP before use by others
  - 32 mm well installed upon completion
  - Field work supervised by an exp representative.
  - See Notes on Sample Descriptions
  - Log to be read with EXP Report OTT-23005943-A0

WATER LEVEL RECORDS		
Date	Water Level (m)	Hole Open To (m)
6/22/2023	3.5	

CORE DRILLING RECORD			
Run No.	Depth (m)	% Rec.	RQD %
1	3.4 - 4.7	100	91
2	4.7 - 6.2	100	90
3	6.2 - 7.8	100	87
4	7.8 - 8.4	100	100

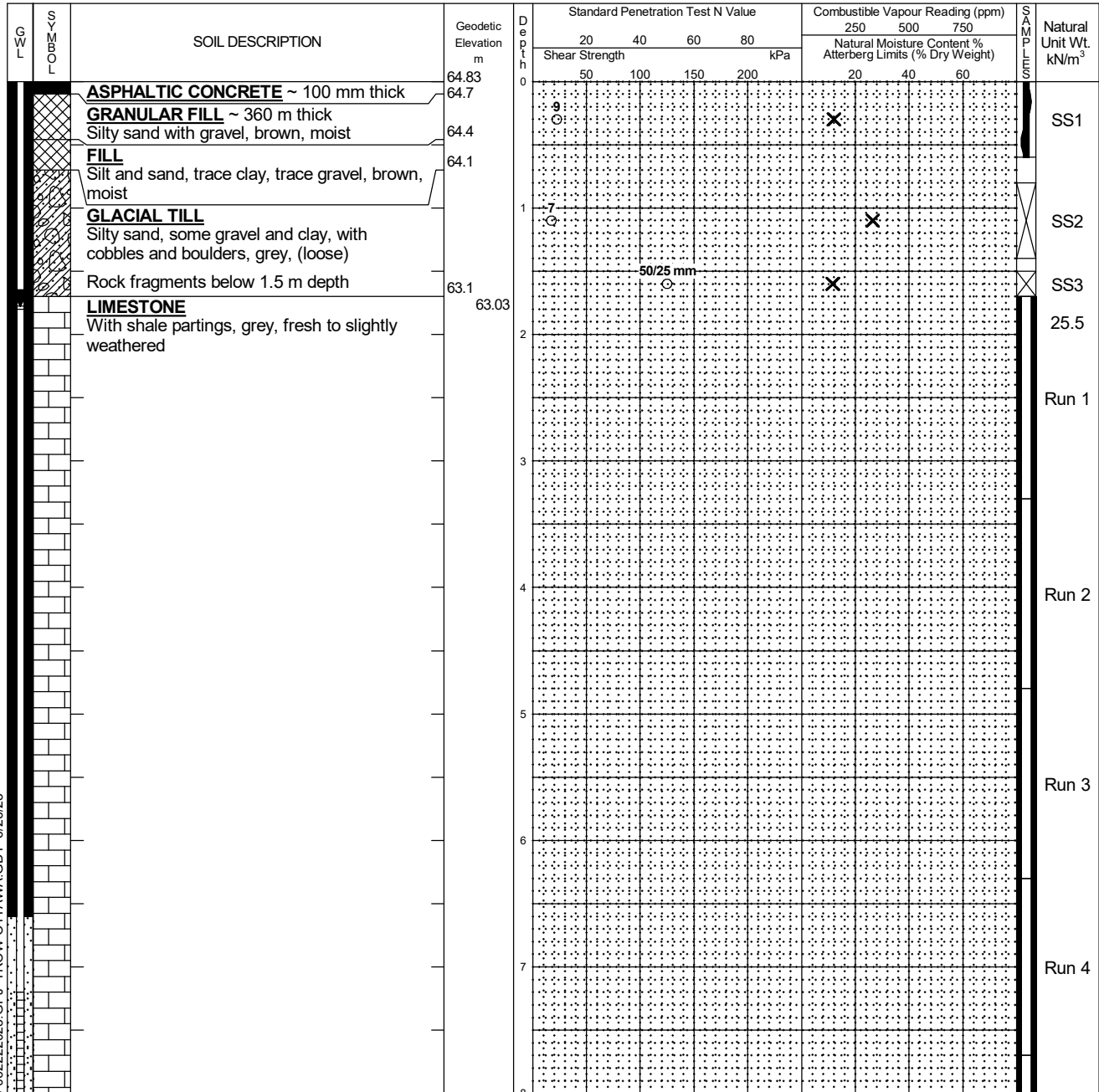
# Log of Borehole BH-02



Project No: OTT-23005943-A0  
 Project: Proposed High-Rise Redevelopment  
 Location: 116 Beech Street, Ottawa, Ontario  
 Date Drilled: June 7, 2023  
 Drill Type: CME-75 Track-Mounted Drill Rig  
 Datum: Geodetic Elevation  
 Logged by: JE Checked by: DW

Figure No. 4  
 Page. 1 of 2

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



LOG OF BOREHOLE GINT LOGS 0622222023.GPJ TROW OTTAWA.GDT 6/26/23

Continued Next Page

- NOTES:
- Borehole data requires interpretation by EXP before use by others
  - 32 mm well installed upon completion
  - Field work supervised by an exp representative.
  - See Notes on Sample Descriptions
  - Log to be read with EXP Report OTT-23005943-A0

WATER LEVEL RECORDS		
Date	Water Level (m)	Hole Open To (m)
6/22/2023	1.8	

CORE DRILLING RECORD			
Run No.	Depth (m)	% Rec.	RQD %
1	1.7 - 3.3	100	71
2	3.3 - 4.8	99	59
3	4.8 - 6.3	100	95
4	6.3 - 7.7	96	96
5	7.7 - 8.5	100	89

# Log of Borehole BH-02



Project No: OTT-23005943-A0

Figure No. 4

Project: Proposed High-Rise Redevelopment

Page. 2 of 2

L W G	S O B M Y L	SOIL DESCRIPTION	Geodetic Elevation m	D e p t h s	Standard Penetration Test N Value				Combustible Vapour Reading (ppm)			S O I L T E S T S	Natural Unit Wt. kN/m <sup>3</sup>
					20	40	60	80	250	500	750		
					Shear Strength kPa				Natural Moisture Content % Atterberg Limits (% Dry Weight)				
			56.83	8	50	100	150	200	20	40	60		Run 5
		<b>LIMESTONE</b> With shale partings, grey, fresh to slightly weathered ( <i>continued</i> )	56.3										
		<b>Borehole Terminated at 8.5 m Depth</b>											

LOG OF BOREHOLE GINT LOGS 0622222023.GPJ TROW OTTAWA.GDT 6/26/23

- NOTES:
- Borehole data requires interpretation by EXP before use by others
  - 32 mm well installed upon completion
  - Field work supervised by an exp representative.
  - See Notes on Sample Descriptions
  - Log to be read with EXP Report OTT-23005943-A0

WATER LEVEL RECORDS		
Date	Water Level (m)	Hole Open To (m)
6/22/2023	1.8	

CORE DRILLING RECORD			
Run No.	Depth (m)	% Rec.	RQD %
1	1.7 - 3.3	100	71
2	3.3 - 4.8	99	59
3	4.8 - 6.3	100	95
4	6.3 - 7.7	96	96
5	7.7 - 8.5	100	89

# Log of Borehole BH-03



Project No: OTT-23005943-A0

Project: Proposed High-Rise Redevelopment

Location: 116 Beech Street, Ottawa, Ontario

Figure No. 5

Page. 1 of 1

Date Drilled: June 7, 2023

Drill Type: CME-75 Track-Mounted Drill Rig

Datum: Geodetic Elevation

Logged by: JE Checked by: DW

Split Spoon Sample

Auger Sample

SPT (N) Value

Dynamic Cone Test

Shelby Tube

Shear Strength by Vane Test

Combustible Vapour Reading

Natural Moisture Content

Atterberg Limits

Undrained Triaxial at % Strain at Failure

Shear Strength by Penetrometer Test

GWL	SOIL TYPES	SOIL DESCRIPTION	Geodetic Elevation m	Depth	Standard Penetration Test N Value				Combustible Vapour Reading (ppm)			Natural Unit Wt. kN/m <sup>3</sup>
					Shear Strength kPa				250	500	750	
					20	40	60	80	Natural Moisture Content % Atterberg Limits (% Dry Weight)			
		<b>ASPHALTIC CONCRETE</b> ~ 50 mm thick	65.41	0								
		<b>GRANULAR FILL</b> ~ 250 m thick	65.4									
		Silty sand with gravel, brown, moist	65.1		21					X		SS1
		<b>FILL</b>										
		Silt and sand, trace clay, trace gravel, brown, moist, (compact)		1	12					X		SS2
		<b>SANDY SILT</b>	64.0									
		Some clay, brown, moist, (loose)		2	8					X		SS3
		<b>GLACIAL TILL</b>	63.2									
		Silty sand, some gravel and clay, with cobbles and boulders, grey, (compact)			17					X		SS4
		<b>Auger Refusal at 3.1 m Depth</b>	62.3	3						X		SS5

LOG OF BOREHOLE GINT LOGS 062222023.GPJ TROW OTTAWA.GDT 6/26/23

- NOTES:
- Borehole data requires interpretation by EXP before use by others
  - Borehole was backfilled upon completion
  - Field work supervised by an exp representative.
  - See Notes on Sample Descriptions
  - Log to be read with EXP Report OTT-23005943-A0

WATER LEVEL RECORDS		
Date	Water Level (m)	Hole Open To (m)

CORE DRILLING RECORD			
Run No.	Depth (m)	% Rec.	RQD %

# Log of Borehole BH-04



Project No: OTT-23005943-A0

Figure No. 6

Project: Proposed High-Rise Redevelopment

Page. 1 of 2

Location: 116 Beech Street, Ottawa, Ontario

Date Drilled: June 6, 2023

Split Spoon Sample

Combustible Vapour Reading

Drill Type: CME-75 Track-Mounted Drill Rig

Auger Sample

Natural Moisture Content

SPT (N) Value

Atterberg Limits

Datum: Geodetic Elevation

Dynamic Cone Test

Undrained Triaxial at

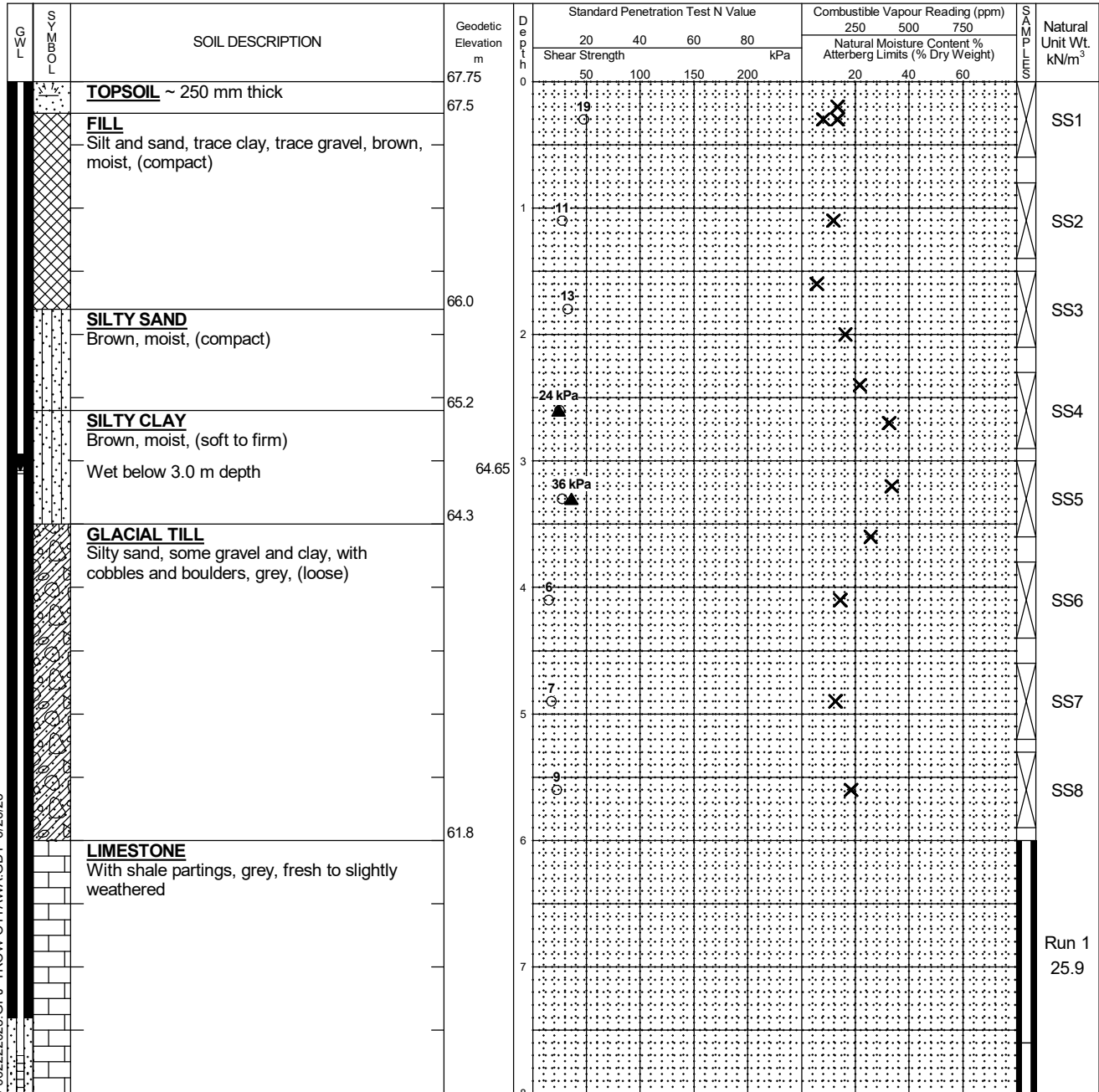
Shelby Tube

% Strain at Failure

Logged by: MD Checked by: DW

Shear Strength by Vane Test

Shear Strength by Penetrometer Test



LOG OF BOREHOLE GINT LOGS\_0622222023.GPJ TROW OTTAWA.GDT 6/26/23

Continued Next Page

**NOTES:**

- Borehole data requires interpretation by EXP before use by others
- 32 mm well installed upon completion
- Field work supervised by an exp representative.
- See Notes on Sample Descriptions
- Log to be read with EXP Report OTT-23005943-A0

**WATER LEVEL RECORDS**

Date	Water Level (m)	Hole Open To (m)
6/22/2023	3.1	

**CORE DRILLING RECORD**

Run No.	Depth (m)	% Rec.	RQD %
1	6 - 7.6	90	57
2	7.6 - 9.2	98	98



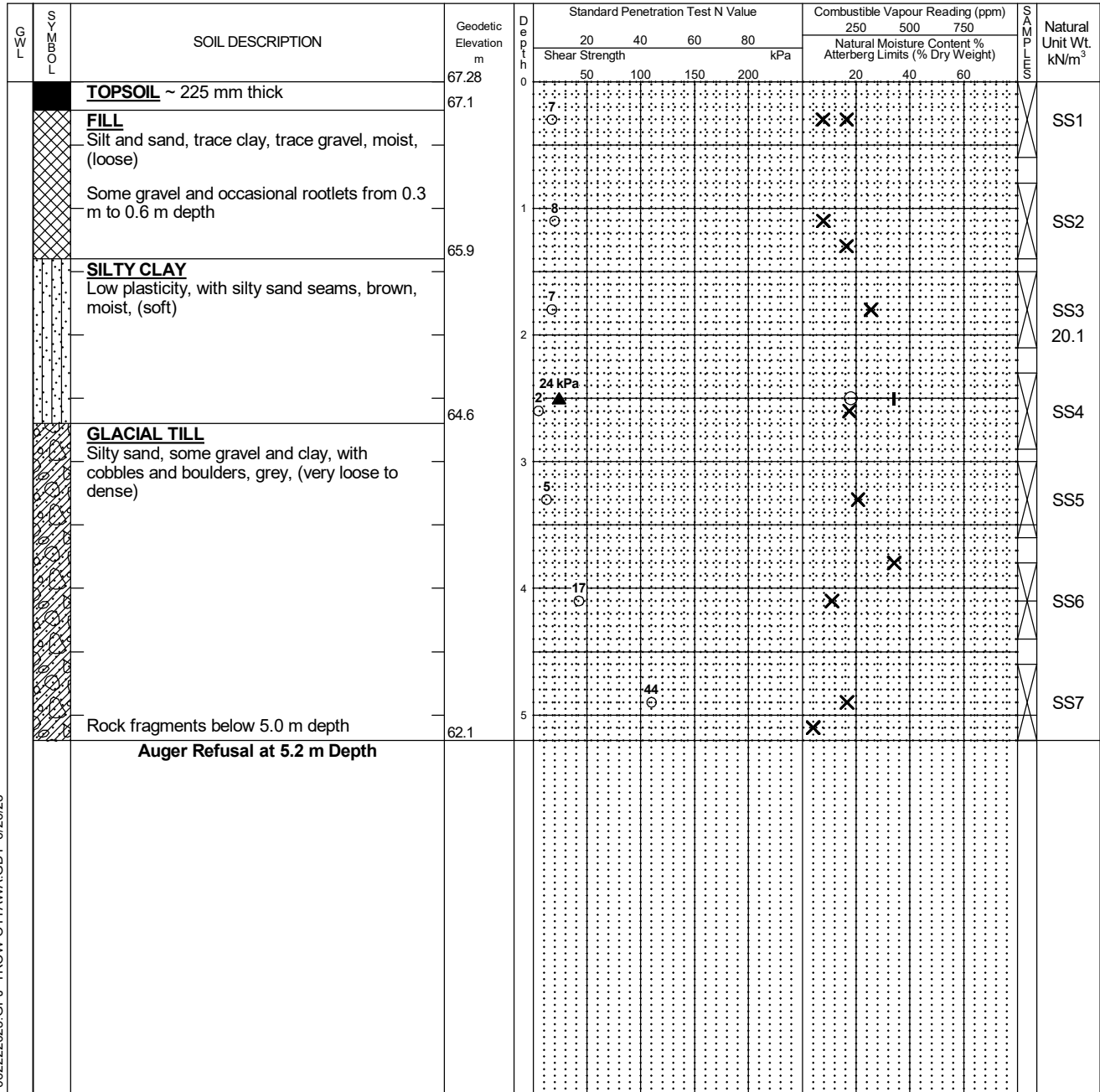
# Log of Borehole BH-05



Project No: OTT-23005943-A0  
 Project: Proposed High-Rise Redevelopment  
 Location: 116 Beech Street, Ottawa, Ontario  
 Date Drilled: June 6, 2023  
 Drill Type: CME-75 Track-Mounted Drill Rig  
 Datum: Geodetic Elevation  
 Logged by: MD Checked by: DW

Figure No. 7  
 Page. 1 of 1

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



LOG OF BOREHOLE GINT LOGS 0622222023.GPJ TROW OTTAWA.GDT 6/26/23

- NOTES:
- Borehole data requires interpretation by EXP before use by others
  - Borehole was backfilled upon completion
  - Field work supervised by an exp representative.
  - See Notes on Sample Descriptions
  - Log to be read with EXP Report OTT-23005943-A0

WATER LEVEL RECORDS		
Date	Water Level (m)	Hole Open To (m)

CORE DRILLING RECORD			
Run No.	Depth (m)	% Rec.	RQD %

EXP Services Inc.

*Katasa Groupe.*

*Phase Two Environmental Site Assessment*

*116 Beech Street, Ottawa, Ontario*

*OTT-23005843-C0*

*July 14, 2023*

## **Appendix D: Analytical Summary Tables**

**Table 1 - Analytical Results in Soil - PHC and BTEX**  
**116 Beech Street, Ottawa, Ontario**  
**OTT-23005943-C0**

Sample ID	UNITS	Samples						
		MECP Table 3 Residential <sup>1</sup>	MECP Table 1 Residential <sup>2</sup>	BH-3-SS1	BH-3-SS3	BH-2-SS1	DUP (BH-2-SS1)	BH-4-SS2
Sampling Date				07-June-2023	07-June-2023	07-June-2023	07-June-2023	07-June-2023
Sample Depth (mbgs)		Orange	Bold	0.0 to 0.6	1.5 to 2.1	0.0 to 0.6	0.0 to 0.6	0.8 to 1.4
<b>Petroleum Hydrocarbons</b>								
F1 PHC (C6-C10)	µg/g	55	25	<10	<10	<10	<10	<10
F2 PHC (C10-C16)	µg/g	98	10	<10	<10	<10	<10	<10
F3 PHC (C16-C34)	µg/g	300	240	<50	<50	<b>250</b>	<b>260</b>	130
F4 PHC (C34-C50)	µg/g	2800	120	<50	<50	<b>680</b>	<b>740</b>	<b>180</b>
F4 PHC (C34-C50) - Gravimetric	µg/g	2800	120	-	-	<b>3400</b>	<b>3800</b>	<b>720</b>
<b>Volatile Organic Compounds</b>								
Benzene	µg/g	0.21	0.02	<0.020	<0.020	<0.020	<0.020	<0.020
Ethylbenzene	µg/g	2	0.05	<0.020	<0.020	<0.020	<0.020	<0.020
Toluene	µg/g	2.3	0.2	<0.020	<0.020	<0.020	<0.020	<0.020
Xylene, m,p-	µg/g	NV	NV	<0.040	<0.040	<0.040	<0.040	<0.040
Xylene, o-	µg/g	NV	NV	<0.020	<0.020	0.027	<0.020	<0.020
Total Xylenes	µg/g	3.1	0.05	<0.040	<0.040	<0.040	<0.040	<0.040

**NOTES:**

- 1 Ontario Ministry of Environment, Conservation and Parks (MECP), Soil, Groundwater and Sediment Standards for use under Part XV.1 of the Environmental Protection Act, April 2011, Table 3 Full Depth Generic Site Condition Standards (SCS) in a Non-Potable Ground Water Condition for Residential/Institutional/Parkland Property Use (coarse textured soils)
- 2 Ontario Ministry of Environment, Conservation and Parks (MECP), Soil, Groundwater and Sediment Standards for use under Part XV.1 of the Environmental Protection Act, April 2011, Table 1 Full Depth Background Site Condition Standards (SCS) for Parkland/Residential/Institutional/Industrial/Commercial/Community Property Use (coarse textured soils)
- < RDL Non-detectable results are shown as "< (RDL)" where RDL represents the reporting detection limit.
- NV No Value
- Parameter not analyzed
- m bgs Metres below ground surface
- Orange Indicates soil exceedance of MECP Table 3 SCS for residential/institutional/parkland land use
- Bold Indicates soil exceedance of MECP Table 1 SCS for all types of property use

**Table 2 - Analytical Results in Soil - PAH**  
**116 Beech Street, Ottawa, Ontario**  
**OTT-23005943-C0**

Sample ID	UNITS	Samples						
		MECP Table 3 Residential <sup>1</sup>	MECP Table 1 Residential <sup>2</sup>	BH-3-SS1	BH-3-SS3	BH-2-SS1	DUP (BH-2-SS1)	BH-4-SS2
Sampling Date		Orange	Bold	07-June-2023	07-June-2023	07-June-2023	07-June-2023	07-June-2023
Sample Depth (mbgs)				0.0 to 0.6	1.5 to 2.1	0.0 to 0.6	0.0 to 0.6	0.8 to 1.4
<b>Polycyclic Aromatic Hydrocarbons</b>								
Acenaphthene	µg/g	7.9	0.072	0.034	<0.0050	<b>0.14</b>	<b>0.15</b>	<0.0050
Acenaphthylene	µg/g	0.15	0.093	0.013	<0.0050	<0.050	<0.050	<0.0050
Anthracene	µg/g	0.67	0.16	0.056	0.011	<b>0.33</b>	<b>0.4</b>	0.0053
Benzo(a)anthracene	µg/g	0.5	0.36	0.17	0.02	<b>1.1</b>	<b>1.4</b>	0.013
Benzo(a)pyrene	µg/g	0.3	0.3	0.16	0.018	<b>0.94</b>	<b>1.4</b>	0.012
Benzo(b)fluoranthene	µg/g	0.78	0.47	0.21	0.022	<b>1.3</b>	<b>1.8</b>	0.016
Benzo(g,h,i)perylene	µg/g	6.6	0.68	0.12	0.013	0.65	<b>1.0</b>	0.01
Benzo(k)fluoranthene	µg/g	0.78	0.48	0.072	0.0079	0.46	<b>0.67</b>	0.0059
Chrysene	µg/g	7	2.8	0.14	0.016	0.95	1.3	0.011
Dibenzo(a,h)anthracene	µg/g	0.1	0.1	0.031	<0.0050	<b>0.18</b>	<b>0.26</b>	<0.0050
Fluoranthene	µg/g	0.69	0.56	0.33	0.04	<b>2.5</b>	<b>3.0</b>	0.028
Fluorene	µg/g	62	0.12	0.023	<0.0050	<b>0.13</b>	<b>0.16</b>	<0.0050
Indeno(1,2,3,-cd)pyrene	µg/g	0.38	0.23	0.12	0.013	<b>0.68</b>	<b>1.1</b>	0.0092
Methylnaphthalene,1-	µg/g	0.99	0.59	0.0052	<0.0050	<0.050	<0.050	<0.0050
Methylnaphthalene,2-	µg/g	0.99	0.59	0.0053	<0.0050	<0.050	<0.050	<0.0050
Methylnaphthalene 2-(1-)	µg/g	0.99	0.59	0.011	<0.0071	<0.071	<0.071	<0.0071
Naphthalene	µg/g	0.6	0.09	0.0084	<0.0050	<0.050	<0.050	<0.0050
Phenanthrene	µg/g	6.2	0.69	0.21	0.033	<b>1.8</b>	<b>2.0</b>	0.018
Pyrene	µg/g	78	1	0.26	0.031	<b>1.8</b>	<b>2.3</b>	0.022

**NOTES:**

- 1 Ontario Ministry of Environment, Conservation and Parks (MECP), Soil, Groundwater and Sediment Standards for use under Part XV.1 of the Environmental Protection Act, April 2011, Table 3 Full Depth Generic Site Condition Standards (SCS) in a Non-Potable Ground Water Condition for Residential/Institutional/Parkland Property Use (coarse textured soils)
- 2 Ontario Ministry of Environment, Conservation and Parks (MECP), Soil, Groundwater and Sediment Standards for use under Part XV.1 of the Environmental Protection Act, April 2011, Table 1 Full Depth Background Site Condition Standards (SCS) for Parkland/Residential/Institutional/Industrial/Commercial/Community Property Use (coarse textured soils)
- < RDL Non-detectable results are shown as "< (RDL)" where RDL represents the reporting detection limit.
- NV No Value
- Parameter not analyzed
- m bgs Metres below ground surface
- Indicates soil exceedance of MECP Table 3 SCS for residential/institutional/parkland land use
- Bold** Indicates soil exceedance of MECP Table 1 SCS for all types of property use

**Table 3 - Analytical Results in Soil - Inorganic Parameters**  
**116 Beech Street, Ottawa, Ontario**  
**OTT-23005943-C0**

Sample ID	UNITS	Samples						
		MECP Table 3 Residential <sup>1</sup>	MECP Table 1 Residential <sup>2</sup>	BH-3-SS1	BH-3-SS3	BH-2-SS1	DUP (BH-2-SS1)	BH-4-SS2
Sampling Date				07-June-2023	07-June-2023	07-June-2023	07-June-2023	07-June-2023
Sample Depth (mbgs)		Orange	Bold	0.0 to 0.6	1.5 to 2.1	0.0 to 0.6	0.0 to 0.6	0.8 to 1.4
<b>Metals</b>								
Antimony	µg/g	7.5	1.3	<0.20	0.93	1.9	1.9	0.47
Arsenic	µg/g	18	18	2.5	5.9	5.2	4.6	1.7
Barium	µg/g	390	220	74	130	220	210	88
Beryllium	µg/g	4	2.5	0.29	0.46	0.42	0.43	0.23
Boron (Total)	µg/g	120	36	5.6	7.2	6.3	5.6	<5.0
Cadmium	µg/g	1.2	1.2	<0.10	0.34	0.83	0.68	0.18
Chromium (Total)	µg/g	160	70	12	37	25	25	18
Cobalt	µg/g	22	21	5.5	7.6	6.5	6.5	4.4
Copper	µg/g	140	92	16	43	66	69	27
Lead	µg/g	120	120	17	61	250	210	71
Molybdenum	µg/g	6.9	2	0.98	1.2	1.5	1.2	<0.50
Nickel	µg/g	100	82	12	21	17	17	13
Selenium	µg/g	2.4	1.5	<0.50	0.5	<0.50	<0.50	<0.50
Silver	µg/g	20	0.5	<0.20	0.25	0.5	0.86	<0.20
Thallium	µg/g	1	1	0.17	0.14	0.15	0.14	0.082
Uranium	µg/g	23	2.5	0.60	1.0	0.51	0.49	0.55
Vanadium	µg/g	86	86	20	55	37	36	20
Zinc	µg/g	340	290	34	94	570	560	73
Conductivity	mS/cm	5	2.4	0.51	0.57	0.38	0.38	0.80
Sodium Adsorption Ratio	N/A	0.7	0.57	16	1.4	6.3	6.9	10

**NOTES:**

- 1 Ontario Ministry of Environment, Conservation and Parks (MECP), Soil, Groundwater and Sediment Standards for use under Part XV.1 of the Environmental Protection Act, April 2011, Table 3 Full Depth Generic Site Condition Standards (SCS) in a Non-Potable Ground Water Condition for Residential/Institutional/Parkland Property Use (coarse textured soils)
  - 2 Ontario Ministry of Environment, Conservation and Parks (MECP), Soil, Groundwater and Sediment Standards for use under Part XV.1 of the Environmental Protection Act, April 2011, Table 1 Full Depth Background Site Condition Standards (SCS) for Parkland/Residential/Institutional/Industrial/Commercial/Community Property Use (coarse textured soils)
- < RDL Non-detectable results are shown as "< (RDL)" where RDL represents the reporting detection limit.
- NV No Value
- Parameter not analyzed
- m bgs Metres below ground surface
- Orange Indicates soil exceedance of MECP Table 3 SCS for residential/institutional/parkland land use
- Bold Indicates soil exceedance of MECP Table 1 SCS for all types of property use

**Table 4 - Maximum Concentrations in Soil**  
**116 Beech Street, Ottawa, Ontario**  
**OTT-23005943-C0**

Parameter	Sample Location	Sample Depth (m bgs)	Sampling Date	Maximum Concentration	MECP Table 3 Residential <sup>1</sup>
<b>Petroleum Hydrocarbons</b>					
F1 PHC (C6-C10)	All sample locations	0.0 to 2.1	7-Jun-23	<10	55
F2 PHC (C10-C16)	All sample locations	0.0 to 2.1	7-Jun-23	<10	98
F3 PHC (C16-C34)	BH-2 (Dup)	0.0 to 0.6	7-Jun-23	260	300
F4 PHC (C34-C50)	BH-2 (Dup)	0.0 to 0.6	7-Jun-23	3800	2800
<b>Volatile Organic Compounds</b>					
Benzene	All sample locations	0.0 to 2.1	7-Jun-23	<0.020	0.21
Ethylbenzene	All sample locations	0.0 to 2.1	7-Jun-23	<0.020	2
Toluene	All sample locations	0.0 to 2.1	7-Jun-23	<0.020	2.3
Xylene, m,p-	All sample locations	0.0 to 2.1	7-Jun-23	<0.040	NV
Xylene, o-	BH-2-SS1	0.0 to 0.6	7-Jun-23	0.027	NV
Total Xylenes	All sample locations	0.0 to 2.1	7-Jun-23	<0.040	3.1
<b>Polycyclic Aromatic Hydrocarbons</b>					
Acenaphthene	BH-2 (Dup)	0.0 to 0.6	7-Jun-23	0.15	7.9
Acenaphthylene	BH-3	0.0 to 0.6	7-Jun-23	0.013	0.15
Anthracene	BH-2 (Dup)	0.0 to 0.6	7-Jun-23	0.40	0.67
Benzo(a)anthracene	BH-2 (Dup)	0.0 to 0.6	7-Jun-23	1.4	0.5
Benzo(a)pyrene	BH-2 (Dup)	0.0 to 0.6	7-Jun-23	1.4	0.3
Benzo(b)fluoranthene	BH-2 (Dup)	0.0 to 0.6	7-Jun-23	1.8	0.78
Benzo(g,h,i)perylene	BH-2 (Dup)	0.0 to 0.6	7-Jun-23	1.0	6.6
Benzo(k)fluoranthene	BH-2 (Dup)	0.0 to 0.6	7-Jun-23	0.67	0.78
Chrysene	BH-2 (Dup)	0.0 to 0.6	7-Jun-23	1.3	7
Dibenzo(a,h)anthracene	BH-2 (Dup)	0.0 to 0.6	7-Jun-23	0.26	0.1
Fluoranthene	BH-2 (Dup)	0.0 to 0.6	7-Jun-23	3.0	0.69
Fluorene	BH-2 (Dup)	0.0 to 0.6	7-Jun-23	0.16	62
Indeno(1,2,3-cd)pyrene	BH-2 (Dup)	0.0 to 0.6	7-Jun-23	1.1	0.38
Methylnaphthalene,1-	BH-3	0.0 to 0.6	7-Jun-23	0.0052	0.99
Methylnaphthalene,2-	BH-3	0.0 to 0.6	7-Jun-23	0.0053	0.99
Methylnaphthalene 2-(1-)	BH-3	0.0 to 0.6	7-Jun-23	0.011	0.99
Naphthalene	BH-3	0.0 to 0.6	7-Jun-23	0.0084	0.6
Phenanthrene	BH-2 (Dup)	0.0 to 0.6	7-Jun-23	2.0	6.2
Pyrene	BH-2 (Dup)	0.0 to 0.6	7-Jun-23	2.3	78
<b>Metals</b>					
Antimony	BH-2	0.0 to 0.6	7-Jun-23	1.9	7.5
Arsenic	BH-3	1.5 to 2.1	7-Jun-23	5.9	18
Barium	BH-2	0.0 to 0.6	7-Jun-23	220	390
Beryllium	BH-3	1.5 to 2.1	7-Jun-23	0.46	4
Boron (Total)	BH-3	1.5 to 2.1	7-Jun-23	7.2	120
Cadmium	BH-2	0.0 to 0.6	7-Jun-23	0.83	1.2
Chromium (Total)	BH-3	1.5 to 2.1	7-Jun-23	37	160
Cobalt	BH-3	1.5 to 2.1	7-Jun-23	7.6	22
Copper	BH-2 (Dup)	0.0 to 0.6	7-Jun-23	69	140
Lead	BH-2	0.0 to 0.6	7-Jun-23	250	120
Molybdenum	BH-2	0.0 to 0.6	7-Jun-23	1.5	6.9
Nickel	BH-3	1.5 to 2.1	7-Jun-23	21	100
Selenium	BH-3	1.5 to 2.1	7-Jun-23	0.5	2.4
Silver	BH-2 (Dup)	0.0 to 0.6	7-Jun-23	0.86	20
Thallium	BH-3	0.0 to 0.6	7-Jun-23	0.17	1
Uranium	BH-3	0.0 to 0.6	7-Jun-23	0.60	23
Vanadium	BH-3	1.5 to 2.1	7-Jun-23	55	86
Zinc	BH-2	0.0 to 0.6	7-Jun-23	570	340

**NOTES:**

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

NV No Value

- Parameter not analyzed

m bgs Metres below ground surface

**Table 5 - Relative Percent Differences - PHC and BTEX in Soil**  
**116 Beech Street, Ottawa, Ontario**  
**OTT-23005943-C0**

Parameter	Units	RDL	BH-2-SS1	DUP	RPD (%)	Alert Limit (%)
			07-June-2023	07-June-2023		
<b>Petroleum Hydrocarbons</b>						
F1 PHC (C6 - C10) - BTEX	ug/g dry	10	<10	<10	nc	60
F2 PHC (C10-C16)	ug/g dry	5	<10	<10	nc	60
F3 PHC (C16-C34)	ug/g dry	10	250	260	4	60
F4 PHC (C34-C50)	ug/g dry	10	680	740	8	60
F4 PHC (C34-C50) - Gravimetric	ug/g dry	10	3400	3800	11	60
<b>Volatiles</b>						
Benzene	ug/g dry	0.0060	<0.020	<0.020	nc	100
Ethylbenzene	ug/g dry	0.010	<0.020	<0.020	nc	100
Toluene	ug/g dry	0.020	<0.020	<0.020	nc	100
Xylenes, total	ug/g dry	0.020	<0.040	<0.040	nc	100

**NOTES:**

Analysis by Bureay Veritas Laboratories

All results on dry weight basis; Non-detectable results are shown as "< (RDL)" where RDL represents the reporting detection limit.

- means "not analysed"

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

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

**Table 6 - Relative Percent Differences - PAH in Soil**  
**116 Beech Street, Ottawa, Ontario**  
**OTT-23005943-C0**

Parameter	Units	RDL	BH-2-SS1	DUP	RPD (%)	Alert Limit (%)
			07-June-2023	07-June-2023		
<i>Polycyclic Aromatic Hydrocarbons</i>						
Acenaphthene	ug/g dry	0.05	0.14	0.15	nc	80
Acenaphthylene	ug/g dry	0.05	<0.050	<0.050	nc	80
Anthracene	ug/g dry	0.05	0.33	0.4	19	80
Benzo(a)anthracene	ug/g dry	0.05	1.1	1.4	24	80
Benzo(a)pyrene	ug/g dry	0.05	0.94	1.4	39	80
Benzo(b)fluoranthene	ug/g dry	0.05	1.3	1.8	32	80
Benzo(g,h,i)perylene	ug/g dry	0.05	0.65	1.0	42	80
Benzo(k)fluoranthene	ug/g dry	0.05	0.46	0.7	37	80
Chrysene	ug/g dry	0.05	0.95	1.3	31	80
Dibenzo(a,h)anthracene	ug/g dry	0.05	0.18	0.26	nc	80
Fluoranthene	ug/g dry	0.05	2.5	3	18	80
Fluorene	ug/g dry	0.05	0.13	0.16	nc	80
Indeno(1,2,3,-cd)pyrene	ug/g dry	0.05	0.68	1.1	47	80
Methylnaphthalene,1-	ug/g dry	0.05	<0.050	<0.050	nc	80
Methylnaphthalene,2-	ug/g dry	0.05	<0.050	<0.050	nc	80
Methylnaphthalene 2-(1-)	ug/g dry	0.05	<0.071	<0.071	nc	80
Naphthalene	ug/g dry	0.05	<0.050	<0.050	nc	80
Phenanthrene	ug/g dry	0.05	1.8	2	11	80
Pyrene	ug/g dry	0.05	1.8	2.3	24	80

**NOTES:**

Analysis by Bureay Veritas Laboratories

All results on dry weight basis; Non-detectable results are shown as "< (RDL)" where RDL represents the reporting detection limit.

- means "not analysed"

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

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

**Table 7 - Relative Percent Differences - Inorganics in Soil**  
**116 Beech Street, Ottawa, Ontario**  
**OTT-23005943-C0**

Parameter	Units	RDL	BH-2-SS1	DUP	RPD (%)	Alert Limit (%)
			07-June-2023	07-June-2023		
<i>Inorganic Parameters</i>						
Antimony	ug/g dry	0.5	1.9	1.9	nc	60
Arsenic	ug/g dry	0.5	5.2	4.6	12	60
Barium	ug/g dry	1	220	210	5	60
Beryllium	ug/g dry	0.2	0.42	0.43	nc	60
Boron	ug/g dry	0.5	6.3	5.6	12	60
Cadmium	ug/g dry	0.5	0.83	0.68	nc	60
Chromium	ug/g dry	1	25	25	0	60
Cobalt	ug/g dry	1	6.5	6.5	0	60
Copper	ug/g dry	1	66	69	4	60
Lead	ug/g dry	5	250	210	17	60
Molybdenum	ug/g dry	1	1.5	1.2	nc	60
Nickel	ug/g dry	1	17	17	0	60
Selenium	ug/g dry	0.5	<0.50	<0.50	nc	60
Silver	ug/g dry	0.2	0.5	0.86	nc	60
Thallium	ug/g dry	0.1	0.15	0.14	nc	60
Vanadium	ug/g dry	1	0.51	0.49	nc	60
Zinc	ug/g dry	3	37	36	3	60
Uranium	ug/g dry	0.1	570	560	2	60

**NOTES:**

Analysis by Bureay Veritas Laboratories

All results on dry weight basis; Non-detectable results are shown as "< (RDL)" where RDL represents the reporting detection limit.

- means "not analysed"

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

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

EXP Services Inc.

*Katasa Groupe.*

*Phase Two Environmental Site Assessment*

*116 Beech Street, Ottawa, Ontario*

*OTT-23005843-C0*

*July 14, 2023*

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





Your Project #: OTT-23005943-B0  
 Your C.O.C. #: 938549-01-01

**Attention: Leah Wells**

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

**Report Date: 2023/06/15**  
 Report #: R7673674  
 Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**BUREAU VERITAS JOB #: C3G6852**

**Received: 2023/06/08, 09:50**

Sample Matrix: Soil  
 # Samples Received: 5

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
Methylnaphthalene Sum (1)	5	N/A	2023/06/12	CAM SOP-00301	EPA 8270D m
Conductivity (1)	5	2023/06/13	2023/06/13	CAM SOP-00414	OMOE E3530 v1 m
Petroleum Hydro. CCME F1 & BTEX in Soil (1, 2)	5	N/A	2023/06/12	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Soil (1, 3)	4	2023/06/12	2023/06/12	CAM SOP-00316	CCME CWS m
Petroleum Hydrocarbons F2-F4 in Soil (1, 3)	1	2023/06/12	2023/06/13	CAM SOP-00316	CCME CWS m
F4G (CCME Hydrocarbons Gravimetric) (1)	3	2023/06/14	2023/06/14	CAM SOP-00316	CCME PHC-CWS m
Acid Extractable Metals by ICPMS (1)	2	2023/06/10	2023/06/12	CAM SOP-00447	EPA 6020B m
Acid Extractable Metals by ICPMS (1)	3	2023/06/12	2023/06/12	CAM SOP-00447	EPA 6020B m
Moisture (1)	5	N/A	2023/06/09	CAM SOP-00445	Carter 2nd ed 51.2 m
PAH Compounds in Soil by GC/MS (SIM) (1)	4	2023/06/09	2023/06/10	CAM SOP-00318	EPA 8270E
PAH Compounds in Soil by GC/MS (SIM) (1)	1	2023/06/09	2023/06/11	CAM SOP-00318	EPA 8270E
Sodium Adsorption Ratio (SAR) (1)	5	N/A	2023/06/15	CAM SOP-00102	EPA 6010C

**Remarks:**

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

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

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

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

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested. This Certificate shall not be reproduced except in full, without the written approval of the laboratory.



Your Project #: OTT-23005943-B0  
Your C.O.C. #: 938549-01-01

**Attention: Leah Wells**

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

**Report Date: 2023/06/15**  
Report #: R7673674  
Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**BUREAU VERITAS JOB #: C3G6852**

**Received: 2023/06/08, 09:50**

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

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

- (1) This test was performed by Bureau Veritas Mississauga, 6740 Campobello Rd , Mississauga, ON, L5N 2L8
- (2) No lab extraction date is given for F1BTEX & VOC samples that are field preserved with methanol. Extraction date is the date sampled unless otherwise stated.
- (3) All CCME PHC results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Bureau Veritas 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:

Katherine Szozda, Project Manager  
Email: Katherine.Szozda@bureauveritas.com  
Phone# (613)274-0573 Ext:7063633

=====  
This report has been generated and distributed using a secure automated process.  
Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.  
For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Rodney Major, General Manager responsible for Ontario Environmental laboratory operations.



BUREAU  
VERITAS

Bureau Veritas Job #: C3G6852  
Report Date: 2023/06/15

exp Services Inc  
Client Project #: OTT-23005943-B0  
Sampler Initials: J.E

**O.REG 406 EXCESS SOIL BULK ICPMS METALS (SOIL)**

Bureau Veritas ID		WBA529		WBA530	WBA531		WBA532		
Sampling Date		2023/06/07 10:00		2023/06/07 11:00	2023/06/07 11:10		2023/06/07 11:00		
COC Number		938549-01-01		938549-01-01	938549-01-01		938549-01-01		
	<b>UNITS</b>	<b>DUP</b>	<b>QC Batch</b>	<b>BH-3-SS1</b>	<b>BH-3-SS3</b>	<b>QC Batch</b>	<b>BH-2-SS1</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Metals</b>									
Acid Extractable Antimony (Sb)	ug/g	1.9	8718073	<0.20	0.93	8719587	1.9	0.20	8718073
Acid Extractable Arsenic (As)	ug/g	4.6	8718073	2.5	5.9	8719587	5.2	1.0	8718073
Acid Extractable Barium (Ba)	ug/g	210	8718073	74	130	8719587	220	0.50	8718073
Acid Extractable Beryllium (Be)	ug/g	0.43	8718073	0.29	0.46	8719587	0.42	0.20	8718073
Acid Extractable Boron (B)	ug/g	5.6	8718073	5.6	7.2	8719587	6.3	5.0	8718073
Acid Extractable Cadmium (Cd)	ug/g	0.68	8718073	<0.10	0.34	8719587	0.83	0.10	8718073
Acid Extractable Chromium (Cr)	ug/g	25	8718073	12	37	8719587	25	1.0	8718073
Acid Extractable Cobalt (Co)	ug/g	6.5	8718073	5.5	7.6	8719587	6.5	0.10	8718073
Acid Extractable Copper (Cu)	ug/g	69	8718073	16	43	8719587	66	0.50	8718073
Acid Extractable Lead (Pb)	ug/g	210	8718073	17	61	8719587	250	1.0	8718073
Acid Extractable Molybdenum (Mo)	ug/g	1.2	8718073	0.98	1.2	8719587	1.5	0.50	8718073
Acid Extractable Nickel (Ni)	ug/g	17	8718073	12	21	8719587	17	0.50	8718073
Acid Extractable Selenium (Se)	ug/g	<0.50	8718073	<0.50	0.50	8719587	<0.50	0.50	8718073
Acid Extractable Silver (Ag)	ug/g	0.86	8718073	<0.20	0.25	8719587	0.50	0.20	8718073
Acid Extractable Thallium (Tl)	ug/g	0.14	8718073	0.17	0.14	8719587	0.15	0.050	8718073
Acid Extractable Uranium (U)	ug/g	0.49	8718073	0.60	1.0	8719587	0.51	0.050	8718073
Acid Extractable Vanadium (V)	ug/g	36	8718073	20	55	8719587	37	5.0	8718073
Acid Extractable Zinc (Zn)	ug/g	560	8718073	34	94	8719587	570	5.0	8718073

RDL = Reportable Detection Limit  
QC Batch = Quality Control Batch



BUREAU  
VERITAS

Bureau Veritas Job #: C3G6852  
Report Date: 2023/06/15

exp Services Inc  
Client Project #: OTT-23005943-B0  
Sampler Initials: J.E

**O.REG 406 EXCESS SOIL BULK ICPMS METALS (SOIL)**

Bureau Veritas ID		WBA533		
Sampling Date		2023/06/07 12:30		
COC Number		938549-01-01		
	<b>UNITS</b>	<b>BH-4-SS2</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Metals</b>				
Acid Extractable Antimony (Sb)	ug/g	0.47	0.20	8719587
Acid Extractable Arsenic (As)	ug/g	1.7	1.0	8719587
Acid Extractable Barium (Ba)	ug/g	88	0.50	8719587
Acid Extractable Beryllium (Be)	ug/g	0.23	0.20	8719587
Acid Extractable Boron (B)	ug/g	<5.0	5.0	8719587
Acid Extractable Cadmium (Cd)	ug/g	0.18	0.10	8719587
Acid Extractable Chromium (Cr)	ug/g	18	1.0	8719587
Acid Extractable Cobalt (Co)	ug/g	4.4	0.10	8719587
Acid Extractable Copper (Cu)	ug/g	27	0.50	8719587
Acid Extractable Lead (Pb)	ug/g	71	1.0	8719587
Acid Extractable Molybdenum (Mo)	ug/g	<0.50	0.50	8719587
Acid Extractable Nickel (Ni)	ug/g	13	0.50	8719587
Acid Extractable Selenium (Se)	ug/g	<0.50	0.50	8719587
Acid Extractable Silver (Ag)	ug/g	<0.20	0.20	8719587
Acid Extractable Thallium (Tl)	ug/g	0.082	0.050	8719587
Acid Extractable Uranium (U)	ug/g	0.55	0.050	8719587
Acid Extractable Vanadium (V)	ug/g	20	5.0	8719587
Acid Extractable Zinc (Zn)	ug/g	73	5.0	8719587
RDL = Reportable Detection Limit				
QC Batch = Quality Control Batch				



BUREAU  
VERITAS

Bureau Veritas Job #: C3G6852  
Report Date: 2023/06/15

exp Services Inc  
Client Project #: OTT-23005943-B0  
Sampler Initials: J.E

**O.REG 406 EXCESS SOIL BULK PAHS (SOIL)**

Bureau Veritas ID		WBA529		WBA530	WBA531		WBA532		
Sampling Date		2023/06/07 10:00		2023/06/07 11:00	2023/06/07 11:10		2023/06/07 11:00		
COC Number		938549-01-01		938549-01-01	938549-01-01		938549-01-01		
	<b>UNITS</b>	<b>DUP</b>	<b>RDL</b>	<b>BH-3-SS1</b>	<b>BH-3-SS3</b>	<b>RDL</b>	<b>BH-2-SS1</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Calculated Parameters</b>									
Methylnaphthalene, 2-(1-)	ug/g	<0.071	0.071	0.011	<0.0071	0.0071	<0.071	0.071	8716028
<b>Polyaromatic Hydrocarbons</b>									
Acenaphthene	ug/g	0.15	0.050	0.034	<0.0050	0.0050	0.14	0.050	8717003
Acenaphthylene	ug/g	<0.050	0.050	0.013	<0.0050	0.0050	<0.050	0.050	8717003
Anthracene	ug/g	0.40	0.050	0.056	0.011	0.0050	0.33	0.050	8717003
Benzo(a)anthracene	ug/g	1.4	0.050	0.17	0.020	0.0050	1.1	0.050	8717003
Benzo(a)pyrene	ug/g	1.4	0.050	0.16	0.018	0.0050	0.94	0.050	8717003
Benzo(b,j)fluoranthene	ug/g	1.8	0.050	0.21	0.022	0.0050	1.3	0.050	8717003
Benzo(g,h,i)perylene	ug/g	1.0	0.050	0.12	0.013	0.0050	0.65	0.050	8717003
Benzo(k)fluoranthene	ug/g	0.67	0.050	0.072	0.0079	0.0050	0.46	0.050	8717003
Chrysene	ug/g	1.3	0.050	0.14	0.016	0.0050	0.95	0.050	8717003
Dibenzo(a,h)anthracene	ug/g	0.26	0.050	0.031	<0.0050	0.0050	0.18	0.050	8717003
Fluoranthene	ug/g	3.0	0.050	0.33	0.040	0.0050	2.5	0.050	8717003
Fluorene	ug/g	0.16	0.050	0.023	<0.0050	0.0050	0.13	0.050	8717003
Indeno(1,2,3-cd)pyrene	ug/g	1.1	0.050	0.12	0.013	0.0050	0.68	0.050	8717003
1-Methylnaphthalene	ug/g	<0.050	0.050	0.0052	<0.0050	0.0050	<0.050	0.050	8717003
2-Methylnaphthalene	ug/g	<0.050	0.050	0.0053	<0.0050	0.0050	<0.050	0.050	8717003
Naphthalene	ug/g	<0.050	0.050	0.0084	<0.0050	0.0050	<0.050	0.050	8717003
Phenanthrene	ug/g	2.0	0.050	0.21	0.033	0.0050	1.8	0.050	8717003
Pyrene	ug/g	2.3	0.050	0.26	0.031	0.0050	1.8	0.050	8717003
Biphenyl	ug/g	<0.050	0.050	<0.0050	<0.0050	0.0050	<0.050	0.050	8717003
<b>Surrogate Recovery (%)</b>									
D10-Anthracene	%	97		90	92		103		8717003
D14-Terphenyl (FS)	%	86		86	87		81		8717003
D8-Acenaphthylene	%	89		85	85		84		8717003
RDL = Reportable Detection Limit QC Batch = Quality Control Batch									



BUREAU  
VERITAS

Bureau Veritas Job #: C3G6852

Report Date: 2023/06/15

exp Services Inc

Client Project #: OTT-23005943-B0

Sampler Initials: J.E

### O.REG 406 EXCESS SOIL BULK PAHS (SOIL)

Bureau Veritas ID		WBA533		
Sampling Date		2023/06/07 12:30		
COC Number		938549-01-01		
	<b>UNITS</b>	<b>BH-4-SS2</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Calculated Parameters</b>				
Methylnaphthalene, 2-(1-)	ug/g	<0.0071	0.0071	8716028
<b>Polyaromatic Hydrocarbons</b>				
Acenaphthene	ug/g	<0.0050	0.0050	8717003
Acenaphthylene	ug/g	<0.0050	0.0050	8717003
Anthracene	ug/g	0.0053	0.0050	8717003
Benzo(a)anthracene	ug/g	0.013	0.0050	8717003
Benzo(a)pyrene	ug/g	0.012	0.0050	8717003
Benzo(b/j)fluoranthene	ug/g	0.016	0.0050	8717003
Benzo(g,h,i)perylene	ug/g	0.010	0.0050	8717003
Benzo(k)fluoranthene	ug/g	0.0059	0.0050	8717003
Chrysene	ug/g	0.011	0.0050	8717003
Dibenzo(a,h)anthracene	ug/g	<0.0050	0.0050	8717003
Fluoranthene	ug/g	0.028	0.0050	8717003
Fluorene	ug/g	<0.0050	0.0050	8717003
Indeno(1,2,3-cd)pyrene	ug/g	0.0092	0.0050	8717003
1-Methylnaphthalene	ug/g	<0.0050	0.0050	8717003
2-Methylnaphthalene	ug/g	<0.0050	0.0050	8717003
Naphthalene	ug/g	<0.0050	0.0050	8717003
Phenanthrene	ug/g	0.018	0.0050	8717003
Pyrene	ug/g	0.022	0.0050	8717003
Biphenyl	ug/g	<0.0050	0.0050	8717003
<b>Surrogate Recovery (%)</b>				
D10-Anthracene	%	93		8717003
D14-Terphenyl (FS)	%	86		8717003
D8-Acenaphthylene	%	89		8717003
RDL = Reportable Detection Limit QC Batch = Quality Control Batch				



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exp Services Inc

Client Project #: OTT-23005943-B0

Sampler Initials: J.E

**O.REG 406 EXCESS SOIL BULK BTEX/F1-F4 (SOIL)**

Bureau Veritas ID		WBA529	WBA530	WBA531	WBA532	WBA533		
Sampling Date		2023/06/07 10:00	2023/06/07 11:00	2023/06/07 11:10	2023/06/07 11:00	2023/06/07 12:30		
COC Number		938549-01-01	938549-01-01	938549-01-01	938549-01-01	938549-01-01		
	<b>UNITS</b>	<b>DUP</b>	<b>BH-3-SS1</b>	<b>BH-3-SS3</b>	<b>BH-2-SS1</b>	<b>BH-4-SS2</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	8718919
Toluene	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	8718919
Ethylbenzene	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	8718919
o-Xylene	ug/g	<0.020	<0.020	<0.020	0.027	<0.020	0.020	8718919
p+m-Xylene	ug/g	<0.040	<0.040	<0.040	<0.040	<0.040	0.040	8718919
Total Xylenes	ug/g	<0.040	<0.040	<0.040	<0.040	<0.040	0.040	8718919
F1 (C6-C10)	ug/g	<10	<10	<10	<10	<10	10	8718919
F1 (C6-C10) - BTEX	ug/g	<10	<10	<10	<10	<10	10	8718919
<b>F2-F4 Hydrocarbons</b>								
F2 (C10-C16 Hydrocarbons)	ug/g	<10	<10	<10	<10	<10	10	8719078
F3 (C16-C34 Hydrocarbons)	ug/g	260	<50	<50	250	130	50	8719078
F4 (C34-C50 Hydrocarbons)	ug/g	740	<50	<50	680	180	50	8719078
Reached Baseline at C50	ug/g	No	Yes	Yes	No	No		8719078
<b>Surrogate Recovery (%)</b>								
1,4-Difluorobenzene	%	102	99	98	101	100		8718919
4-Bromofluorobenzene	%	99	100	100	99	99		8718919
D10-o-Xylene	%	84	89	88	89	98		8718919
D4-1,2-Dichloroethane	%	98	99	101	98	99		8718919
o-Terphenyl	%	88	96	96	94	95		8719078
RDL = Reportable Detection Limit								
QC Batch = Quality Control Batch								



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**SODIUM ADSORPTION RATIO (SAR)**

Bureau Veritas ID		WBA529	WBA530	WBA531	WBA532	WBA533	
Sampling Date		2023/06/07 10:00	2023/06/07 11:00	2023/06/07 11:10	2023/06/07 11:00	2023/06/07 12:30	
COC Number		938549-01-01	938549-01-01	938549-01-01	938549-01-01	938549-01-01	
	<b>UNITS</b>	<b>DUP</b>	<b>BH-3-SS1</b>	<b>BH-3-SS3</b>	<b>BH-2-SS1</b>	<b>BH-4-SS2</b>	<b>QC Batch</b>

**Calculated Parameters**

Sodium Adsorption Ratio	N/A	6.9	16	1.4	6.3	10	8716301
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QC Batch = Quality Control Batch



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**RESULTS OF ANALYSES OF SOIL**

Bureau Veritas ID		WBA529	WBA530	WBA531		WBA532		
Sampling Date		2023/06/07 10:00	2023/06/07 11:00	2023/06/07 11:10		2023/06/07 11:00		
COC Number		938549-01-01	938549-01-01	938549-01-01		938549-01-01		
	<b>UNITS</b>	<b>DUP</b>	<b>BH-3-SS1</b>	<b>BH-3-SS3</b>	<b>QC Batch</b>	<b>BH-2-SS1</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Inorganics</b>								
Conductivity	mS/cm	0.38	0.51	0.57	8722014	0.38	0.002	8721996
Moisture	%	13	9.7	19	8716471	13	1.0	8716578
RDL = Reportable Detection Limit QC Batch = Quality Control Batch								

Bureau Veritas ID		WBA533		
Sampling Date		2023/06/07 12:30		
COC Number		938549-01-01		
	<b>UNITS</b>	<b>BH-4-SS2</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Inorganics</b>				
Conductivity	mS/cm	0.80	0.002	8722014
Moisture	%	18	1.0	8716578
RDL = Reportable Detection Limit QC Batch = Quality Control Batch				



**PETROLEUM HYDROCARBONS (CCME)**

Bureau Veritas ID		WBA529	WBA532	WBA533		
Sampling Date		2023/06/07 10:00	2023/06/07 11:00	2023/06/07 12:30		
COC Number		938549-01-01	938549-01-01	938549-01-01		
	<b>UNITS</b>	<b>DUP</b>	<b>BH-2-SS1</b>	<b>BH-4-SS2</b>	<b>RDL</b>	<b>QC Batch</b>
<b>F2-F4 Hydrocarbons</b>						
F4G-sg (Grav. Heavy Hydrocarbons)	ug/g	3800	3400	720	100	8724195
RDL = Reportable Detection Limit						
QC Batch = Quality Control Batch						



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Bureau Veritas Job #: C3G6852  
Report Date: 2023/06/15

exp Services Inc  
Client Project #: OTT-23005943-B0  
Sampler Initials: J.E

### TEST SUMMARY

**Bureau Veritas ID:** WBA529  
**Sample ID:** DUP  
**Matrix:** Soil

**Collected:** 2023/06/07  
**Shipped:**  
**Received:** 2023/06/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	8716028	N/A	2023/06/12	Automated Statchk
Conductivity	AT	8722014	2023/06/13	2023/06/13	Surinder Rai
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	8718919	N/A	2023/06/12	Anca Ganea
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	8719078	2023/06/12	2023/06/12	Ksenia Trofimova
F4G (CCME Hydrocarbons Gravimetric)	BAL	8724195	2023/06/14	2023/06/14	Rashmi Dubey
Acid Extractable Metals by ICPMS	ICP/MS	8718073	2023/06/10	2023/06/12	Viviana Canzonieri
Moisture	BAL	8716471	N/A	2023/06/09	Muhammad Chhaidan
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	8717003	2023/06/09	2023/06/10	Jonghan Yoon
Sodium Adsorption Ratio (SAR)	CALC/MET	8716301	N/A	2023/06/15	Automated Statchk

**Bureau Veritas ID:** WBA530  
**Sample ID:** BH-3-SS1  
**Matrix:** Soil

**Collected:** 2023/06/07  
**Shipped:**  
**Received:** 2023/06/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	8716028	N/A	2023/06/12	Automated Statchk
Conductivity	AT	8722014	2023/06/13	2023/06/13	Surinder Rai
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	8718919	N/A	2023/06/12	Anca Ganea
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	8719078	2023/06/12	2023/06/12	Ksenia Trofimova
Acid Extractable Metals by ICPMS	ICP/MS	8719587	2023/06/12	2023/06/12	Daniel Teclu
Moisture	BAL	8716471	N/A	2023/06/09	Muhammad Chhaidan
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	8717003	2023/06/09	2023/06/10	Jonghan Yoon
Sodium Adsorption Ratio (SAR)	CALC/MET	8716301	N/A	2023/06/15	Automated Statchk

**Bureau Veritas ID:** WBA531  
**Sample ID:** BH-3-SS3  
**Matrix:** Soil

**Collected:** 2023/06/07  
**Shipped:**  
**Received:** 2023/06/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	8716028	N/A	2023/06/12	Automated Statchk
Conductivity	AT	8722014	2023/06/13	2023/06/13	Surinder Rai
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	8718919	N/A	2023/06/12	Anca Ganea
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	8719078	2023/06/12	2023/06/13	Ksenia Trofimova
Acid Extractable Metals by ICPMS	ICP/MS	8719587	2023/06/12	2023/06/12	Daniel Teclu
Moisture	BAL	8716471	N/A	2023/06/09	Muhammad Chhaidan
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	8717003	2023/06/09	2023/06/10	Jonghan Yoon
Sodium Adsorption Ratio (SAR)	CALC/MET	8716301	N/A	2023/06/15	Automated Statchk

**Bureau Veritas ID:** WBA532  
**Sample ID:** BH-2-SS1  
**Matrix:** Soil

**Collected:** 2023/06/07  
**Shipped:**  
**Received:** 2023/06/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	8716028	N/A	2023/06/12	Automated Statchk
Conductivity	AT	8721996	2023/06/13	2023/06/13	Surinder Rai
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	8718919	N/A	2023/06/12	Anca Ganea



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### TEST SUMMARY

**Bureau Veritas ID:** WBA532  
**Sample ID:** BH-2-SS1  
**Matrix:** Soil

**Collected:** 2023/06/07  
**Shipped:**  
**Received:** 2023/06/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	8719078	2023/06/12	2023/06/12	Ksenia Trofimova
F4G (CCME Hydrocarbons Gravimetric)	BAL	8724195	2023/06/14	2023/06/14	Rashmi Dubey
Acid Extractable Metals by ICPMS	ICP/MS	8718073	2023/06/10	2023/06/12	Viviana Canzonieri
Moisture	BAL	8716578	N/A	2023/06/09	Muhammad Chhaidan
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	8717003	2023/06/09	2023/06/10	Jonghan Yoon
Sodium Adsorption Ratio (SAR)	CALC/MET	8716301	N/A	2023/06/15	Automated Statchk

**Bureau Veritas ID:** WBA533  
**Sample ID:** BH-4-SS2  
**Matrix:** Soil

**Collected:** 2023/06/07  
**Shipped:**  
**Received:** 2023/06/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	8716028	N/A	2023/06/12	Automated Statchk
Conductivity	AT	8722014	2023/06/13	2023/06/13	Surinder Rai
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	8718919	N/A	2023/06/12	Anca Ganea
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	8719078	2023/06/12	2023/06/12	Ksenia Trofimova
F4G (CCME Hydrocarbons Gravimetric)	BAL	8724195	2023/06/14	2023/06/14	Rashmi Dubey
Acid Extractable Metals by ICPMS	ICP/MS	8719587	2023/06/12	2023/06/12	Daniel Teclu
Moisture	BAL	8716578	N/A	2023/06/09	Muhammad Chhaidan
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	8717003	2023/06/09	2023/06/11	Jonghan Yoon
Sodium Adsorption Ratio (SAR)	CALC/MET	8716301	N/A	2023/06/15	Automated Statchk



### 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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Sample WBA529 [DUP] : PAH Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample WBA530 [BH-3-SS1] : F1 BTEX analysis : Soil weight exceeds the protocol specification of approximately 5g in the field preserved vial. Additional methanol was added to the vial to ensure extraction efficiency

Sample WBA531 [BH-3-SS3] : F1 BTEX analysis : Soil weight exceeds the protocol specification of approximately 5g in the field preserved vial. Additional methanol was added to the vial to ensure extraction efficiency

Sample WBA532 [BH-2-SS1] : F1 BTEX analysis : Soil weight exceeds the protocol specification of approximately 5g in the field preserved vial. Additional methanol was added to the vial to ensure extraction efficiency

PAH Analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

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



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### QUALITY ASSURANCE REPORT

exp Services Inc

Client Project #: OTT-23005943-B0

Sampler Initials: J.E

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8717003	D10-Anthracene	2023/06/10	73	50 - 130	96	50 - 130	96	%		
8717003	D14-Terphenyl (FS)	2023/06/10	68	50 - 130	88	50 - 130	91	%		
8717003	D8-Acenaphthylene	2023/06/10	71	50 - 130	95	50 - 130	93	%		
8718919	1,4-Difluorobenzene	2023/06/12	100	60 - 140	100	60 - 140	99	%		
8718919	4-Bromofluorobenzene	2023/06/12	99	60 - 140	100	60 - 140	97	%		
8718919	D10-o-Xylene	2023/06/12	98	60 - 140	90	60 - 140	83	%		
8718919	D4-1,2-Dichloroethane	2023/06/12	99	60 - 140	96	60 - 140	100	%		
8719078	o-Terphenyl	2023/06/12	96	60 - 130	99	60 - 130	105	%		
8716471	Moisture	2023/06/09							0	20
8716578	Moisture	2023/06/09							0.59	20
8717003	1-Methylnaphthalene	2023/06/10	106	50 - 130	109	50 - 130	<0.0050	ug/g	NC	40
8717003	2-Methylnaphthalene	2023/06/10	97	50 - 130	100	50 - 130	<0.0050	ug/g	NC	40
8717003	Acenaphthene	2023/06/10	97	50 - 130	99	50 - 130	<0.0050	ug/g	NC	40
8717003	Acenaphthylene	2023/06/10	94	50 - 130	97	50 - 130	<0.0050	ug/g	NC	40
8717003	Anthracene	2023/06/10	98	50 - 130	100	50 - 130	<0.0050	ug/g	NC	40
8717003	Benzo(a)anthracene	2023/06/10	100	50 - 130	100	50 - 130	<0.0050	ug/g	NC	40
8717003	Benzo(a)pyrene	2023/06/10	93	50 - 130	95	50 - 130	<0.0050	ug/g	NC	40
8717003	Benzo(b,j)fluoranthene	2023/06/10	95	50 - 130	97	50 - 130	<0.0050	ug/g	NC	40
8717003	Benzo(g,h,i)perylene	2023/06/10	120	50 - 130	126	50 - 130	<0.0050	ug/g	NC	40
8717003	Benzo(k)fluoranthene	2023/06/10	89	50 - 130	94	50 - 130	<0.0050	ug/g	NC	40
8717003	Biphenyl	2023/06/10	100	50 - 130	103	50 - 130	<0.0050	ug/g		
8717003	Chrysene	2023/06/10	99	50 - 130	101	50 - 130	<0.0050	ug/g	NC	40
8717003	Dibenzo(a,h)anthracene	2023/06/10	110	50 - 130	108	50 - 130	<0.0050	ug/g	NC	40
8717003	Fluoranthene	2023/06/10	94	50 - 130	95	50 - 130	<0.0050	ug/g	NC	40
8717003	Fluorene	2023/06/10	95	50 - 130	97	50 - 130	<0.0050	ug/g	NC	40
8717003	Indeno(1,2,3-cd)pyrene	2023/06/10	113	50 - 130	115	50 - 130	<0.0050	ug/g	NC	40
8717003	Naphthalene	2023/06/10	91	50 - 130	95	50 - 130	<0.0050	ug/g	NC	40
8717003	Phenanthrene	2023/06/10	96	50 - 130	99	50 - 130	<0.0050	ug/g	NC	40
8717003	Pyrene	2023/06/10	93	50 - 130	94	50 - 130	<0.0050	ug/g	NC	40
8718073	Acid Extractable Antimony (Sb)	2023/06/12	82	75 - 125	103	80 - 120	<0.20	ug/g	13	30
8718073	Acid Extractable Arsenic (As)	2023/06/12	89	75 - 125	100	80 - 120	<1.0	ug/g	8.6	30
8718073	Acid Extractable Barium (Ba)	2023/06/12	NC	75 - 125	101	80 - 120	<0.50	ug/g	4.9	30



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### QUALITY ASSURANCE REPORT(CONT'D)

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Sampler Initials: J.E

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8718073	Acid Extractable Beryllium (Be)	2023/06/12	94	75 - 125	101	80 - 120	<0.20	ug/g	2.5	30
8718073	Acid Extractable Boron (B)	2023/06/12	86	75 - 125	97	80 - 120	<5.0	ug/g	0.73	30
8718073	Acid Extractable Cadmium (Cd)	2023/06/12	91	75 - 125	101	80 - 120	<0.10	ug/g	1.8	30
8718073	Acid Extractable Chromium (Cr)	2023/06/12	NC	75 - 125	101	80 - 120	<1.0	ug/g	2.3	30
8718073	Acid Extractable Cobalt (Co)	2023/06/12	87	75 - 125	98	80 - 120	<0.10	ug/g	2.6	30
8718073	Acid Extractable Copper (Cu)	2023/06/12	NC	75 - 125	100	80 - 120	<0.50	ug/g	3.6	30
8718073	Acid Extractable Lead (Pb)	2023/06/12	NC	75 - 125	100	80 - 120	<1.0	ug/g	5.1	30
8718073	Acid Extractable Molybdenum (Mo)	2023/06/12	92	75 - 125	100	80 - 120	<0.50	ug/g	1.8	30
8718073	Acid Extractable Nickel (Ni)	2023/06/12	90	75 - 125	100	80 - 120	<0.50	ug/g	9.8	30
8718073	Acid Extractable Selenium (Se)	2023/06/12	90	75 - 125	99	80 - 120	<0.50	ug/g	NC	30
8718073	Acid Extractable Silver (Ag)	2023/06/12	93	75 - 125	100	80 - 120	<0.20	ug/g	2.8	30
8718073	Acid Extractable Thallium (Tl)	2023/06/12	88	75 - 125	98	80 - 120	<0.050	ug/g	27	30
8718073	Acid Extractable Uranium (U)	2023/06/12	91	75 - 125	98	80 - 120	<0.050	ug/g	3.9	30
8718073	Acid Extractable Vanadium (V)	2023/06/12	NC	75 - 125	99	80 - 120	<5.0	ug/g	2.4	30
8718073	Acid Extractable Zinc (Zn)	2023/06/12	NC	75 - 125	102	80 - 120	<5.0	ug/g	3.0	30
8718919	Benzene	2023/06/12	105	50 - 140	93	50 - 140	<0.020	ug/g	NC	50
8718919	Ethylbenzene	2023/06/12	115	50 - 140	103	50 - 140	<0.020	ug/g	NC	50
8718919	F1 (C6-C10) - BTEX	2023/06/12					<10	ug/g	NC	30
8718919	F1 (C6-C10)	2023/06/12	105	60 - 140	98	80 - 120	<10	ug/g	NC	30
8718919	o-Xylene	2023/06/12	112	50 - 140	99	50 - 140	<0.020	ug/g	NC	50
8718919	p+m-Xylene	2023/06/12	109	50 - 140	98	50 - 140	<0.040	ug/g	NC	50
8718919	Toluene	2023/06/12	98	50 - 140	87	50 - 140	<0.020	ug/g	NC	50
8718919	Total Xylenes	2023/06/12					<0.040	ug/g	NC	50
8719078	F2 (C10-C16 Hydrocarbons)	2023/06/12	94	60 - 130	98	80 - 120	<10	ug/g	NC	30
8719078	F3 (C16-C34 Hydrocarbons)	2023/06/12	91	60 - 130	96	80 - 120	<50	ug/g	NC	30
8719078	F4 (C34-C50 Hydrocarbons)	2023/06/12	99	60 - 130	102	80 - 120	<50	ug/g	NC	30
8719587	Acid Extractable Antimony (Sb)	2023/06/12	81	75 - 125	97	80 - 120	<0.20	ug/g	NC	30
8719587	Acid Extractable Arsenic (As)	2023/06/12	96	75 - 125	102	80 - 120	<1.0	ug/g	0.65	30
8719587	Acid Extractable Barium (Ba)	2023/06/12	NC	75 - 125	100	80 - 120	<0.50	ug/g	1.7	30
8719587	Acid Extractable Beryllium (Be)	2023/06/12	93	75 - 125	98	80 - 120	<0.20	ug/g	5.1	30
8719587	Acid Extractable Boron (B)	2023/06/12	83	75 - 125	103	80 - 120	<5.0	ug/g	7.3	30
8719587	Acid Extractable Cadmium (Cd)	2023/06/12	96	75 - 125	100	80 - 120	<0.10	ug/g	5.4	30



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### QUALITY ASSURANCE REPORT(CONT'D)

exp Services Inc

Client Project #: OTT-23005943-B0

Sampler Initials: J.E

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8719587	Acid Extractable Chromium (Cr)	2023/06/12	NC	75 - 125	98	80 - 120	<1.0	ug/g	4.6	30
8719587	Acid Extractable Cobalt (Co)	2023/06/12	93	75 - 125	97	80 - 120	<0.10	ug/g	1.8	30
8719587	Acid Extractable Copper (Cu)	2023/06/12	91	75 - 125	101	80 - 120	<0.50	ug/g	2.8	30
8719587	Acid Extractable Lead (Pb)	2023/06/12	90	75 - 125	103	80 - 120	<1.0	ug/g	2.8	30
8719587	Acid Extractable Molybdenum (Mo)	2023/06/12	93	75 - 125	99	80 - 120	<0.50	ug/g	NC	30
8719587	Acid Extractable Nickel (Ni)	2023/06/12	NC	75 - 125	101	80 - 120	<0.50	ug/g	3.6	30
8719587	Acid Extractable Selenium (Se)	2023/06/12	96	75 - 125	101	80 - 120	<0.50	ug/g	NC	30
8719587	Acid Extractable Silver (Ag)	2023/06/12	94	75 - 125	99	80 - 120	<0.20	ug/g	NC	30
8719587	Acid Extractable Thallium (Tl)	2023/06/12	92	75 - 125	99	80 - 120	<0.050	ug/g	2.9	30
8719587	Acid Extractable Uranium (U)	2023/06/12	90	75 - 125	93	80 - 120	<0.050	ug/g	3.4	30
8719587	Acid Extractable Vanadium (V)	2023/06/12	NC	75 - 125	96	80 - 120	<5.0	ug/g	3.0	30
8719587	Acid Extractable Zinc (Zn)	2023/06/12	NC	75 - 125	103	80 - 120	<5.0	ug/g	3.4	30
8721996	Conductivity	2023/06/13			103	90 - 110	<0.002	mS/cm	6.0	10
8722014	Conductivity	2023/06/13			103	90 - 110	<0.002	mS/cm	3.4	10
8724195	F4G-sg (Grav. Heavy Hydrocarbons)	2023/06/14	82	65 - 135	101	65 - 135	<100	ug/g	6.9	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 spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

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



BUREAU  
VERITAS

Bureau Veritas Job #: C3G6852

Report Date: 2023/06/15

exp Services Inc

Client Project #: OTT-23005943-B0

Sampler Initials: J.E

### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

\_\_\_\_\_  
Anastassia Hamanov, Scientific Specialist

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Bureau Veritas  
6740 Campbell Road, Mississauga, Ontario Canada L5N 2L8 Tel (905) 817-5700 Toll-free 800-563-6266 Fax (905) 817-5777 www.bvna.com

Received in Ottawa

08-Jun-23 09:50

Page 1 of 1

Katherine Szozda

C3G6852

ly:

Bottle Order #:

938549

Project Manager:

Katherine Szozda

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name: #17498 exp Services Inc	Company Name:	Quotation #: C20328	P.O. #: OTT-23005943-B0 RJM ENV-1548		
Attention: Accounts Payable	Attention: Leah Wells	Project Name:			
Address: 100-2650 Queensview Drive Ottawa ON K2B 8H6	Address:	COC #: C#938549-01-01			
Tel: (613) 688-1899 Fax: (613) 225-7337	Tel:	Site #: <u>Jeremy Eckert</u>			
Email: AP@exp.com; Karen.Burke@exp.com	Email: leah.wells@exp.com	Sampled By:			

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

<b>Regulation 153 (2011)</b> <input type="checkbox"/> Table 1 <input type="checkbox"/> Res/Park <input type="checkbox"/> Medium/Fine <input type="checkbox"/> Table 2 <input type="checkbox"/> Ind/Comm <input type="checkbox"/> Coarse <input type="checkbox"/> Table 3 <input type="checkbox"/> Agri/Other <input type="checkbox"/> For RSC <input type="checkbox"/> Table _____	<b>Other Regulations</b> <input type="checkbox"/> CCME <input type="checkbox"/> Sanitary Sewer Bylaw <input type="checkbox"/> Reg 558 <input type="checkbox"/> Storm Sewer Bylaw <input type="checkbox"/> MISA <input type="checkbox"/> Municipality _____ <input type="checkbox"/> PWOO <input checked="" type="checkbox"/> Reg 406 Table _____ <input type="checkbox"/> Other _____	<b>Special Instructions</b> Excess soil
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Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	ANALYSIS REQUESTED (PLEASE BE SPECIFIC)						# of Bottles	Comments
					Field Filtered (please circle): Metals / Hg / Cr / V	Reg 153 PHCs, BTEX/F1-F4 (Soil)	Reg 153 PAHs (Soil)	Reg 153 ICPMS Metals (Soil)	EC	SAP		
1	BH-4-SS1	23/06/07	1230	S	X	X	X	X	X	3		
2	DUP		1000							3		
3	BH-3-SS1		1100							3		
4	BH-3-SS3		1110							3		
5	BH-2-SS1		1000							3		
6												
7												
8												
9												
10												

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# Jars used and not submitted	Laboratory Use Only				
<u>Jeremy Eckert</u>	23/06/07	15:00	<u>Samuel Duval</u>	2023/06/08	09:50		Time Sensitive	Temperature (°C) on Receipt	Custody Seal Present	Yes	No
			<u>Michelle Sullivan</u>	2023/06/09	08:20			2, 1 g 1 jar each	Intact	✓	

\* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BUREAU VERITAS'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVNA.COM/ENVIRONMENTAL-LABORATORIES/RESOURCES/COG-TERMS-AND-CONDITIONS.

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

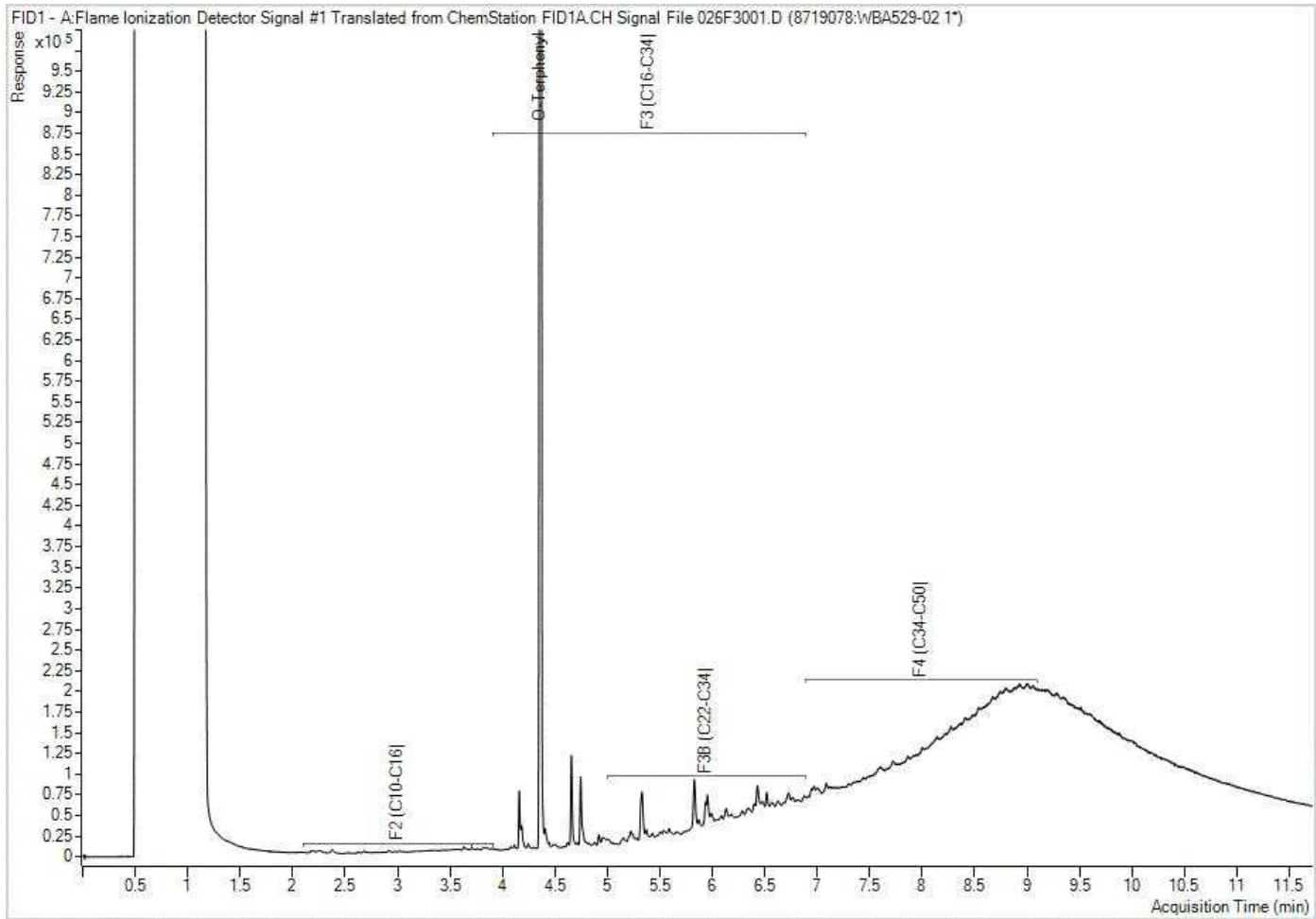
\*\*\* SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT WWW.BVNA.COM/ENVIRONMENTAL-LABORATORIES/RESOURCES/CHAIN-CUSTODY-FORMS-COCS.

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

White: Bureau Veritas Yellow: Client

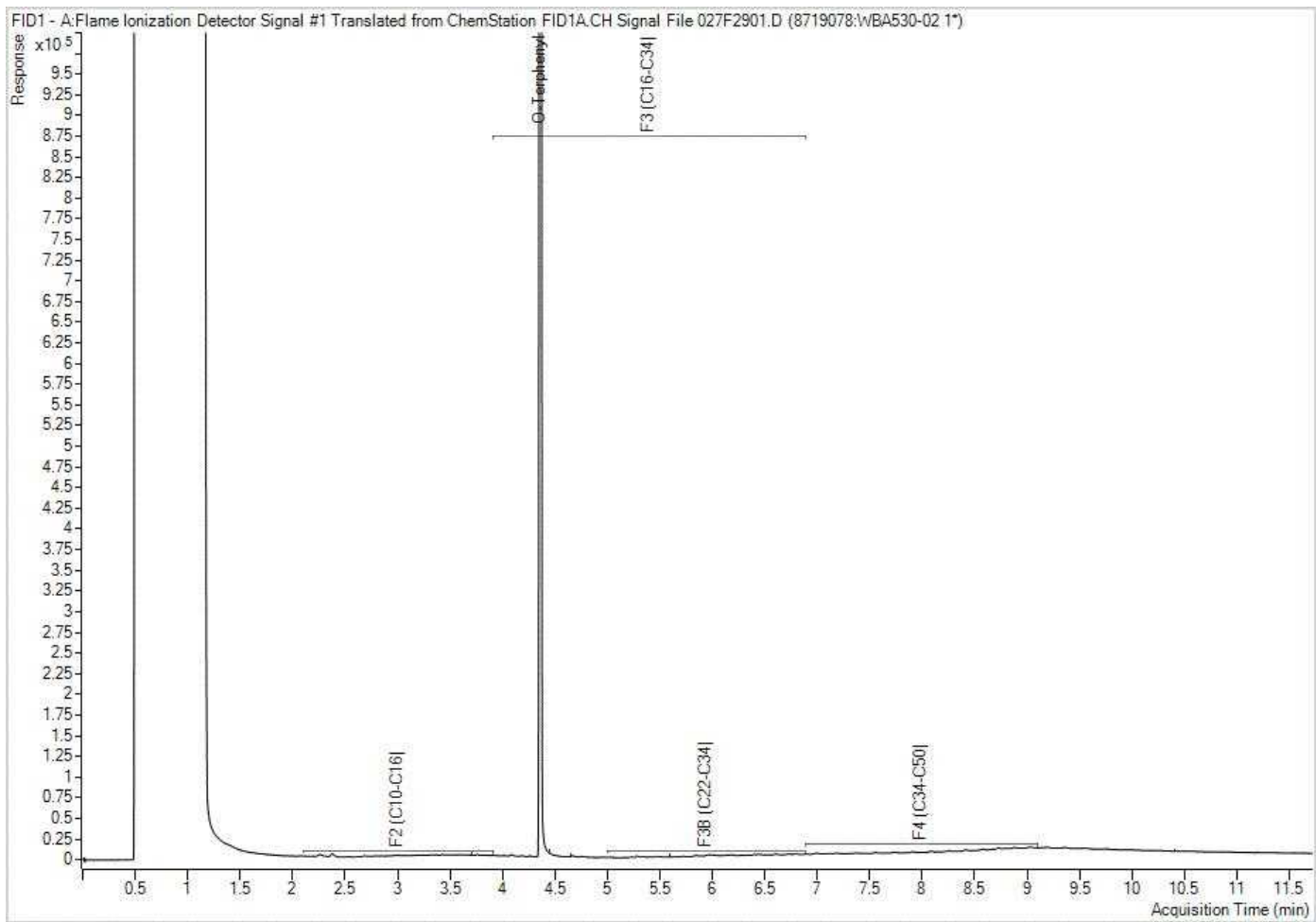
5/2/3

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



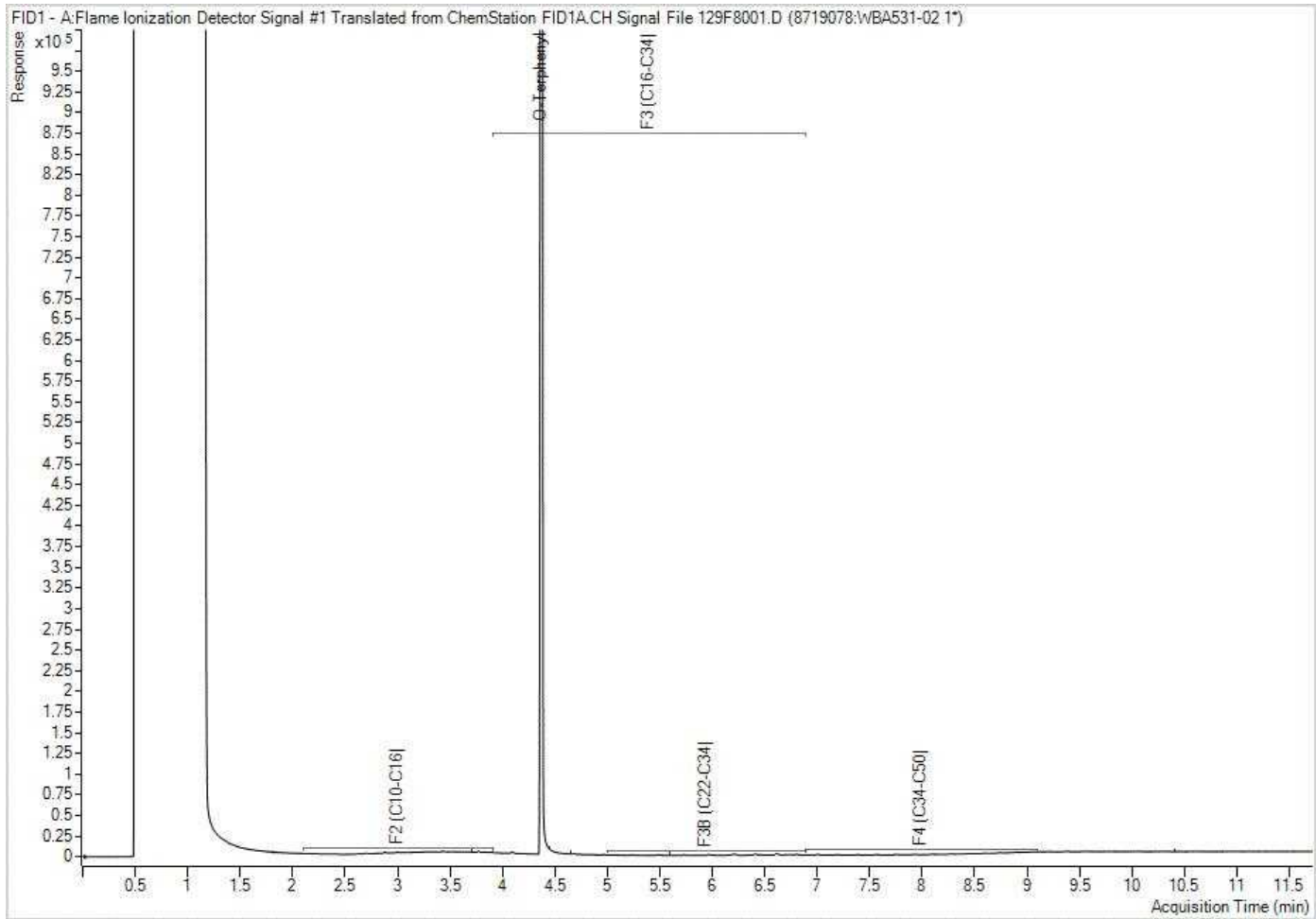
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



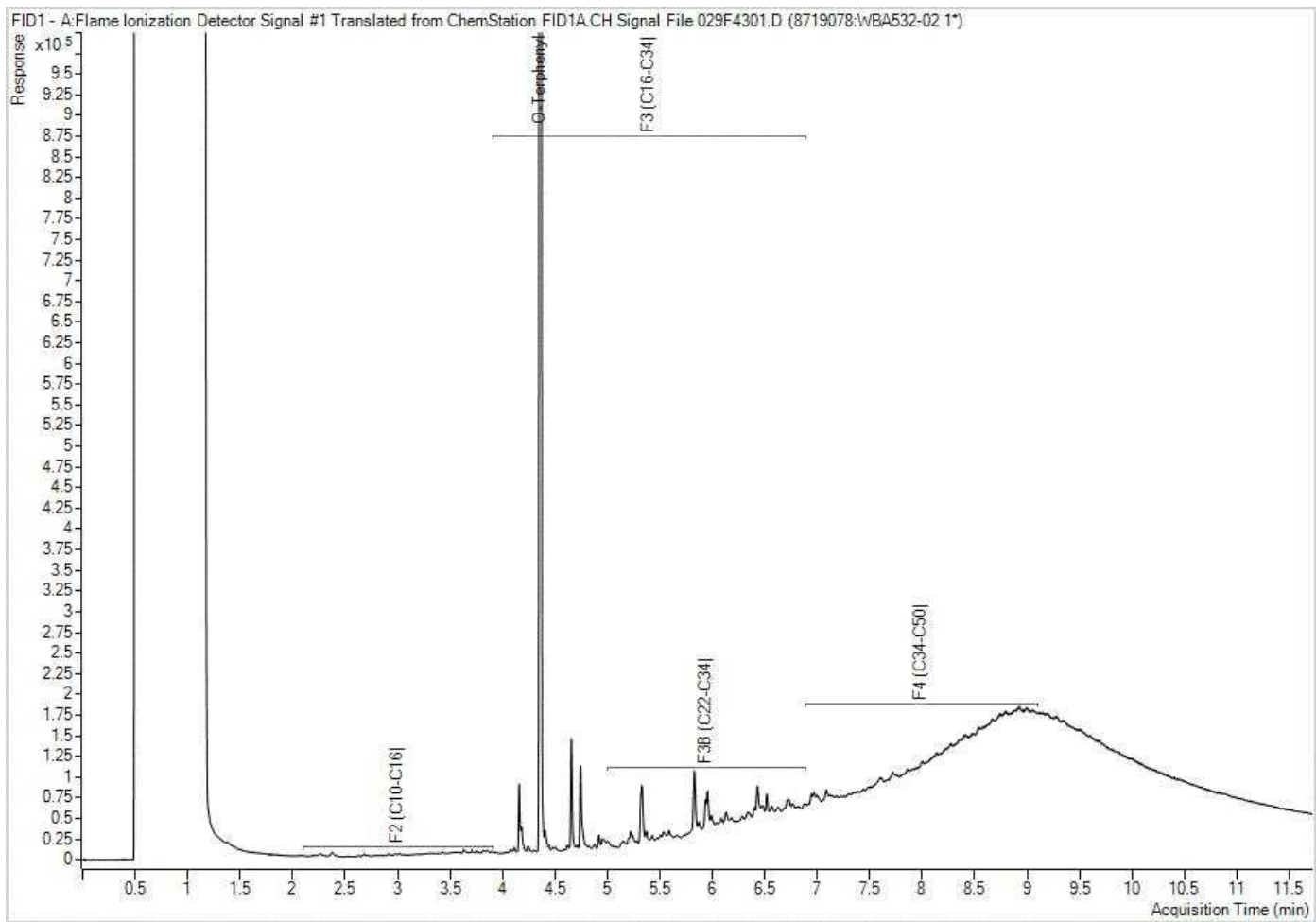
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



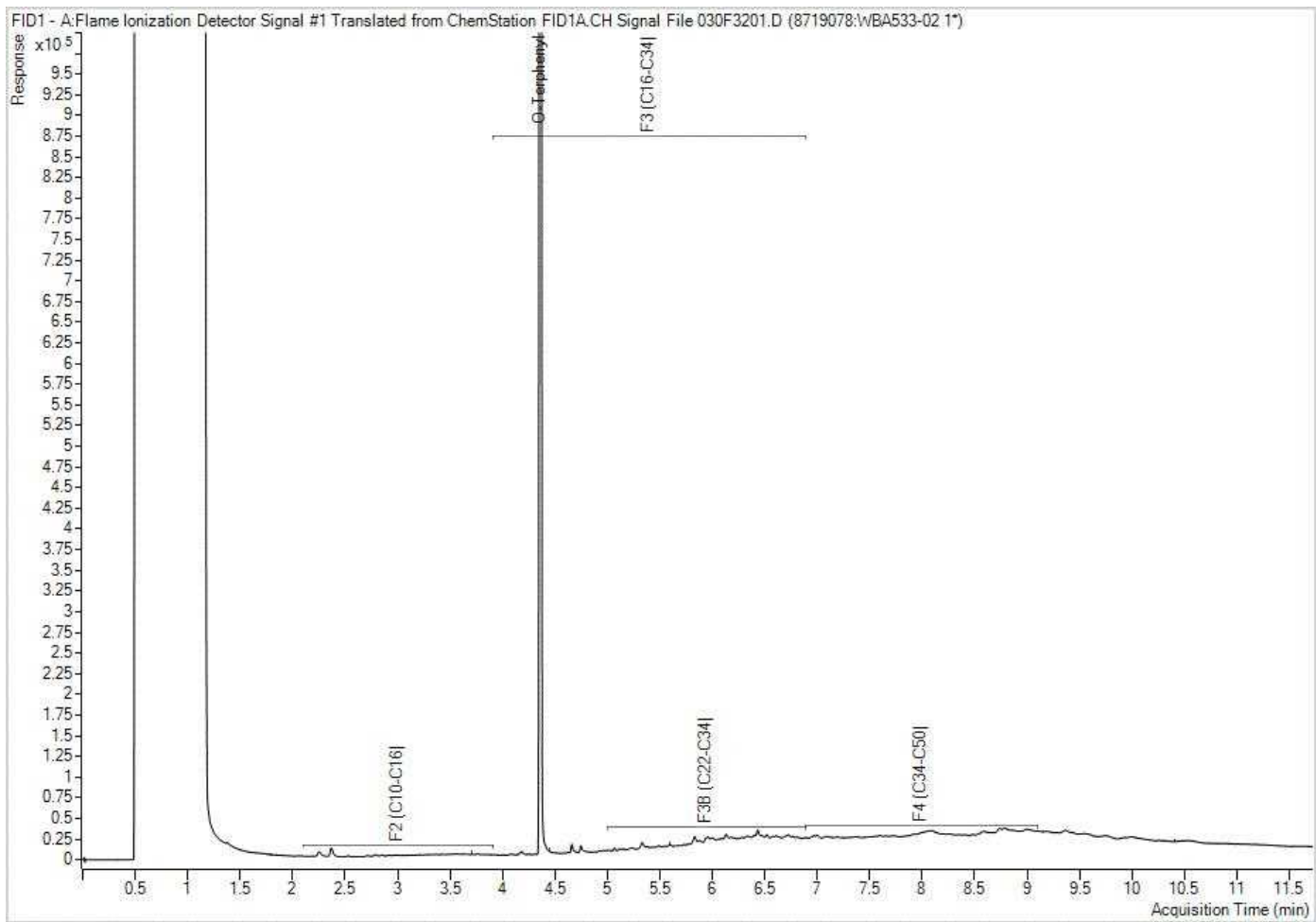
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



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Petroleum Hydrocarbons F2-F4 in Soil Chromatogram



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

EXP Services Inc.

*Katasa Groupe.*

*Phase Two Environmental Site Assessment*

*116 Beech Street, Ottawa, Ontario*

*OTT-23005843-C0*

*July 14, 2023*

