Phase Two Environmental Site Assessment

265 Carling Avenue, Ottawa, Ontario

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265 Carling LP

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Phase Two Environmental Site Assessment

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Executive Summary

EXP Services Inc. (EXP) was retained by 265 Carling LP to complete a Phase Two Environmental Site Assessment (ESA) of the property located at 265 Carling Avenue in Ottawa, Ontario hereinafter referred to as the 'Phase Two property'.

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 9 of this report.

The objective of the Phase Two ESA investigation was to assess the quality of the soil and groundwater conditions within the areas of potential environmental concern (APEC) identified in a previous Phase One ESA prepared by EXP. It is proposed that several floors of the existing commercial building on the Phase Two property be converted for residential use. Since historically the Phase Two property was occupied by a gas station, and the proposed future property use is commercial and residential, a Record of Site Condition (RSC) must be filed, per Ontario Regulation 153/04.

The Phase Two property is located has the municipal address 265 Carling Street and is located on the northwest corner of the intersection of Carling Avenue and Bronson Avenue in Ottawa, Ontario. The Phase Two property is irregular is shape and has a total area of approximately 0.17 hectares. The Phase Two property is legally described as Part Lots 6, 7, 12, 13, 14 and 15 on PLAN 54, South Clemow Avenue, Being Parts 3, 4, 5 and 6, on Plan 4R-31424, City of Ottawa. The Property identification number (PIN) is 041040471.

At the time of this investigation, the Phase Two property was occupied by an eight-storey, muti-tenanted commercial building with one level of underground parking. Seventeen tenants were present at the time of this investigation. The third floor was vacant, and under construction.

Based on the completion of the Phase One ESA, the following potentially contaminating activities (PCA) were identified:

EXP PCA #	Location of PCA	Potentially Contaminating Activity (PCA)	Description	Rationale
PCA 1	770 Bronson Avenue (20 m south)	PCA #28 – Gasoline and associated products storage in fixed tanks, PCA #10 – Commercial autobody shops	Former gas station with three USTs, former garage. Operated between the 1930s and late 2000s.	Due to the down-gradient location from the site, the separation form the site by Carling Avenue and associated subsurface infrastructure, and as previous investigations on this site have not identified any groundwater impact associated with the former gas station/garage this PCA does not contribute to an APEC.
PCA 2	247 Glebe Avenue (30 m east)	PCA #55 – Transformer manufacturing, processing and use	Ottawa Hydro Sub Station from the 1930s to present.	Due to the cross-gradient location from the site, and as PCBs are more likely to sorb to soil than partition into groundwater, this PCA does not contribute to an APEC.
PCA 3	Between Cambridge Street and Dows Lake (100 m southwest)	PCA #46 – Rail yards, tracks and spurs; PCA #59 – Wood treating and preservative facility and bulk storage of treated and preserved wood products	Fraserfield lumber yard from the 1880s to the 1920s. Rail spur lines historically present.	Due to the distance and inferred downgradient location from the site, this PCA does not contribute to an APEC. This area was subsequently redeveloped as residential properties.

EXP PCA #	Location of PCA	Potentially Contaminating Activity (PCA)	Description	Rationale
PCA 4	786-788 Bronson Street (120 m south)	PCA #37 – Operation of dry cleaning equipment (where chemicals are used	Dry cleaner from the 1940s to the 1950s.	Due to the distance and inferred downgradient location from the site, this PCA does not contribute to an APEC. This property was re-developed in the 1960s.
PCA 5	299 Carling Avenue (150 m southwest)	PCA #10 – Commercial autobody shops, PCA #28 – Gasoline and associated products storage in fixed tanks	Federal District Commission garage with USTs. Record for two USTs installed in 1957.	Due to the distance and inferred downgradient location from the site, this PCA does not contribute to an APEC.
PCA 6	360 Bell Street (170 m west)	PCA #10 – Commercial autobody shops, PCA #28 – Gasoline and associated products storage in fixed tanks	Ottawa Public School Board Garage in the 1950s and 1960s. Records for waste oil and gasoline USTs installed in the 1950s and 1960s.	Due to the distance and inferred cross gradient location from the site, this PCA does not contribute to an APEC. This property was redeveloped with ahigh-rise apartment building in the 1970s.
PCA 7	601 Booth Street (250 m west)	PCA #28 – Gasoline and associated products storage in fixed tanks	Gas station in the 1940s to the 1970s with multiple UST records.	Due to the distance and inferred cross gradient location from the site, this PCA does not contribute to an APEC.
PCA 8	265 Carling Avenue (Phase Two property)	PCA #28 – Gasoline and associated products storage in fixed tanks	Gas station in the 1960 and 1970s with multiple UST records.	As the gas station is located on the site, this PCA contributes to an APEC.
PCA 9	644 Bronson Avenue (210 m north)	PCA #28 – Gasoline and associated products storage in fixed tanks	Gas station from the 1970s to 2000s. Records for multiple USTs.	Due to the distance, and the separation from the site by Powell Avenue, Clemow Avenue and associated subsurface infrastructure, this PCA does not contribute to an APEC.
PCA 10	635 Bronson Avenue (230 m north)	PCA #28 – Gasoline and associated products storage in fixed tanks	Gas station from the 1960s to present.	Due to the distance, and the separation from the site by Bronson Avenue, Powell Avenue, Clemow Avenue and associated subsurface infrastructure, this PCA does not contribute to an APEC.
PCA 11	557 Cambridge Street (60 m south)	PCA #28 – Gasoline and associated products storage in fixed tanks	Contractor's yard in the 1940s and 1950s. Record for two USTs installed in 1957.	Due to the distance and down-gradient location form the site this PCA does not contribute to an APEC.
PCA 12	540 Cambridge Street (60 m west)	PCA #28 – Gasoline and associated products storage in fixed tanks	Record for USTs installed in 1928 and 1957.	Due to the distance and inferred cross gradient location from the site, this PCA does not contribute to an APEC.
PCA 13	290 Powell Avenue (80 m north)	PCA #28 – Gasoline and associated products storage in fixed tanks	Record for fuel oil and waste oil UST installed in 1965 at New Borden Public School.	Due to the distance, Clemow Avenue and associated subsurface infrastructure, this PCA does not contribute to an APEC. This property was redeveloped with a residential high rise in the early 2000s.

EXP PCA #	Location of PCA	Potentially Contaminating Activity (PCA)	Description	Rationale
PCA 14	475 Cambridge Street (190 m northwest)	PCA #28 – Gasoline and associated products storage in fixed tanks, PCA #37 – Operation of dry cleaning equipment (where chemicals are used)	Dry cleaner in the 1930s and 1940s. Record for UST installed in 1925.	Due to the distance and cross-gradient location from the site, this PCA does not contribute to an APEC.
PCA 15	212 Glebe Avenue (220 m east)	PCA #28 – Gasoline and associated products storage in fixed tanks	Record for fuel oil UST installed in 1957.	Due to the distance and cross-gradient location from the site, this PCA did not contribute to an APEC.
PCA 16	265 Carling Avenue (Phase Two property)	PCA #30 – Importation of fill material of unknown quality	Fill identified during previous investigations on the east side of the site.	Fill of unknown quality was present on the east side of the site, that was considered to contribute to an APEC.
PCA 17	265 Carling Avenue (Phase Two property)	PCA #Other – Application of de-icing salt	Use of de-icing salts on parking lot	It is considered likely that road salt was historically applied to the paved surfaces on the Phase Two property. It was determined that the application of de-icing salts to the parking areas was for the purpose of safety of vehicular or pedestrian traffic under conditions of snow or ice or both, and therefore falls under the exemption in Section 49.1 of O.Reg. 153/04, where the applicable standard would be deemed not to exceed.

The following APECs were identified:

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)
1. Former on-site gas station	East half of the Phase Two property	**PCA 8**: PCA #28 – Gasoline and Associated Products Storage in Fixed Tanks	On-site	BTEX, PHC	Soil and groundwater
2. Fill material of unknown quality	Area along on east side of Phase Two property	**PCA 16**: PCA #30 – Importation of fill material of unknown quality	On-site	BTEX, PHC, PAH, metals	Soil
3. Use of salt for de-icing	Parking lot on east side of Phase Two property	**PCA 17:** #Other: Use of salt for de-icing	On-site	EC, SAR, sodium, chloride	None

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

- Drilling two boreholes on the subject property and completing one of them as monitoring wells;
- Collecting representative soil samples for laboratory analysis of BTEX, PHC, PAH and metals;

- Assessing groundwater conditions by sampling the new and existing monitoring wells for BTEX and PHC;
- Conducting an elevation survey of the boreholes;
- Monitoring ground water levels in the monitors to determine ground water elevations;
- Comparing 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); and
- Preparing a report summarizing the results of the assessment activities.

For assessment purposes, EXP selected the 2011 Table 3 SCS in a non-potable groundwater condition for all types of residential/parkland/institutional property use. The site investigative activities consisted of the advancement of boreholes on the Phase Two property to facilitate the collection of soil and groundwater samples for visual inspection and chemical analyses.

The drilling program was completed on February 26 and 28, 2024, by Strata Drilling Group (Strata), a licensed well contractor. Strata advanced one interior borehole (MW24-2) inside the parking garage and one exterior borehole (MW24-1) on the east side of the Phase Two property. The interior borehole was augured to refusal, then the bedrock was cored to a depth of 9.3 m below ground surface. A monitoring well was installed in this borehole. The exterior borehole was terminated at 3.5 metres on inferred bedrock. It is noted that three monitoring wells (BH98-1 to BH98-3) installed during the 1998 investigation were still present on the Phase Two property. All three of these monitoring wells were sampled as part of this investigation.

One soil sample and one field duplicate were submitted for chemical analysis of BTEX, PHC, PAH, and metals. There were no exceedances of the Table 3 residential SCS. It is noted that as part of the 1998 investigation, three soil samples were submitted for analysis of TPH and BTEX. These samples were below the detection limits for all of the parameters analysed.

The new monitoring well and the monitoring wells installed in 1998 were sampled. Four groundwater samples, a field duplicate, and a trip blank were submitted for analysis of BTEX and PHC. All of the samples were below the detection limits. There were no exceedances of the Table 3 SCS.

Based on the analytical results of the soil and groundwater sampling program, no exceedances of the Table 3 residential SCS were identified on the Phase Two property.

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. Based on the results of the Phase Two ESA, no additional work is required prior to submitting a Record of Site Condition.

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

1.0 Introduction

EXP Services Inc. (EXP) was retained by 265 Carling LP to complete a Phase Two Environmental Site Assessment (ESA) of the property located at 265 Carling Avenue in Ottawa, Ontario hereinafter referred to as the 'Phase Two property'. At the time of the investigation, the Phase Two property was occupied by an eight-storey office building with one level of underground parking. The purpose of the investigations was to support the filing of a Record of Site Condition (RSC).

The objectives of the Phase Two ESA investigation were to assess the quality of the soil and groundwater conditions within the areas of potential environmental concern (APEC) identified in a Phase One ESA prepared by EXP.

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 9 of this report.

Philip Oliveira conducted the field assessment work. Leah Wells, P.Eng., was the report author for this project. Ms. Wells was supervised by Chris Kimmerly, P. Geo., QP_{ESA}.

1.1 Site Description

The Phase Two property is located has the municipal address 265 Carling Street and is located on the northwest corner of the intersection of Carling Avenue and Bronson Avenue in Ottawa, Ontario, as shown on Figure 1 in Appendix A. The Phase Two property is irregular is shape and has a total area of approximately 0.17 hectares. The Phase Two property is legally described as Part Lots 6, 7, 12, 13, 14 and 15 on PLAN 54, South Clemow Avenue, Being Parts 3, 4, 5 and 6, on Plan 4R-31424, City of Ottawa. The Property identification number (PIN) is 041040471.

At the time of this investigation, the Phase Two property was occupied by an eight-storey, muti-tenanted commercial building with one level of underground parking. Seventeen tenants were present at the time of this investigation. The third floor was vacant, and under construction.

The approximate Universal Transverse Mercator (UTM) coordinates for the Phase Two property are Zone 18, 445181 m E and 5027742 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.

Table 1.1: Site Identification Details

Civic Address	265 Carling Avenue, Ottawa
Current Land Use	Commercial
Previous Land Use	Industrial
Proposed Future Land Use	Commercial and Residential
Property Identification Number	041040471(LT)
UTM Coordinates	NAD83 18T 445181 m E and 5027742 m N
Site Area	0.17 hectares
Property Owner	Bronson and Carling Ltd.

A survey plan of the Phase Two property was completed by Annis, O'Sullivan Vollebekk Ltd. in October 2018. A copy of the survey plan is provided in Appendix B.

1.2 Property Ownership

The registered owner of the Phase Two property Bronson and Carling Ltd., who holds title to the Phase Two property as nominee/bare trustee for the beneficial owners, 265 Carling Avenue Limited Partnership. Authorization to proceed with this investigation on behalf of the property owner was provided by Mr. Fadi Bou Sleiman of 265 Carling LP. Contact information for Mr. Bou Sleiman is 69 rue Jean-Proulx, Unit 301, Gatineau, Quebec, J8Z 1W2.

1.3 Current and Proposed Future Use

Based on a review of historical aerial photographs, historical maps, and other records the Phase Two property was first developed prior to 1912 for commercial/residential use. Four residences and a commercial building are shown on the 1912 fire insurance plan (FIP). The original buildings were subsequently demolished between 1912 and 1956. A commercial building was constructed on the west part of the Phase One property between 1948 and 1956. A gas station was developed on the Phase One property prior between 1956 and 1958. The existing multi-tenant commercial building was constructed in 1974.

It is proposed that several floors of the existing commercial building on the Phase Two property be converted for residential use. Since historically the Phase Two property was occupied by a gas station, and the proposed future property use is commercial and residential, an RSC must be filed, per Ontario Regulation 153/04.

1.4 Applicable Site Condition Standards

Analytical results obtained for soil and groundwater 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 and coarse textured soil. The selection of this category was based on the following factors:

- The predominant soil type on the Phase Two property was considered to be coarse textured, based on grain size analyses conducted during the current investigation;
- There was no intention to carry out a stratified restoration at the Phase Two property;
- More than two-thirds of the Phase Two property has an overburden thickness greater than 2 m;
- The Phase Two property does not include and is not within 30 m of a water body;
- 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;
- The Phase Two property and surrounding properties are supplied by municipal water provided by the City of Ottawa through its water distribution system;
- The Phase Two property 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.

Based on the above considerations:

- 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; and
- The Phase Two property is not a shallow soil property, as defined in Section 43.1 of Regulation 153/04.

2.0 Background Information

2.1 Physical Setting

The Phase Two property is located has the municipal address 265 Carling Street and is located on the northwest corner of the intersection of Carling Avenue and Bronson Avenue in Ottawa, Ontario, as shown on Figure 1 in Appendix A. The Phase Two property is irregular is shape and has a total area of approximately 0.17 hectares. The Phase Two property is legally described as Part Lots 6, 7, 12, 13, 14 and 15 on PLAN 54, South Clemow Avenue, Being Parts 3, 4, 5 and 6, on Plan 4R-31424, City of Ottawa. The Property identification number (PIN) is 041040471.

At the time of this investigation, the Phase Two property was occupied by an eight-storey, muti-tenanted commercial building with one level of underground parking. Seventeen tenants were present at the time of this investigation. The third floor was vacant, and under construction.

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.

The Phase Two property topography is relatively flat. The regional topography slopes downwards to the southwest. The local groundwater flow direction is anticipated to be southwest towards the Dow's Lake.

In accordance with Section 41 of the Ontario Regulation 153/04 (as amended), 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.

Based on the Phase Two ESA investigation, the property is not considered a shallow soil property as defined in Section 43.1 of the regulation as more than 2/3 of the Phase Two property has greater than 2 metres of soil.

A review of geological maps revealed that, beneath any fill, the surficial geology of the subject site is characterised by Champlain Sea deposits of plain till. The bedrock geology underlying the site consists of limestone with some shaley partings of the Verulam Formation. The depth to rock in the area is typically 5 m below surface grade or less.

2.2 Past Investigations

EXP reviewed the following reports:

- Golder Associates, *Phase II Environmental Site Assessment, 265 Carling Avenue, Ottawa, Ontario*, September 1998.
- EXP Services Inc., *Phase One Environmental Site Assessment, 265 Carling Avenue, Ottawa, Ontario,* March 15, 2024.

A Phase I ESA conducted by Golder identified an automotive service garage and former gas station was present at the southwest corner of Carling Avenue and Bronson Avenue. Due to the inferred down-gradient location from the site, no additional investigation was recommended for this activity. The site operated as a gas station from 1959 to 1972. The Phase Two property was re-developed with the existing commercial building in the 1970s. It was inferred that the existing building, which has one level of underground parking and occupies the majority of the site, was founded either on or within bedrock. It was therefore assumed that most of the soil on the site, and potentially some bedrock, were removed when the existing budling was constructed. The Phase II ESA was conducted to address the former on-site gas station.

Three boreholes were installed on the site, one in the parking garage (BH98-1), and two in the parking lot on the east side of the site building (BH98-2 and BH98-3). The boreholes were advanced between 4.8 and 7.9 metres below ground surface. All boreholes were completed as monitoring wells. The monitoring wells in BH98-1 and BH98-2 were screened entirely in the

bedrock, and BH98-3 was screen through the silty sand above the bedrock continuously into the bedrock. The concrete sub slab in the parking garage was underlain by aporically 1 m metre of crushed limestone. The geology at the exterior boreholes consisted of asphalt overlying crushed limestone fill, overlying silty sand to medium sand fill. The groundwater flow direction was determined to be to the northwest.

Three soil or fractured rock samples were submitted for analysis of total petroleum hydrocarbons (TPH) and benzene, toluene, ethylbenzene, and xylenes (BTEX). All parameters were below the detection limits. As no visual or olfactory indications of impacted were observed during the field program, no ground water samples were submitted for analysis. No further environmental investigation was recommended. It is noted that analysis for TPH has been relaced by analysis for petroleum hydrocarbons (PHC) F1 to F4, and that there is not a direct comparison between the two.

Most recently, EXP prepared a report entitled *Phase One Environmental Site Assessment, 265 Carling Avenue, Ottawa, Ontario* dated March 15, 2024. Based on the results of the Phase One ESA, the following APECs were identified. A copy of the Phase One conceptual site model is provided as Figure 2 in Appendix A.

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)
1. Former on-site gas station	East half of the Phase Two property	**PCA 8**: PCA #28 – Gasoline and Associated Products Storage in Fixed Tanks	On-site	BTEX, PHC	Soil and groundwater
2. Fill material of unknown quality	Area along on east side of Phase Two property	**PCA 16**: PCA #30 – Importation of fill material of unknown quality	On-site	BTEX, PHC, PAH, metals	Soil
3. Use of salt for de-icing	Parking lot on east side of Phase Two property	**PCA 17:** #Other: Use of salt for de-icing	On-site	EC, SAR, sodium, chloride	None

Although it is likely that road salt was historically applied to the paved parking lot, APEC #3, on the Phase Two property, it was determined that the application of de-icing salts was for the purpose of safety of vehicular or pedestrian traffic under conditions of snow or ice or both, and therefore falls under the exemption in Section 49.1 of Regulation 153/04, where the applicable standard would be deemed not to exceed the applicable SCS. Further, the potential impacts to the subsurface are deemed to be *de minimus*. There has never been a main road on the Phase Two property and the asphalt itself provides some barrier between the salt and the soil.

The Phase One ESA was conducted per the requirements of Ontario Regulation 153/04, as amended, and in accordance with generally accepted professional practices.

3.0 Scope of the Investigation

3.1 Objective of the Site Investigation

The objective of the Phase Two ESA was to assess the quality of soil and groundwater on the Phase Two property.

Historically, a gas station, which is defined as industrial land use, was present on the Phase Two property. The most recent use of the property was commercial. Although no changes are proposed to the building envelope, two of the floors will be converted for residential use. Due to the former industrial property use, and as the building is greater than six stories, in accordance with Regulation 153/04, as amended, an RSC must be filed.

3.2 Scope of Work

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

- Drilling two boreholes on the subject property and completing one of them as monitoring wells;
- Collecting representative soil samples for laboratory analysis of BTEX, PHC, PAH and metals;
- Assessing groundwater conditions by sampling the new and existing monitoring wells for BTEX and PHC;
- Conducting an elevation survey of the boreholes;
- Monitoring ground water levels in the monitors to determine ground water elevations;
- Comparing 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); and
- Preparing 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 9 of this report.

3.3 Media Investigated

The Phase Two ESA included the investigation of soil and groundwater on the Phase Two property. No sediment or surface water is present on the Phase Two property. The contaminants of potential concern (COPC) identified in the previously completed Phase One ESA are as follows:

Area of Potential Environmental Concern (APEC)	Contaminants of Potential Concern	Media Potentially Impacted (Groundwater, Soil and/or Sediment)
APEC #1	BTEX and PHC	Soil and groundwater
APEC #2	BTEX, PHC, PAH, Metals	Soil
APEC #3	EC, SAR, sodium, chloride	None

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 Figure 2 and Figure 3.

3.4.1 Current and Past Uses

Based on a review of historical aerial photographs, historical maps, and other records the Phase Two property was first developed prior to 1912 for commercial/residential use. Four residences and a commercial building are shown on the 1912 fire insurance plan (FIP). The original buildings were subsequently demolished between 1912 and 1956. A commercial building was constructed on the west part of the Phase Two property between 1948 and 1956. A gas station was developed on the Phase Two property prior between 1956 and 1958. The existing multi-tenant commercial building was constructed in 1974.

3.4.2 Buildings and Structures

The Phase Two property is occupied by an eight-storey, muti-tenanted commercial building with one level of underground parking. A mechanical penthouse is present on the roof of the building. The building is heated via natural gas fired hot water boilers.

No changes are proposed to the exterior structure of the existing site building. Floors two to four will be renovated and converted for residential use.

3.4.3 Water Bodies and Groundwater Flow Direction

There are no water bodies on the subject site. The closest water body is Dow's Like, located approximately 480 m southwest of the Phase Two property.

3.4.4 Areas of Natural Significance

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. In accordance with Section 41 of Ontario Regulation 153/04, the Phase Two property is not an environmentally sensitive area.

3.4.5 Water Wells

No wells used as a source of potable water or for agricultural purposes were observed on the Phase Two property or on any property within 250 metres of the Phase Two property.

3.4.6 Potentially Contaminating Activity

Ontario Regulation 153/04 defines a potentially contaminating activity (PCA) as one of 59 operations set out in Table 2 of Schedule D that occurs or has occurred in a property study area. If an activity is not listed in Table 2, the PCA is to be identified as "not applicable" and described. Potentially contaminating activities were identified on-Site and within 250 m from the Phase Two property site boundaries (Figure 2). Each PCA was further evaluated to determine if the activity may be contributing to an area of potential environmental concern (APEC) at the Phase Two property or if they are considered de-minimis and not contributing to an APEC.

The following PCAs were identified in the study area:

EXP PCA #	Location of PCA	Potentially Contaminating Activity (PCA)	Description	Rationale
PCA 1	770 Bronson Avenue (20 m south)	PCA #28 – Gasoline and associated products storage in fixed tanks, PCA #10 – Commercial autobody shops	Former gas station with three USTs, former garage. Operated between the 1930s and late 2000s.	Due to the down-gradient location from the site, the separation form the site by Carling Avenue and associated subsurface infrastructure, and as previous investigations on this site have not identified any groundwater impact associated with the former gas station/garage this PCA does not contribute to an APEC.
PCA 2	247 Glebe Avenue (30 m east)	PCA #55 – Transformer manufacturing, processing and use	Ottawa Hydro Sub Station from the 1930s to present.	Due to the cross-gradient location from the site, and as PCBs are more likely to sorb to soil than partition into groundwater, this PCA does not contribute to an APEC.
PCA 3	Between Cambridge Street and Dows Lake (100 m southwest)	PCA #46 – Rail yards, tracks and spurs; PCA #59 – Wood treating and preservative facility and bulk storage of treated and preserved wood products	Fraserfield lumber yard from the 1880s to the 1920s. Rail spur lines historically present.	Due to the distance and inferred downgradient location from the site, this PCA does not contribute to an APEC. This area was subsequently redeveloped as residential properties.
PCA 4	786-788 Bronson Street (120 m south)	PCA #37 – Operation of dry cleaning equipment (where chemicals are used	Dry cleaner from the 1940s to the 1950s.	Due to the distance and inferred downgradient location from the site, this PCA does not contribute to an APEC. This property was re-developed in the 1960s.
PCA 5	299 Carling Avenue (150 m southwest)	PCA #10 – Commercial autobody shops, PCA #28 – Gasoline and associated products storage in fixed tanks	Federal District Commission garage with USTs. Record for two USTs installed in 1957.	Due to the distance and inferred downgradient location from the site, this PCA does not contribute to an APEC.
PCA 6	360 Bell Street (170 m west)	PCA #10 – Commercial autobody shops, PCA #28 – Gasoline and associated products storage in fixed tanks	Ottawa Public School Board Garage in the 1950s and 1960s. Records for waste oil and gasoline USTs installed in the 1950s and 1960s.	Due to the distance and inferred cross gradient location from the site, this PCA does not contribute to an APEC. This property was redeveloped with ahigh-rise apartment building in the 1970s.
PCA 7	601 Booth Street (250 m west)	PCA #28 – Gasoline and associated products storage in fixed tanks	Gas station in the 1940s to the 1970s with multiple UST records.	Due to the distance and inferred cross gradient location from the site, this PCA does not contribute to an APEC.
PCA 8	265 Carling Avenue (Phase Two property)	PCA #28 – Gasoline and associated products storage in fixed tanks	Gas station in the 1960 and 1970s with multiple UST records.	As the gas station is located on the site, this PCA contributes to an APEC.

EXP PCA #	Location of PCA	Potentially Contaminating Activity (PCA)	Description	Rationale
PCA 9	644 Bronson Avenue (210 m north)	PCA #28 – Gasoline and associated products storage in fixed tanks	Gas station from the 1970s to 2000s. Records for multiple USTs.	Due to the distance, and the separation from the site by Powell Avenue, Clemow Avenue and associated subsurface infrastructure, this PCA does not contribute to an APEC.
PCA 10	635 Bronson Avenue (230 m north)	PCA #28 – Gasoline and associated products storage in fixed tanks	Gas station from the 1960s to present.	Due to the distance, and the separation from the site by Bronson Avenue, Powell Avenue, Clemow Avenue and associated subsurface infrastructure, this PCA does not contribute to an APEC.
PCA 11	557 Cambridge Street (60 m south)	PCA #28 – Gasoline and associated products storage in fixed tanks	Contractor's yard in the 1940s and 1950s. Record for two USTs installed in 1957.	Due to the distance and down-gradient location form the site this PCA does not contribute to an APEC.
PCA 12	540 Cambridge Street (60 m west)	PCA #28 – Gasoline and associated products storage in fixed tanks	Record for USTs installed in 1928 and 1957.	Due to the distance and inferred cross gradient location from the site, this PCA does not contribute to an APEC.
PCA 13	290 Powell Avenue (80 m north)	PCA #28 – Gasoline and associated products storage in fixed tanks	Record for fuel oil and waste oil UST installed in 1965 at New Borden Public School.	Due to the distance, Clemow Avenue and associated subsurface infrastructure, this PCA does not contribute to an APEC. This property was redeveloped with a residential high rise in the early 2000s.
PCA 14	475 Cambridge Street (190 m northwest)	PCA #28 – Gasoline and associated products storage in fixed tanks, PCA #37 – Operation of dry cleaning equipment (where chemicals are used)	Dry cleaner in the 1930s and 1940s. Record for UST installed in 1925.	Due to the distance and cross-gradient location from the site, this PCA does not contribute to an APEC.
PCA 15	212 Glebe Avenue (220 m east)	PCA #28 – Gasoline and associated products storage in fixed tanks	Record for fuel oil UST installed in 1957.	Due to the distance and cross-gradient location from the site, this PCA did not contribute to an APEC.
PCA 16	265 Carling Avenue (Phase Two property)	PCA #30 – Importation of fill material of unknown quality	Fill identified during previous investigations on the east side of the site.	Fill of unknown quality was present on the east side of the site, that was considered to contribute to an APEC.

EXP PCA #	Location of PCA	Potentially Contaminating Activity (PCA)	Description	Rationale
PCA 17	265 Carling Avenue (Phase Two property)	PCA #Other – Application of de-icing salt	Use of de-icing salts on parking lot	It is considered likely that road salt was historically applied to the paved surfaces on the Phase Two property. It was determined that the application of de-icing salts to the parking areas was for the purpose of safety of vehicular or pedestrian traffic under conditions of snow or ice or both, and therefore falls under the exemption in Section 49.1 of O.Reg. 153/04, where the applicable standard would be deemed not to exceed.

The former gas station on the Phase Two property (PCA 8), the fill material identified on the east side of the Phase Two property (PCA 16), and the historic use of de-icing salts for parking lots/walkways (PCA 17) were considered to contribute to APECs. None of the off-site PCAs were determined to contribute to APECs.

3.4.7 Areas of Potential Environmental Concern

Ontario Regulation 153/04 defines an APEC as an area on a property where one or more contaminants are potentially present. Based on this Phase One ESA, the following APEC was identified:

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)
1. Former on-site gas station	East half of the Phase Two property	**PCA 8**: PCA #28 – Gasoline and Associated Products Storage in Fixed Tanks	On-site	BTEX, PHC	Soil and groundwater
2. Fill material of unknown quality	Area along on east side of Phase Two property	**PCA 16**: PCA #30 – Importation of fill material of unknown quality	On-site	BTEX, PHC, PAH, metals	Soil
3. Use of salt for de-icing	Parking lot on east side of Phase Two property	**PCA 17:** #Other: Use of salt for de-icing	On-site	EC, SAR, sodium, chloride	None

Although it is likely that road salt was historically applied to the paved parking lot (PCA 17) on the Phase Two property, it was determined that the application of de-icing salts was for the purpose of safety of vehicular or pedestrian traffic under conditions of snow or ice or both, and therefore falls under the exemption in Section 49.1 of Regulation 153/04, where the applicable standard would be deemed not to exceed the applicable SCS. Further, the potential impacts to the subsurface are deemed to be de minimus. There has never been a main road on the Phase Two property and the asphalt itself provides some barrier between the salt and the soil.

3.4.8 Underground Utilities

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, as defined in the Safe Drinking Water Act, 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.

The Phase Two property is serviced by municipal water and sewer, natural gas, and underground hydro. Surrounding properties are also supplied by municipal water provided by the City of Ottawa. The source of municipal water is the Ottawa River.

3.4.9 Subsurface Stratigraphy

The surficial geology of the subject site is characterised by Champlain Sea deposits of plain till. The bedrock geology underlying the site consists of limestone with some shaley partings of the Verulam Formation. The depth to rock in the area is typically 5 m below surface grade or less. Topographically, the study area slopes towards the southwest.

Well records indicate that the geology in the study area consists of fill overlying limestone bedrock. It is noted that the ill material beneath the building consisted of crushed limestone, not soil.

3.4.10 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 sampling and analysis plan, as provided in Appendix C, were reported that affected the sampling and data quality objectives for the Phase Two property.

3.6 Impediments

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

4.0 Investigation Methodology

4.1 General

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

The site investigative activities consisted of the advancement of boreholes on the site to facilitate the collection of soil and groundwater samples for visual inspection and chemical analyses.

Data from three pre-existing monitoring wells (BH98-1, BH98-2, and BH98-3) were also collected during this investigation.

4.2 Utility Clearances

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.

4.3 Borehole Drilling Program

The site investigative activities consisted of the drilling of boreholes to facilitate the collection of soil samples for visual inspection and chemical analysis. The boreholes were instrumented with monitoring wells to facilitate the collection of groundwater samples.

The drilling program was completed on February 26 and 28, 2024, by Strata Drilling Group (Strata), a licensed well contractor. Strata advanced one interior borehole (MW24-2) inside the parking garage and one exterior borehole (MW24-1) on the east side of the Phase Two property. The interior borehole was augured to refusal, then the bedrock was cored to a depth of 9.3 m below ground surface. A monitoring well was installed in this borehole. The exterior borehole was terminated at 3.5 metres on inferred bedrock.

No petroleum-based greases or solvents were used during drilling activities. EXP staff continuously monitored the drilling activities to log the stratigraphy observed from the recovered samples, to record the depth of the samples, and to record total depths of borings. Field observations are documented on the borehole logs provided in Appendix D.

The locations of the boreholes are presented on Figure 3 in Appendix A.

4.4 Soil Sampling

The soil sampling during the completion of this Phase Two ESA was undertaken in general accordance with the SAAP presented in Appendix C. For the purposes of the environmental site assessment program, the contaminants of concern were based on the results of previous investigations and a recent Phase One ESA completed on the Phase Two property.

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 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, AGAT Laboratories (AGAT) of Ottawa, Ontario. The samples were transported/submitted within 24 hours of collection to the laboratory following chain of custody protocols for chemical analysis.

One soil sample and one duplicate sample were submitted for analysis of BTEX, PHC, PAH, and metals. It is noted that no soil samples were submitted from the borehole drilled within the building footprint as the fill material consisted of crushed limestone.

4.5 Field Screening Measurements

Soil samples were placed in a sealed Ziploc plastic bag and allowed to reach ambient temperature prior to field screening with a combustible vapour meter calibrated to hexane gas prior to use. The field screening measurements were made by inserting the instrument's probe into the plastic bag while manipulating the sample to ensure volatilization of the soil gases. These 'headspace' readings provide a real-time indication of the relative concentration of combustible vapours encountered in the subsurface during drilling and are used to aid in the assessment of the vertical and horizontal extent of potential impacts and the selection of soil samples for analysis.

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

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

The field screening measurements, in parts per million by volume (ppmv), are presented in the borehole logs provided in Appendix D.

4.6 Groundwater: Monitoring Well Installation

A monitoring wells was installed in one of the boreholes (MW24-2). Monitoring wells were installed in general accordance with the Ontario Water Resources Act - R.R.O. 1990, Regulation 903 (as amended). The monitoring wells consisted of a 52 mm diameter Schedule 40 PVC screen that was no more than 3.0 m long and a 52 mm diameter Schedule 40 PVC riser pipe that was at least 0.8 m long. The annular space around the wells was backfilled with sand to an average height of 0.3 m above the top of the screen. A bentonite seal was added from the top of the sand pack to approximately 0.3 m below ground surface. The monitoring wells were completed with flushmount casings.

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

- The use of well pipe components (e.g. riser pipe and well screens) with factory machined threaded flush coupling joints
- Construction of wells without the use of glues or adhesives
- Removing the protective plastic wraps from well components at the time of borehole insertion to prevent contact with the ground and other surfaces
- Cleaning or disposal of drilling equipment between sampling locations

Details of the monitoring well installations are shown on the borehole logs provided in Appendix D.

4.7 Groundwater: Field Measurement and Water Quality Parameters

Field measurement of water quality parameters is described in Section 4.7.

All measurements of petroleum vapours in the monitor well riser were made with an RKI Eagle 2 in methane elimination mode. Immediately after removing the well cap, the collection tube of the Eagle was inserted into the riser and the peak instrument reading was recorded. EXP used a Heron water level tape to measure the static water level in each monitoring well. The measuring tape was cleaned with phosphate-free soap and tap water, rinsed with distilled water after each measurement.

4.8 Groundwater: Sampling

As part of the Phase Two ESA groundwater samples from the monitoring wells were collected via a low flow sampling technique using a Horiba U-52 multi probe water quality meter. The Horiba probe was calibrated using in-house reference standards. Prior to collecting the groundwater samples, water quality field parameters (turbidity, dissolved oxygen, conductivity, temperature, pH, and oxidation reduction potential) were monitored until stable readings were achieved. These parameters are considered to be stable when three consecutive readings meet the following conditions:

- Turbidity: within 10% for values greater than 5 nephelometric turbidity units (NTU), or three values less than 5 NTU;
- Dissolved oxygen: within 10% for values greater than 0.5 mg/L, or three values less than 0.5 mg/L;
- Conductivity: within 3%;
- Temperature: ± 1°C;
- pH: ± 0.1 unit; and,
- Oxidation reduction potential: ±10 millivolts.

When stabilization occurs, equilibrium between groundwater within a monitor and the surrounding formation water is attained. As such, samples collected when stabilization occurs are considered to be representative of formation water.

The groundwater sampling during the completion of this Phase Two ESA was undertaken in general accordance with the SAAP presented in Appendix C. Four groundwater samples and one field duplicate were submitted for analysis of BTEX and PHC. The groundwater samples were placed in clean coolers containing ice packs prior to and during transportation to the laboratory. The samples were transported to the laboratory within 24 hours of collection with a chain of custody.

4.9 Sediment: Sampling

Sediment nor surface water was present on the property; therefore, no sampling was completed.

4.10 Analytical Testing

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

4.11 Residue Management

The soil from the boreholes and monitoring wells was contained in steel drums stored at the Phase Two property. The purged water from monitoring well development and sampling activities was also contained on-site.

Fluids from cleaning drilling equipment were disposed of by the driller at their facility.

4.12 Elevation Surveying

An elevation survey was conducted by EXP. The top of casing and ground surface elevation of each monitoring well location were surveyed relative to a catch basin with an assumed elevation of 100.00 m above sea level.

4.13 Analytical Testing and Quality Assurance / Quality Control Measures

The contracted laboratory selected to perform chemical analysis on all soil and water samples was AGAT which 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.

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 soil and groundwater 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.

AGAT'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 detailed soil profiles encountered in the boreholes are provided on the borehole logs in Appendix D. Boundaries of soils indicated on the logs are intended to reflect transition zones for the purpose of environmental assessment and should not be interpreted as exact planes of geological change.

Asphalt was present at ground surface in in the exterior borehole. The asphalt was underlain by sand and gravel fill. Approximately 0.2 m of concrete was present in the parking garage/basement. Approximately 0.8 m of crushed limestone fill was present beneath the concrete. The fill in all the boreholes is underlain by bedrock contacted at depths ranging between 0.9 m (interior) and 3.5 m below ground surface (exterior).

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 March 6th and 7th, 2024, the new monitoring well MW24-2, and existing monitoring wells MW98-1, MW98-2, and MW98-3 were monitored. Monitoring consisted of inspection for general physical condition, groundwater depth, the presence of phase-separated liquid petroleum and petroleum vapour. Groundwater monitoring and elevation data are provided below in Table 5.2.1.

Table 5.2.1 – Monitoring and Elevation Data

Monitoring Well ID	Grade Elevation	Top of Casing Elevation (mbTOC)	Screen Depth (mbgs)	Depth to LNAPL (mbgs)	Depth to Groundwater (mbTOC)	Groundwater Elevation March 6-7, 2024
MW98-1 (BR)	99.97	99.88	1.7 to 4.8	ND	1.09	98.79
MW98-2 (BR)	102.68	102.58	4.8 to 7.9	ND	3.90	98.68
MW98-3 (BR/OB)	101.68	101.38	1.7 to 6.3	ND	2.70	98.68
MW24-2	99.97	99.84	1.5 to 4.6	ND	1.25	98.59

Notes: Elevations were measured to a geodetic datum.
BR – bedrock
OB - overburden
LNAPL – light non-aqueous phase liquid
ppmv – parts per million by volume
mbgs – metres below ground surface
mbTOC – metres below top of monitor casing
ND – non-detectable

Based on the groundwater elevations for the monitoring wells in the above tables, groundwater contour plans were prepared. The groundwater flow direction in the bedrock was determined to be to the southeast (Figure 4).

EXP notes that groundwater levels can be influenced by seasonal changes, the presence of subsurface structures, or fill, however based on the shallow depth to bedrock and the depth of the water table, it is unlikely that any of these factors will affect the groundwater flow direction at the Phase Two property.

5.3 Groundwater: Hydraulic Gradients

Horizontal hydraulic gradients were estimated for the groundwater flow components identified in the bedrock and overburden aquifer based on the March 2024 groundwater elevations. The horizontal hydraulic gradient is calculated across the using the following equation:

$i = \Delta h / \Delta s$

Where,

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

The average horizontal hydraulic gradient was calculated to be 0.0125 m/m.

On March 7, 2024, rising head tests were conducted on one of the monitoring wells (MW24-2). The rising head test requires that the static water level be measured in each monitoring well prior to the removal of groundwater. Groundwater is removed from the monitoring well using a bailer. After the water level has been sufficiently lowered, an interface probe is lowered into the monitor as quickly as possible to measure the new water level. The time at which the new water level is measured is noted as time equal zero. Water level readings are subsequently taken at frequent intervals. Both the water levels and the time they were taken are recorded.

The frequency of the time measurement is determined by the rate the water level recovers to the static water level. Measurements are taken until at least 70% recovery has been achieved or, in cases where recovery is extremely slow, until it is deemed that a sufficient amount of time has elapsed. Using the Hvorslev model, the hydraulic conductivity for the monitoring well was calculated.

All water level measurements were made with a Heron oil/water interface probe. Both the probe and the measuring tape that come into contact with liquids within a monitor are cleaned with phosphate-free soap and tap water, rinsed with distilled water and then finally rinsed with methanol after each hydraulic conductivity test is concluded.

Table 5.2: Rising Head Tests

Monitoring Well ID/ Installation ID	Horizon	Screen Depth (mbgs)	Initial Static Water Level (mbToC)	Water Level after Purging (mbToC)	Recovery (%)	Hydraulic Conductivity (m/s)
MW24-2	Bedrock	1.5 to 4.6	1.18	3.01	99	1.05×10^{-8}

Notes: mbTOC – metres below top of monitor casing

The data and the calculations for the hydraulic conductivity testing are provided in Appendix G.

5.4 Soil: Field Screening

The methodology for the collection of soil vapour concentration measurements is described in Section 4.4.

Petroleum vapours were non-detectable in all samples screened. Field screening data is presented in the borehole logs in Appendix D.

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

5.5 Soil: Quality

In accordance with the scope of work, chemical analyses were performed on selected soil samples recovered from boreholes. The selection of representative "worst case" soil samples was based on field visual or olfactory evidence of impacts. Copies of the laboratory Certificates of Analysis are provided in Appendix F.

The MECP Table 3 SCS are applicable if soil pH is in the range of 5 to 9 for surficial soil (less than 1.5 m below soil surface) and 5 to 11 for subsurface soil (greater than 1.5 m below soil surface). One soil sample collected was submitted for analysis of pH. The sample was within the acceptable ranges for the application of MECP Table 3 SCS.

5.5.1 Soil Quality

One soil sample and one field duplicate were submitted for chemical analysis of BTEX, PHC, PAH, and metals. There were no exceedances of the Table 3 residential SCS.

It is noted that as part of the 1998 investigation, three soil samples were submitted for analysis of TPH and BTEX. These samples were below the detection limits for all of the parameters analysed.

The soil results are provided in Tables 1 to 3 in Appendix E and Figures 7 to 12 (Appendix A). Copies of the laboratory Certificates of Analysis are provided in Appendix F.

5.6 Groundwater: Quality

All groundwater samples were collected via a low flow sampling technique. EXP monitored several water quality parameters (such as water level, temperature, dissolved oxygen, conductivity, salinity, pH, oxygen reduction potential and turbidity) to ensure that the samples collected were representative of actual groundwater conditions.

On March 6th and 7th, 2024, four groundwater samples, a field duplicate, and a trip blank were submitted for analysis of BTEX and PHC. All of the samples were below the detection limits. There were no exceedances of the Table 3 SCS.

The results are presented in Table 4 in Appendix E and Figures 13 and 14 (Appendix A). Copies of the laboratory Certificates of Analysis are provided in Appendix F.

5.6.1 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.

No soil or groundwater exceedances were present on the Phase Two property, therefore chemical transformations of COC are not considered a concern at the site.

5.6.2 Evidence of Non-Aqueous Phase Liquid

Inspection of the groundwater monitoring wells did not indicate the presence of non-aqueous phase liquid (NAPL).

5.7 Maximum Concentrations

Potential soil impacts were possible in the fill material on the Phase Two property and former on-site gas station. Potential groundwater impacts were related to a former on-site gas station on the Phase Two property.

Potential contaminants of concern (COC) that were identified on the Phase Two property included:

- Soil: BTEX, PHC, PAH, and metals
- Groundwater: BTEX and PHC

No soil or groundwater samples exceeded the Table 3 SCS for any of the parameters analysed.

Maximum soil and groundwater concentrations are provided in Tables 5 and 6 in Appendix E.

5.8 Sediment: Quality

There are no water bodies on the Phase Two property, therefore sediment sampling was not required.

5.9 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 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.

AGAT'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 AGAT. 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 E in Tables 7 to 10 for soil and groundwater. All of the RPD for the soil and groundwater samples were either not calculable or within the applicable alert limits.

5.9.1 Human Health Receptors and Exposure Pathway

It is proposed that floors two to four in the existing eight storey building be converted for residential use. There are no proposed changes to the building exterior. The potential on-site human receptors are identified as property residents (adult,

teen, child, toddler and infant), property visitors (adult, teen, child, toddler and infant), indoor and outdoor long-term workers, indoor and outdoor short-term workers, and construction workers.

Possible routes of exposure for human receptors include the following: incidental soil ingestion, soil particulate inhalation, soil dermal contact.

No soil or groundwater exceedances were identified on the Phase Two property. Therefore, none of the identified exposure pathways are considered to potentially pose a concern to human health, as no contaminants of concern were present on the Phase Two property.

5.9.2 Ecological Receptors and Exposure Pathway

While the footprint of the building and parking lot will occupies most of the property, there are some landscaped areas on the Phase Two property. Therefore, the Phase Two property is capable of supporting some ecological receptors. Relevant ecological receptors include terrestrial vegetation (bushes, grasses and weeds); soil invertebrates (earthworms, millipedes and beetles); birds (seagulls, pigeons, sparrows and robins); and small terrestrial mammals (moles, voles, and mice).

Possible routes of exposure for ecological receptors are root uptake of soil (terrestrial vegetation), and soil particulate inhalation, soil dermal contact, and soil ingestion (soil invertebrates, mammals, and birds).

No soil or groundwater exceedances were identified on the Phase Two property. Therefore, none of the identified exposure pathways are considered to potentially pose a concern to human health, as no contaminants of concern were present on the Phase Two property.

6.0 Phase Two Conceptual Site Model

6.1 Introduction

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. The P2CSM was completed in accordance with Ontario Regulation 153/04, as amended (O.Reg.153/04), as defined by the Ontario Ministry of the Environment, Conservation and Parks (MECP).

EXP was retained by 265 Carling LP to complete a Phase Two Environmental Site Assessment (ESA) of the property located at 265 Carling Avenue in Ottawa, Ontario hereinafter referred to as the 'Phase Two property'. The objective of the Phase Two ESA investigation was to assess the quality of the soil and groundwater conditions within the areas of potential environmental concern (APEC) identified in a Phase One ESA prepared by EXP.

6.2 Current and Proposed Future Uses

Based on a review of historical aerial photographs, historical maps, and other records the Phase Two property was first developed prior to 1912 for commercial/residential use. Four residences and a commercial building are shown on the 1912 fire insurance plan (FIP). The original buildings were subsequently demolished between 1912 and 1956. A commercial building was constructed on the west part of the Phase Two property between 1948 and 1956. A gas station was developed on the Phase Two property prior between 1956 and 1958. The existing multi-tenant commercial building was constructed in 1974.

It is proposed that several floors of the existing commercial building on the Phase Two property be converted for residential use. Since historically the Phase Two property was occupied by a gas station, and the proposed future property use is commercial and residential, an RSC must be filed, per Ontario Regulation 153/04.

6.3 Physical Site Description

The Phase Two property is located has the municipal address 265 Carling Street and is located on the northwest corner of the intersection of Carling Avenue and Bronson Avenue in Ottawa, Ontario, as shown on Figure 1 in Appendix A. The Phase Two property is irregular is shape and has a total area of approximately 0.17 hectares. The Phase Two property is legally described as Part Lots 6, 7, 12, 13, 14 and 15 on PLAN 54, South Clemow Avenue, Being Parts 3, 4, 5 and 6, on Plan 4R-31424, City of Ottawa. The property identification number (PIN) is 041040471.

At the time of this investigation, the Phase Two property was occupied by an eight-storey, muti-tenanted commercial building with one level of underground parking. Seventeen tenants were present at the time of this investigation. The third floor was vacant, and under construction.

Refer to Table 6.3.1 for the Site information. The Phase One Conceptual Site Model is provided as Figure 2.

Table 6.3.1: Site Identification Details

Civic Address	265 Carling Avenue, Ottawa
Current Land Use	Commercial
Previous Land Use	Industrial
Proposed Future Land Use	Commercial and Residential
Property Identification Number	041040471(LT)

UTM Coordinates	NAD83 18T 445181 m E and 5027742 m N
Site Area	0.17 hectares
Property Owner	Bronson and Carling Ltd.

6.4 Buildings and Structures

The Phase Two property is occupied by an eight-storey, muti-tenanted commercial building with one level of underground parking. A mechanical penthouse is present on the roof of the building. The building is heated via natural gas fired hot water boilers.

No changes are proposed to the exterior structure of the existing site building. Floors two to four will be renovated and converted for residential use.

6.5 Utilities

The Phase Two property is serviced with electrical, natural gas, Bell and municipal water and sanitary and storm sewer services. The service locations are shown on Figure 5.

6.6 Geological and Hydrogeological Setting

A summary of factors that apply to the Phase Two property is provided in Table 6.6.1.

Table 6.6.1: Site Characteristics

Minimum Depth to Bedrock	1.07 m bgs
Minimum Depth to Groundwater	Overburden – none Bedrock – 1.09 m bgs (March 6, 2024)
Shallow Soil Property	No, bedrock is greater than 2.0 mbgs
Proximity to water body or ANSI	Approximately 480 m southwest – Dow's Lake
Soil pH	Surface and sub-surface pH was within applicable ranges
Soil Texture	Coarse
Current Property Use	Commercial
Future Property Use	Residential and commercial
Areas Containing Suspected Fill	East side of Phase Two property

6.6.1 Site Stratigraphy

The surficial geology of the subject site is characterised by Champlain Sea deposits of plain till. The bedrock geology underlying the site consists of limestone with some shaley partings of the Verulam Formation. The depth to rock in the area is typically 5 m below surface grade or less. Topographically, the study area slopes towards the southwest.

Asphalt was present at ground surface in in the exterior borehole. The asphalt was underlain by sand and gravel fill. Approximately 0.2 m of concrete was present in the parking garage/basement. Approximately 0.8 m of crushed limestone fill

was present beneath the concrete. The fill in all the boreholes is underlain by bedrock contacted at depths ranging between 0.9 m (interior) and 3.5 m below ground surface (exterior).

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

6.6.2 Approximate Depth to Water Table

Four bedrock monitoring wells were installed at the Phase Two property. The depth to groundwater in the ranged from 1.09 to 3.90 m below ground surface in monitoring wells where equilibrium had been attained.

6.6.3 Hydrogeological Conditions

Dow's Lake, located approximately 480 m southwest of the Phase Two property, is the closest waterbody to the Phase Two property. The inferred regional groundwater flow direction is south towards Dow's Lake/the Rideau Canal.

Based on the groundwater level measurements, groundwater contours in the bedrock were plotted, as shown on Figure 5. The groundwater flow direction in the bedrock was to the southeast. EXP notes that groundwater levels can be influenced by seasonal changes, the presence of subsurface structures, or fill, however as the groundwater tables is located in the bedrock, and due to the proximity to the Rideau River, it is unlikely that any of these factors will affect the groundwater flow direction at the Phase Two property.

The hydraulic conductivity was calculated in one monitoring well. The hydraulic conductivity in monitoring well MW24-2 was calculated to be 1.05×10^{-8} m/s.

6.6.4 Approximate Depth to Bedrock

Investigations at the Phase Two property have determined that the stratigraphy generally consisted of sand and gravel fill overlying limestone bedrock. Bedrock was encountered approximately 1.0 metres below the building slab, and 2.5 m to 4.1 bgs outside of the building footprint.

6.7 Site Sensitivity

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 property study area has 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 located greater than 30 metres from a water body. In the opinion of the Qualified Person who oversaw the entire investigation, the Phase Two property is not a sensitive site.

Based on the Phase Two ESA investigation, the property is not considered a shallow soil property as defined in Section 43.1 of the regulation.

6.8 Applicable Site Condition Standards

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

- Bedrock is greater than 2 metres below grade across more than 1/3 of the Phase Two property;
- The Phase Two property does not include and is not within 30 m of a water body;
- 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;
- The Phase Two property and surrounding properties are supplied by municipal water provided by the City of Ottawa through its water distribution system;
- The Phase Two property 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.

Based on the above factors, including the provisions in Sections 35, 41, and 43.1, the Table 3 SCS for a residential/parkland/institutional property use and coarse textured soils were selected for assessment purposes.

6.9 Previous Investigations

A Phase I ESA conducted by Golder identified an automotive service garage and former gas station was present at the southwest corner of Carling Avenue and Bronson Avenue. Due to the inferred down-gradient location from the site, no additional investigation was recommended for this activity. The site operated as a gas station from 1959 to 1972. The Phase Two property was re-developed with the existing commercial building in the 1970s. It was inferred that the existing building, which has one level of underground parking and occupies the majority of the site, was founded either on or within bedrock. It was therefore assumed that most of the soil on the site, and potentially some bedrock, were removed when the existing budling was constructed. The Phase II ESA was conducted to address the former on-site gas station.

Three boreholes were installed on the site, one in the parking garage (BH98-1), and two in the parking lot on the east side of the site building (BH98-2 and BH98-3). The boreholes were advanced between 4.8 and 7.9 metres below ground surface. All boreholes were completed as monitoring wells. The monitoring wells in BH98-1 and BH98-2 were screened entirely in the bedrock, and BH98-3 was screen through the silty sand above the bedrock continuously into the bedrock. The concrete sub slab in the parking garage was underlain by aporically 1 m metre of crushed limestone. The geology at the exterior boreholes consisted of asphalt overlying crushed limestone fill, overlying silty sand to medium sand fill. The groundwater flow direction was determined to be to the northwest.

Three soil or fractured rock samples were submitted for analysis of total petroleum hydrocarbons (TPH) and benzene, toluene, ethylbenzene, and xylenes (BTEX). All parameters were below the detection limits. As no visual or olfactory indications of impacted were observed during the field program, no ground water samples were submitted for analysis. No further environmental investigation was recommended. It is noted that analysis for TPH has been relaced by analysis for petroleum hydrocarbons (PHC) F1 to F4, and that there is not a direct comparison between the two.

Most recently, EXP prepared a report entitled *Phase One Environmental Site Assessment, 265 Carling Avenue, Ottawa, Ontario* dated March 15, 2024. A copy of the Phase One conceptual site model is provided as Figure 2 in Appendix A.

6.10 Potentially Contaminating Activities

Ontario Regulation 153/04 defines a potentially contaminating activity (PCA) as one of 59 operations set out in Table 2 of Schedule D that occurs or has occurred in a property study area. If an activity is not listed in Table 2, the PCA is to be identified as “not applicable” and described. Potentially contaminating activities were identified on-Site and within 250 m from the

Phase Two property site boundaries (Figure 2). Each PCA was further evaluated to determine if the activity may be contributing to an area of potential environmental concern (APEC) at the Phase Two property or if they are considered de-minimis and not contributing to an APEC.

The following PCAs were identified in the study area:

EXP PCA #	Location of PCA	Potentially Contaminating Activity (PCA)	Description	Rationale
PCA 1	770 Bronson Avenue (20 m south)	PCA #28 – Gasoline and associated products storage in fixed tanks, PCA #10 – Commercial autobody shops	Former gas station with three USTs, former garage. Operated between the 1930s and late 2000s.	Due to the down-gradient location from the site, the separation from the site by Carling Avenue and associated subsurface infrastructure, and as previous investigations on this site have not identified any groundwater impact associated with the former gas station/garage this PCA does not contribute to an APEC.
PCA 2	247 Glebe Avenue (30 m east)	PCA #55 – Transformer manufacturing, processing and use	Ottawa Hydro Sub Station from the 1930s to present.	Due to the cross-gradient location from the site, and as PCBs are more likely to sorb to soil than partition into groundwater, this PCA does not contribute to an APEC.
PCA 3	Between Cambridge Street and Dows Lake (100 m southwest)	PCA #46 – Rail yards, tracks and spurs; PCA #59 – Wood treating and preservative facility and bulk storage of treated and preserved wood products	Fraserfield lumber yard from the 1880s to the 1920s. Rail spur lines historically present.	Due to the distance and inferred downgradient location from the site, this PCA does not contribute to an APEC. This area was subsequently redeveloped as residential properties.
PCA 4	786-788 Bronson Street (120 m south)	PCA #37 – Operation of dry cleaning equipment (where chemicals are used	Dry cleaner from the 1940s to the 1950s.	Due to the distance and inferred downgradient location from the site, this PCA does not contribute to an APEC. This property was re-developed in the 1960s.
PCA 5	299 Carling Avenue (150 m southwest)	PCA #10 – Commercial autobody shops, PCA #28 – Gasoline and associated products storage in fixed tanks	Federal District Commission garage with USTs. Record for two USTs installed in 1957.	Due to the distance and inferred downgradient location from the site, this PCA does not contribute to an APEC.
PCA 6	360 Bell Street (170 m west)	PCA #10 – Commercial autobody shops, PCA #28 – Gasoline and associated products storage in fixed tanks	Ottawa Public School Board Garage in the 1950s and 1960s. Records for waste oil and gasoline USTs installed in the 1950s and 1960s.	Due to the distance and inferred cross gradient location from the site, this PCA does not contribute to an APEC. This property was redeveloped with ahigh-rise apartment building in the 1970s.
PCA 7	601 Booth Street (250 m west)	PCA #28 – Gasoline and associated products storage in fixed tanks	Gas station in the 1940s to the 1970s with multiple UST records.	Due to the distance and inferred cross gradient location from the site, this PCA does not contribute to an APEC.
PCA 8	265 Carling Avenue (Phase Two property)	PCA #28 – Gasoline and associated products storage in fixed tanks	Gas station in the 1960 and 1970s with multiple UST records.	As the gas station is located on the site, this PCA contributes to an APEC.

EXP PCA #	Location of PCA	Potentially Contaminating Activity (PCA)	Description	Rationale
PCA 9	644 Bronson Avenue (210 m north)	PCA #28 – Gasoline and associated products storage in fixed tanks	Gas station from the 1970s to 2000s. Records for multiple USTs.	Due to the distance, and the separation from the site by Powell Avenue, Clemow Avenue and associated subsurface infrastructure, this PCA does not contribute to an APEC.
PCA 10	635 Bronson Avenue (230 m north)	PCA #28 – Gasoline and associated products storage in fixed tanks	Gas station from the 1960s to present.	Due to the distance, and the separation from the site by Bronson Avenue, Powell Avenue, Clemow Avenue and associated subsurface infrastructure, this PCA does not contribute to an APEC.
PCA 11	557 Cambridge Street (60 m south)	PCA #28 – Gasoline and associated products storage in fixed tanks	Contractor's yard in the 1940s and 1950s. Record for two USTs installed in 1957.	Due to the distance and down-gradient location form the site this PCA does not contribute to an APEC.
PCA 12	540 Cambridge Street (60 m west)	PCA #28 – Gasoline and associated products storage in fixed tanks	Record for USTs installed in 1928 and 1957.	Due to the distance and inferred cross gradient location from the site, this PCA does not contribute to an APEC.
PCA 13	290 Powell Avenue (80 m north)	PCA #28 – Gasoline and associated products storage in fixed tanks	Record for fuel oil and waste oil UST installed in 1965 at New Borden Public School.	Due to the distance, Clemow Avenue and associated subsurface infrastructure, this PCA does not contribute to an APEC. This property was redeveloped with a residential high rise in the early 2000s.
PCA 14	475 Cambridge Street (190 m northwest)	PCA #28 – Gasoline and associated products storage in fixed tanks, PCA #37 – Operation of dry cleaning equipment (where chemicals are used)	Dry cleaner in the 1930s and 1940s. Record for UST installed in 1925.	Due to the distance and cross-gradient location from the site, this PCA does not contribute to an APEC.
PCA 15	212 Glebe Avenue (220 m east)	PCA #28 – Gasoline and associated products storage in fixed tanks	Record for fuel oil UST installed in 1957.	Due to the distance and cross-gradient location from the site, this PCA did not contribute to an APEC.
PCA 16	265 Carling Avenue (Phase Two property)	PCA #30 – Importation of fill material of unknown quality	Fill identified during previous investigations on the east side of the site.	Fill of unknown quality was present on the east side of the site, that was considered to contribute to an APEC.

EXP PCA #	Location of PCA	Potentially Contaminating Activity (PCA)	Description	Rationale
PCA 17	265 Carling Avenue (Phase Two property)	PCA #Other – Application of de-icing salt	Use of de-icing salts on parking lot	It is considered likely that road salt was historically applied to the paved surfaces on the Phase Two property. It was determined that the application of de-icing salts to the parking areas was for the purpose of safety of vehicular or pedestrian traffic under conditions of snow or ice or both, and therefore falls under the exemption in Section 49.1 of O.Reg. 153/04, where the applicable standard would be deemed not to exceed.

The former gas station on the Phase Two property (PCA 8), the fill material identified on the east side of the Phase Two property (PCA 16), and the historic use of de-icing salts for parking lots/walkways (PCA 17) were considered to contribute to APECs. None of the off-site PCAs were determined to contribute to APECs. None of the off-site PCAs were determined to contribute to APECs.

6.11 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 RSC property, as shown in Table 3 below.

Table 6.3: Site Characteristics

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)
1. Former on-site gas station	East half of the Phase Two property	**PCA 8**: PCA #28 – Gasoline and Associated Products Storage in Fixed Tanks	On-site	BTEX, PHC	Soil and groundwater
2. Fill material of unknown quality	Area along on east side of Phase Two property	**PCA 16**: PCA #30 – Importation of fill material of unknown quality	On-site	BTEX, PHC, PAH, metals	Soil
3. Use of salt for de-icing	Parking lot on east side of Phase Two property	**PCA 17:** #Other: Use of salt for de-icing	On-site	EC, SAR, sodium, chloride	None

Although it is likely that road salt was historically applied to the paved parking lot, APEC #3, on the Phase Two property, it was determined that the application of de-icing salts was for the purpose of safety of vehicular or pedestrian traffic under conditions of snow or ice or both, and therefore falls under the exemption in Section 49.1 of Regulation 153/04, where the applicable standard would be deemed not to exceed the applicable SCS. Further, the potential impacts to the subsurface are deemed to be *de minimus*. There has never been a main road on the Phase Two property and the asphalt itself provides some barrier between the salt and the soil.

The Phase One ESA was conducted per the requirements of Ontario Regulation 153/04, as amended, and in accordance with generally accepted professional practices.

6.12 Scope of the Investigation

The Phase Two ESA was conducted to assess the soil and groundwater at the Phase Two property. The following table summarizes the soil and groundwater locations on the Phase Two property, and the APECs each sample location addresses.

Table 6.4: Summary of Investigation

Area of Potential Environmental Concern (APEC)	Contaminants of Potential Concern	Media Potentially Impacted (Groundwater, Soil and/or Sediment)	Addressed by BH/MW/sample #
APEC #1	BTEX, PHC	Soil and groundwater	MW24-1, BH24-2 BH98-1 to BH98-3
APEC #2	BTEX, PHC, PAH, Metals	Soil	BH24-1
APEC #3	EC, SAR, sodium, chloride	None	None

6.13 Investigation

The site investigative activities consisted of the advancement of boreholes on the site to facilitate the collection of soil and groundwater samples for visual inspection and chemical analyses.

Prior to the commencement of excavating, 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 USL-1 was used to mark out the on-site utilities.

The drilling program was completed on February 26 and 28, 2024, by Strata Drilling Group (Strata), a licensed well contractor. Strata advanced one interior borehole (MW24-2) inside the parking garage and one exterior borehole (MW24-1) on the east side of the Phase Two property. The interior borehole was augured to refusal, then the bedrock was cored to a depth of 9.3 m below ground surface. A monitoring well was installed in this borehole. The exterior borehole was terminated at 3.5 metres on inferred bedrock.

It is noted that three monitoring wells (BH98-1 to BH98-3) installed during the 1998 investigation were still present on the Phase Two property. All three of these monitoring wells were sampled as part of this investigation.

The locations of the boreholes are presented on Figure 3 in Appendix A.

6.13.1 Soil Sampling

One soil sample and one field duplicate were submitted for chemical analysis of BTEX, PHC, PAH, and metals. There were no exceedances of the Table 3 residential SCS.

It is noted that as part of the 1998 investigation, three soil samples were submitted for analysis of TPH and BTEX. These samples were below the detection limits for all of the parameters analysed.

The soil results are shown on Figures 7 to 12.

6.13.2 Groundwater Sampling

During the Phase Two ESA, groundwater samples were collected via a low flow sampling technique with the pump intake placed within the well screen. EXP monitored several water quality parameters (such as water level, temperature, dissolved oxygen, conductivity, salinity, pH, oxygen reduction potential and turbidity) in order to ensure that the samples collected were representative of actual groundwater conditions.

On March 6th and 7th, 2024, the new monitoring well and the monitoring wells installed in 1998 were sampled. Four groundwater samples, a field duplicate, and a trip blank were submitted for analysis of BTEX and PHC. All of the samples were below the detection limits. There were no exceedances of the Table 3 SCS.

The groundwater results are shown on Figures 13 and 14.

6.14 Contaminants of Concern

Potential soil impacts were possible in the fill material on the Phase Two property and former on-site gas station. Potential groundwater impacts were related to a former on-site gas station on the Phase Two property.

Potential contaminants of concern (COC) that were identified on the Phase Two property included:

- Soil: BTEX, PHC, PAH, and metals
- Groundwater: BTEX and PHC

No soil or groundwater samples exceeded the Table 3 SCS for any of the parameters analysed.

6.15 Contaminant Fate and Transport

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

As no soil or groundwater impacts were identified on the site, migration of impacted groundwater is not considered a concern at the Phase Two property. Since there are no volatile COCs on the Phase Two Property, soil vapour migration is not considered an issue.

6.16 Preferential Pathways

The preferential pathways for contaminants present in soil include underground utilities and surface features. There are several utilities corridors present on the Phase Two property.

Apart from apart from topography, there are no surface water features that actively direct surface water flow on the Phase Two property. As no groundwater impacts were identified on the site, migration of impacted groundwater is not considered a concern at the Phase Two property.

6.17 Climatic Conditions

It is noted that climatic or meteorological conditions may influence the distribution and migration of COCs at the Phase Two property. Seasonal fluctuations in groundwater due to cyclical increases and decreases in precipitation can affect groundwater recharge and hence flow direction. Groundwater levels may be elevated in the spring and fall due to snow melt and/or increases in precipitation; and groundwater levels may be lowered in the winter and summer due to snow storage and/or increased evaporation. Such fluctuations have the potential to increase the vertical distribution of COCs in the capillary zone, as well as alter the direction of groundwater flow paths based on changes in infiltration rates.

However, based on the conditions observed at the Phase Two and the fact that acceptable soil concentrations were noted in the soil horizon above the water table, it is not anticipated that the climatic or meteorological changes have had any impact on the distribution of contaminants. As no soil or groundwater impacts were identified on the site, migration of impacted groundwater is not considered a concern at the Phase Two property.

6.18 Human Health Receptors and Exposure Pathway

Residential apartments with parking are currently proposed for the Phase Two property. The potential on-site human receptors are identified as property residents (adult, teen, child, toddler and infant), property visitors (adult, teen, child, toddler and infant), indoor and outdoor long-term workers, indoor and outdoor short-term workers, and construction workers.

Possible routes of exposure for human receptors include the following: incidental soil ingestion, soil particulate inhalation, soil dermal contact.

No soil or groundwater exceedances were identified on the Phase Two property. Therefore, none of the identified exposure pathways are considered to potentially pose a concern to human health, as no contaminants of concern were present on the Phase Two property.

6.19 Ecological Receptors and Exposure Pathway

While the footprint of the building and parking lot will occupy most of the property, there will be some landscaped areas on the Phase Two property. Therefore, the Phase Two property is capable of supporting some ecological receptors. Relevant ecological receptors include terrestrial vegetation (bushes, grasses and weeds); soil invertebrates (earthworms, millipedes and beetles); birds (seagulls, pigeons, sparrows and robins); and small terrestrial mammals (moles, voles, and mice).

Possible routes of exposure for ecological receptors are root uptake of soil (terrestrial vegetation), and soil particulate inhalation, soil dermal contact, and soil ingestion (soil invertebrates, mammals, and birds).

No soil or groundwater exceedances were identified on the Phase Two property. Therefore, none of the identified exposure pathways are considered to potentially pose a concern to ecological receptors, as no contaminants of concern were present on the Phase Two property.

7.0 Conclusion

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

One soil sample and one field duplicate were submitted for chemical analysis of BTEX, PHC, PAH, and metals. There were no exceedances of the Table 3 residential SCS. It is noted that as part of the 1998 investigation, three soil samples were submitted for analysis of TPH and BTEX. These samples were below the detection limits for all of the parameters analysed. Four groundwater samples, a field duplicate, and a trip blank were submitted for analysis of BTEX and PHC. All of the samples were below the detection limits.

There were no soil or groundwater exceedances of the Table 3 SCS for any of the parameters analysed. No additional environmental work is required at the Phase Two property.

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. Based on the results of the Phase Two ESA, no additional investigative or remedial activities are deemed to be warranted.

8.0 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.

- Canadian Standards Association, *CSA-Z769-00 (R2013), Phase II Environmental Assessment Standard*, 2013.
- EXP Services Inc., *Phase One Environmental Site Assessment, 265 Carling Avenue, Ottawa*, March 15, 2024.
- Freeze and Cherry, *Groundwater*, Prentice Hall, 1979.
- Golder Associates, *Phase II Environmental Site Assessment, 265 Carling Avenue, Ottawa, Ontario*, September 1998.
- 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.

9.0 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 265 Carling LP ("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.

10.0 Signatures

We trust this report meets your current needs. If you have any questions pertaining to the investigation undertaken by EXP, please do not hesitate to contact the undersigned.

Leah Wells, P.Eng.
Environmental Engineer
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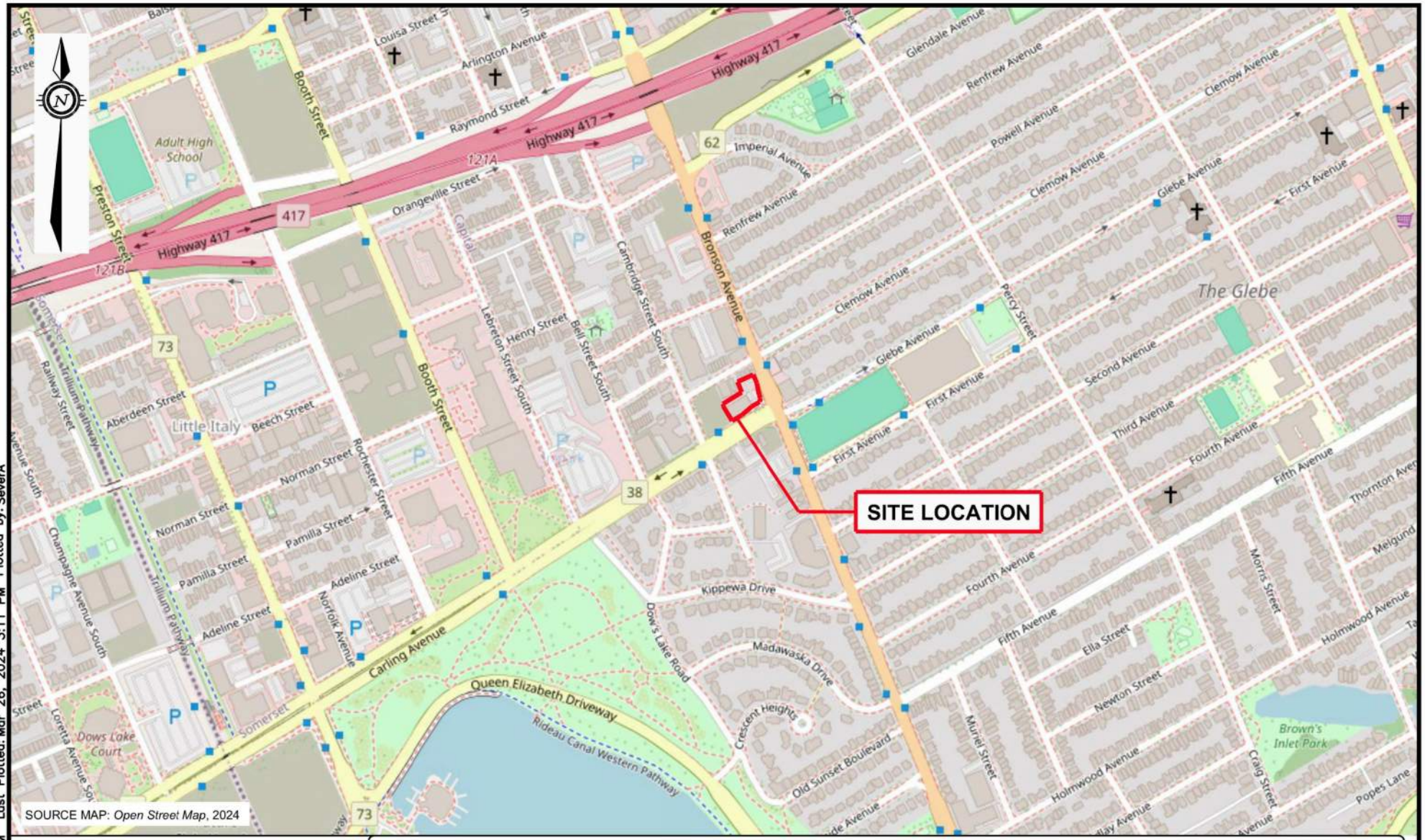
PROFESSIONAL GEOSCIENTIST
Christopher Thomas Kimmerly
PRACTISING MEMBER
0703
ONTARIO
May 15/2024

Appendix A: Figures



ORIGINAL SHEET SIZE = 11" x 8.5"

0 50m 100m 300m

HORIZONTAL 1:7,500

EXP Services Inc. www.exp.com
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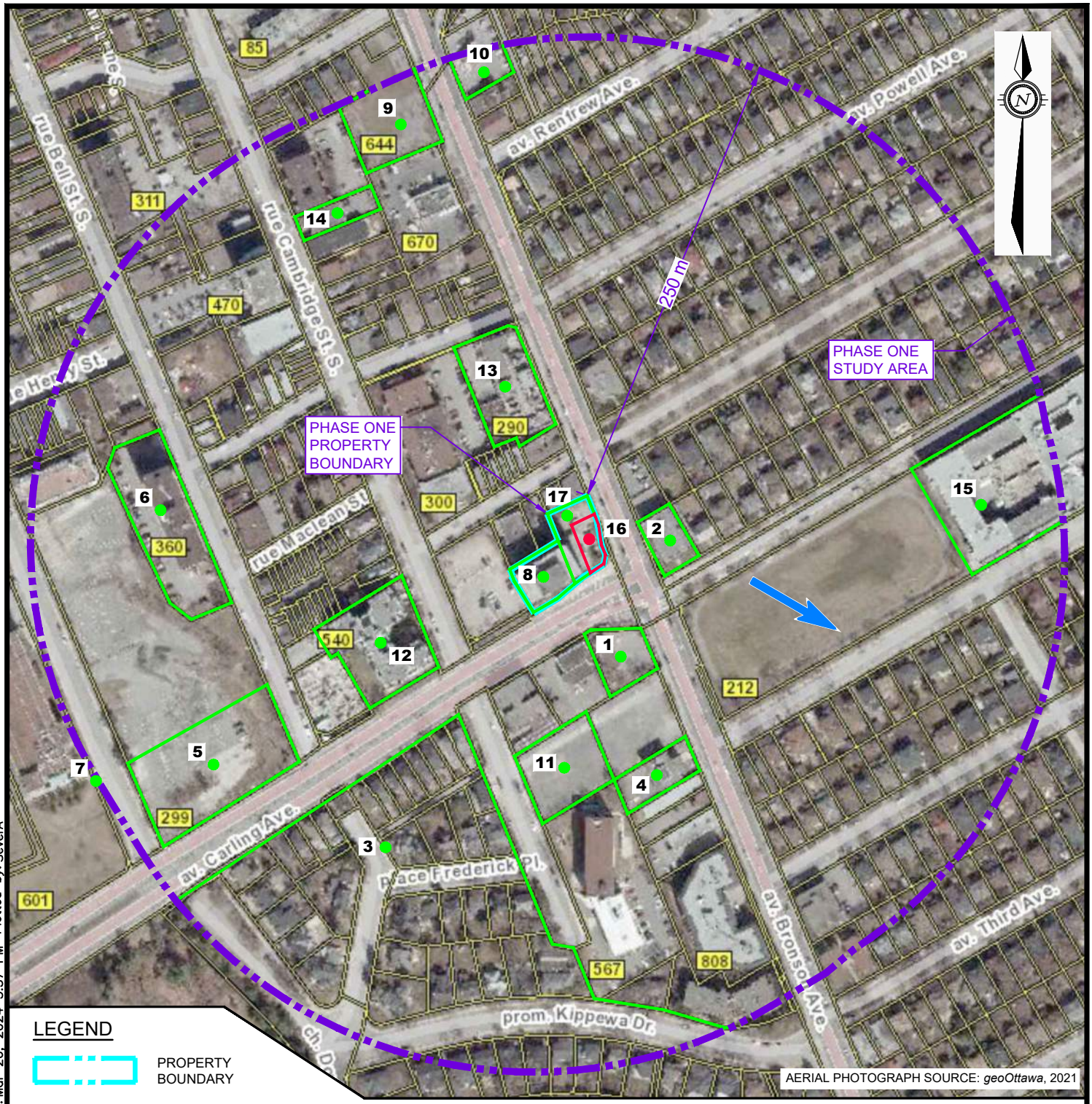
2650 Queensview Drive, Suite 100
Ottawa, ON K2B 8H6, Canada

DATE: MARCH 2024	PROJECT: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT 265 CARLING AVENUE, OTTAWA, ONTARIO		project no. OTT-23015404-A0
DESIGN: LW / CHECKED: LW			scale 1:7,500
DRAWN BY: AS	TITLE: SITE LOCATION PLAN		FIG 1

Filename: E:\OTT\OTT-23015404-A0\60 Execution\65 Drawings\OTT-23015404-A0_Ph-2.dwg
Last Saved: Mar 26, 2024 3:09 PM Last Plotted: Mar 26, 2024 3:11 PM Plotted by: SeverA



LEGEND

- PROPERTY BOUNDARY
- STUDY AREA (250m)
- INFERRED GROUNDWATER FLOW DIRECTION
- 16 POTENTIALLY CONTAMINATING ACTIVITY (PCA) RESULTING IN APECS
- 1 POTENTIALLY CONTAMINATING ACTIVITY (PCA) NOT RESULTING IN APECS

AERIAL PHOTOGRAPH SOURCE: *geoOttawa*, 2021

ORIGINAL SHEET SIZE = 8.5" x 11"

0 30m 60m 120m

HORIZONTAL 1:3,000

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DESIGN: LW / CHECKED: LW		scale: 1:3,000
DRAWN BY: AS	TITLE: PHASE ONE CONCEPTUAL SITE MODEL	FIG 2

Filename: E:\OTT\OTT-23015404-A0\60 Execution\65 Drawings\OTT-23015404-A0_Ph-2.dwg
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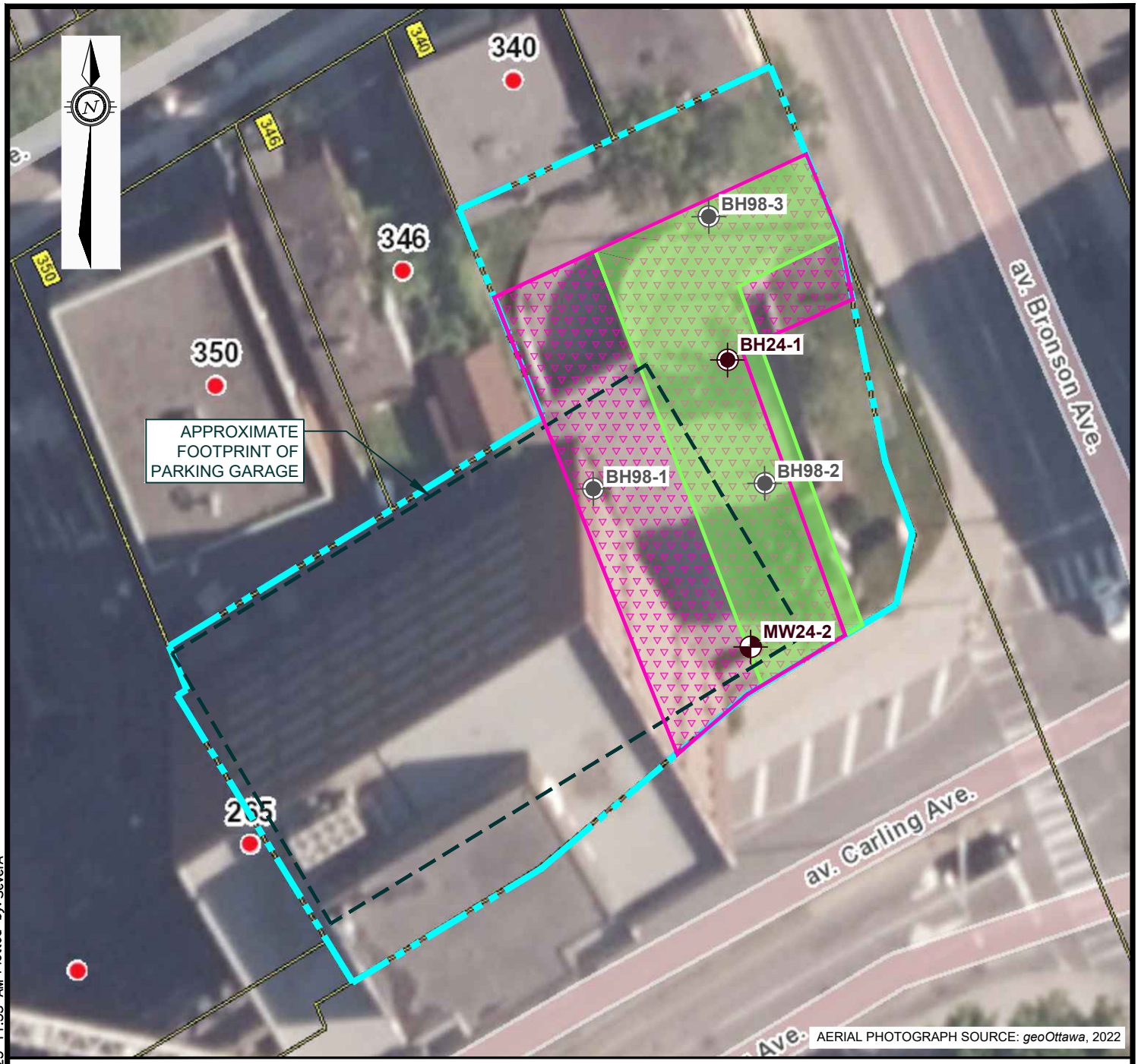

LEGEND

- PROPERTY BOUNDARY
- MW24-1 — MONITORING WELL NUMBER & LOCATION (*EXP*, 2024)
- BH98-1 — BOREHOLE NUMBER & LOCATION (*GOLDER*, 1998)
- AREA OF POTENTIAL ENVIRONMENTAL CONCERN 1 (**APEC #1**) - **PCA #28**: FORMER ON-SITE GAS STATION
- AREA OF POTENTIAL ENVIRONMENTAL CONCERN 2 (**APEC #2**) - **PCA #30**: FILL MARTIAL OF UNKNOWN QUALITY

ORIGINAL SHEET SIZE = 8.5" x 11"

0 4m 8m 16m

HORIZONTAL 1:400

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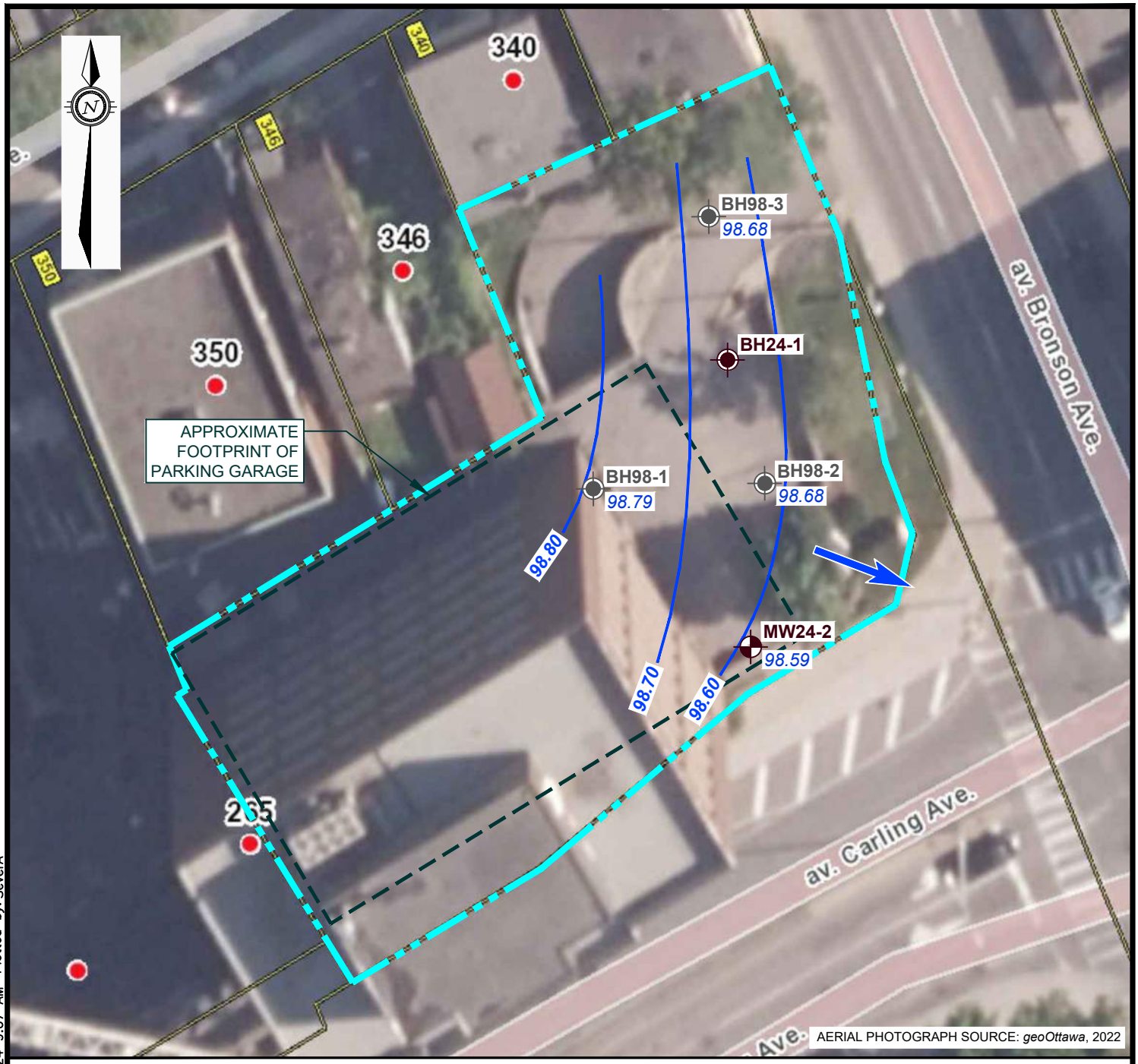
DESIGN: LW / CHECKED: CK		scale: 1:400
DRAWN BY: AS	TITLE: BOREHOLE LOCATION PLAN	FIG 3

Filename: E:\OTT\OTT-23015404-A0\60 Execution\65 Drawings\OTT-23015404-A0_Ph-2_Jan-2025.dwg
Last Saved: Jan 27, 2025 3:17 PM Last Plotted: Jan 28, 2025 11:35 AM Plotted by: SeverA



LEGEND

- PROPERTY BOUNDARY
- MW24-1 — MONITORING WELL NUMBER & LOCATION (*EXP*, 2024)
- BH98-1 — BOREHOLE NUMBER & LOCATION (*GOLDER*, 1998)
- 98.79 — GROUNDWATER LEVEL
- 98.60 — GROUNDWATER CONTOUR
- INFERRED GROUNDWATER FLOW DIRECTION

ORIGINAL SHEET SIZE = 8.5" x 11"

0 4m 8m 16m

HORIZONTAL 1:400

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DESIGN: LW / CHECKED: LW		scale: 1:400
DRAWN BY: AS	TITLE: GROUNDWATER CONTOUR PLAN	FIG 4

Filename: E:\OTT\OTT-23015404-A0\60 Execution\65 Drawings\OTT-23015404-A0_Ph-2.dwg
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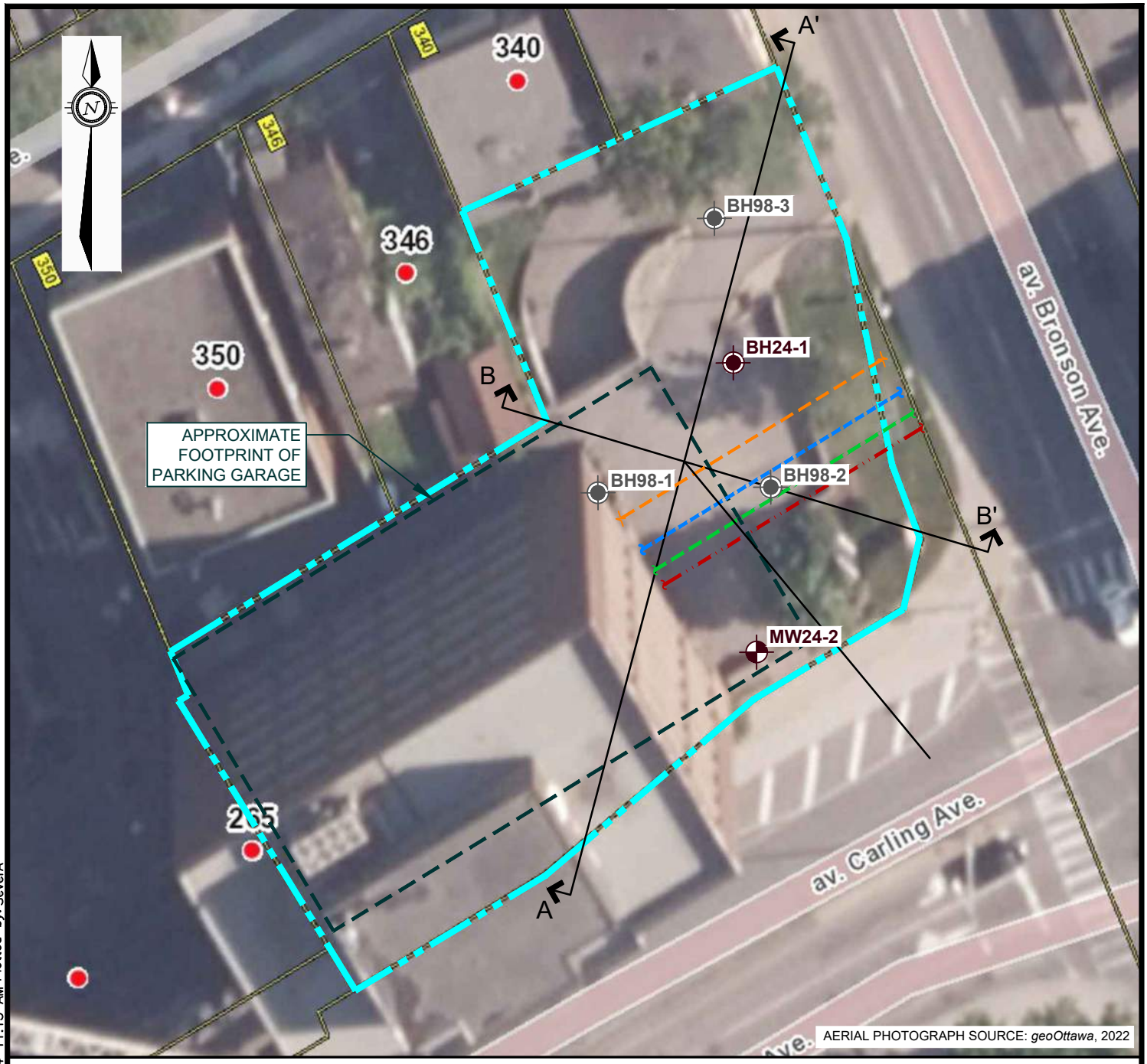

LEGEND

- PROPERTY BOUNDARY
- MW24-1 — MONITORING WELL NUMBER & LOCATION (*EXP*, 2024)
- BH98-1 — BOREHOLE NUMBER & LOCATION (*GOLDER*, 1998)

UTILITIES LEGEND (APPROX. LOCATION):

- WASTEWATER - STORM
- WASTEWATER - SANITARY
- WATER
- HYDRO

A — SECTION MARK

ORIGINAL SHEET SIZE = 8.5" x 11"

0 4m 8m 16m

HORIZONTAL 1:400

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DESIGN: LW / CHECKED: LW		scale: 1:400
DRAWN BY: AS	TITLE: CROSS SECTION PLAN	FIG 5

Filename: E:\OTT\OTT-23015404-A0\60 Execution\65 Drawings\OTT-23015404-A0_Ph-2.dwg
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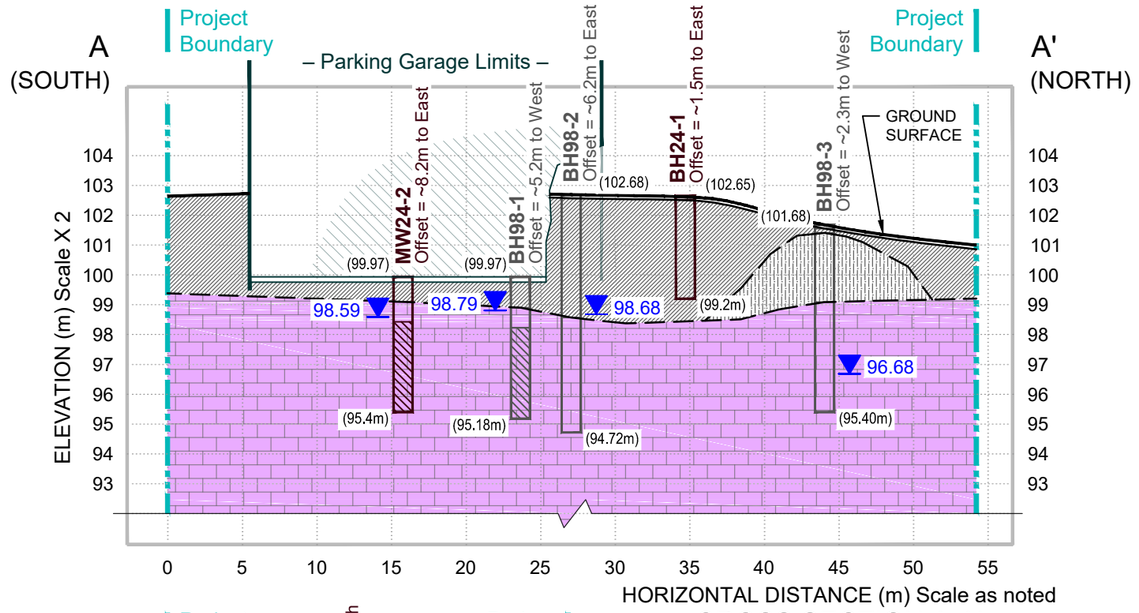
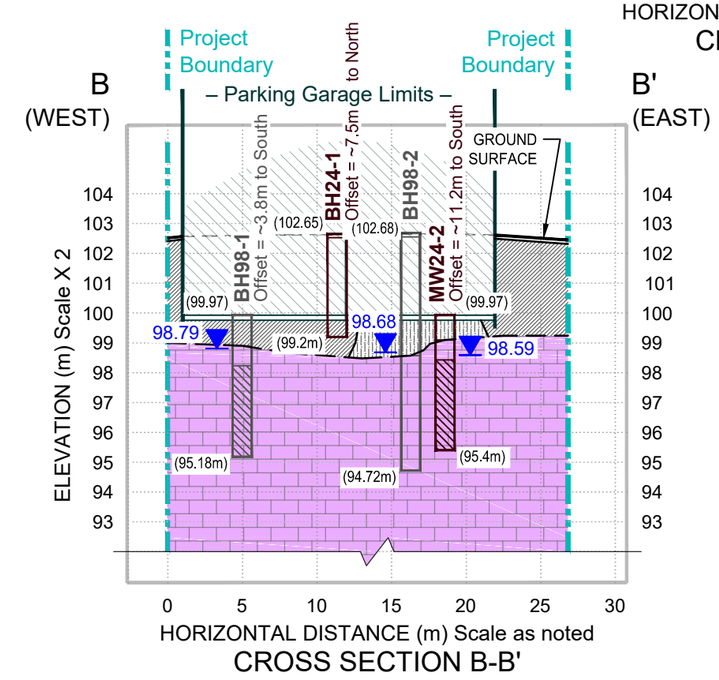


CROSS SECTION A-A'



CROSS SECTION B-B'

APPROXIMATE PROPERTY BOUNDARY

OVERBURDEN
(FILL, CRUSHED LIMESTONE)

OVERBURDEN
(SILTY SAND, SANDY SILT)

LIMESTONE BEDROCK

BOREHOLE/MONITORING WELL:
Ground Surface Elevation (m)
Bedrock Elevation (m)
Screen
BH/MW Bottom Elevation (m)

98.59 GROUNDWATER ELEVATION AT BOREHOLE

ORIGINAL SHEET SIZE = 17" x 11"

0 4m 8m 16m

HORIZONTAL 1:400

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DATE: APRIL 2024	PROJECT: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT 265 CARLING AVENUE, OTTAWA, ONTARIO	project no. OTT-23015404-A0
DESIGN: LW / CHECKED: LW		scale 1:400
DRAWN BY: AS	TITLE: CROSS SECTIONS A-A' & B-B'	FIG 6

Filename: E:\OTT\OTT-23015404-A0\60 Execution\65 Drawings\OTT-23015404-A0_Ph-2.dwg
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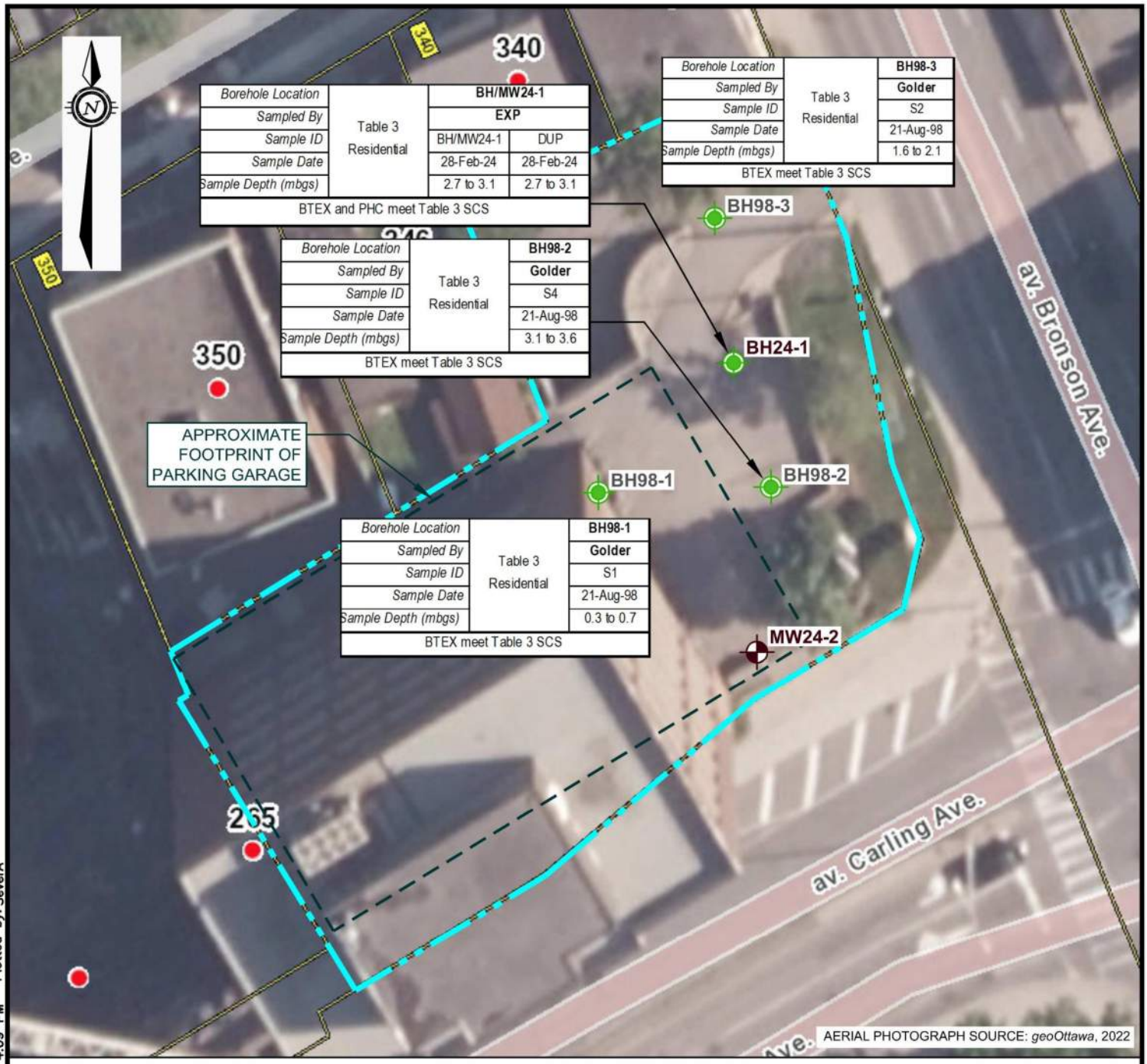

LEGEND

- PROPERTY BOUNDARY
- MW24-1 — MONITORING WELL NUMBER & LOCATION (*EXP*, 2024)
- BH98-1 — BOREHOLE NUMBER & LOCATION (*GOLDER*, 1998)
- SOIL SAMPLE EXCEEDS TABLE 3 SCS
- SOIL SAMPLE MEETS TABLE 3 SCS

ORIGINAL SHEET SIZE = 8.5" x 11"

0 4m 8m 16m

HORIZONTAL 1:400

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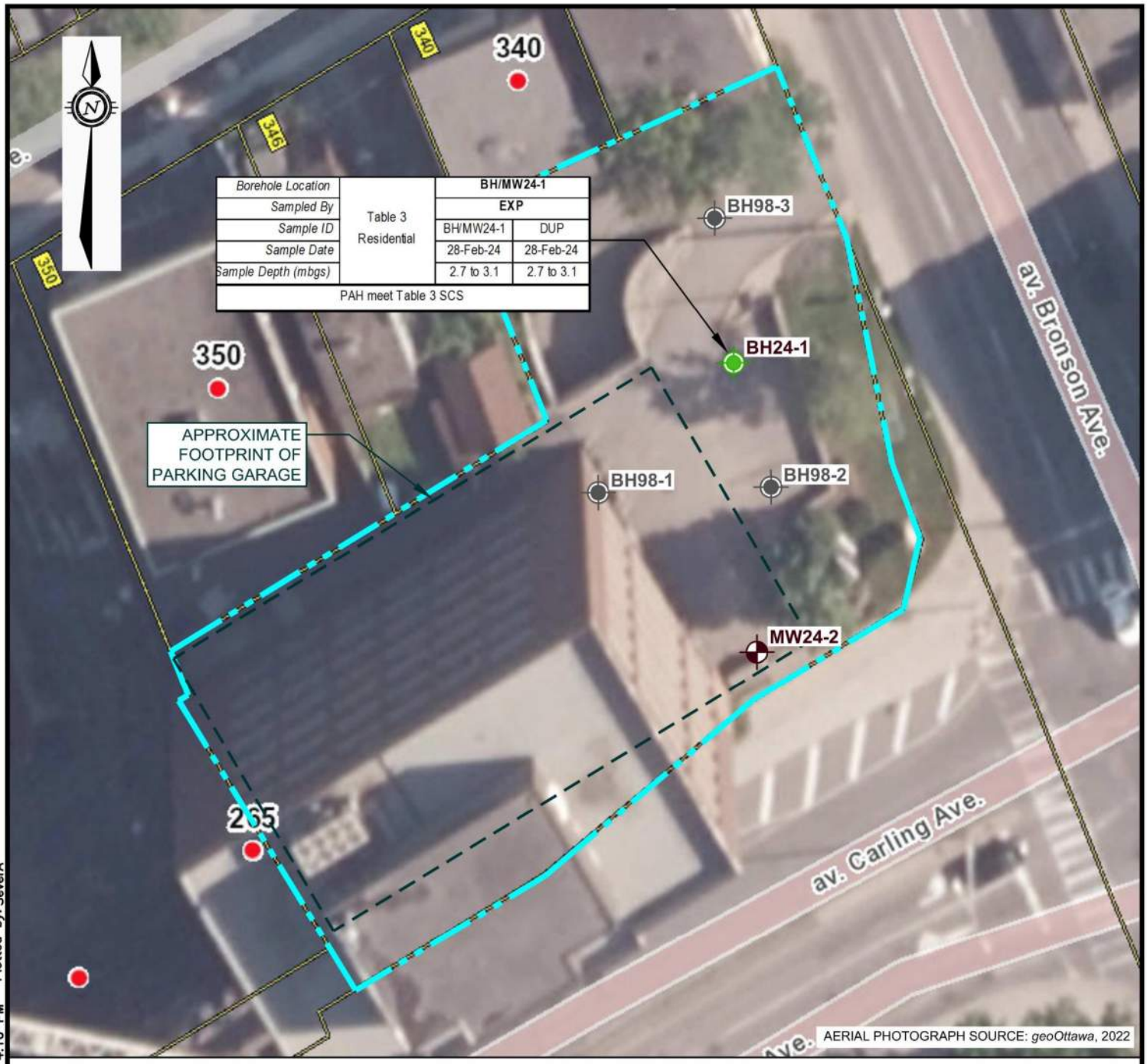
DESIGN: LW / CHECKED: LW		scale: 1:400
DRAWN BY: AS	TITLE: SOIL ANALYTICAL RESULTS – BTEX & PHC	FIG 7

Filename: E:\OTT\OTT-23015404-A0\60 Execution\65 Drawings\OTT-23015404-A0_Ph-2.dwg
Last Saved: Apr 9, 2024 4:07 PM Last Plotted: Apr 9, 2024 4:09 PM Plotted by: SeverA



Borehole Location	Table 3 Residential	BH/MW24-1	
Sampled By		EXP	
Sample ID		BH/MW24-1	DUP
Sample Date		28-Feb-24	28-Feb-24
Sample Depth (mbgs)		2.7 to 3.1	2.7 to 3.1
PAH meet Table 3 SCS			

LEGEND

- PROPERTY BOUNDARY
- MW24-1 — MONITORING WELL NUMBER & LOCATION (*EXP*, 2024)
- BH98-1 — BOREHOLE NUMBER & LOCATION (*GOLDER*, 1998)
- SOIL SAMPLE EXCEEDS TABLE 3 SCS
- SOIL SAMPLE MEETS TABLE 3 SCS

ORIGINAL SHEET SIZE = 8.5" x 11"

0 4m 8m 16m

HORIZONTAL 1:400

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

DATE	PROJECT:	project no.
APRIL 2024	PHASE TWO ENVIRONMENTAL SITE ASSESSMENT 265 CARLING AVENUE, OTTAWA, ONTARIO	OTT-23015404-A0
DESIGN: LW / CHECKED: LW		scale: 1:400
DRAWN BY: AS	TITLE: SOIL ANALYTICAL RESULTS – PAH	FIG 8

Filename: E:\OTT\OTT-23015404-A0\60 Execution\65 Drawings\OTT-23015404-A0_Ph-2.dwg
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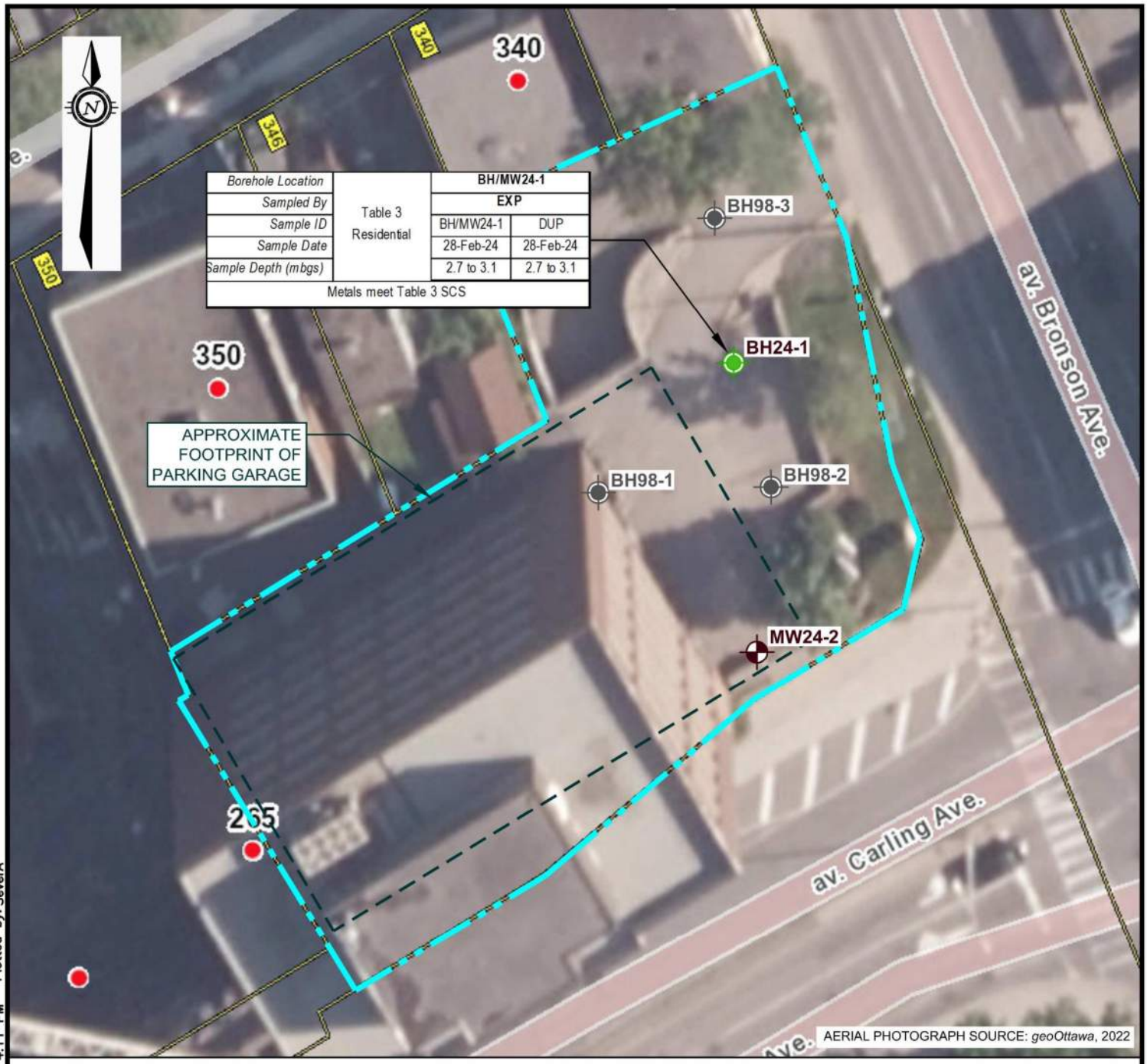

Borehole Location	Table 3 Residential	BH/MW24-1	
Sampled By		EXP	
Sample ID		BH/MW24-1	DUP
Sample Date		28-Feb-24	28-Feb-24
Sample Depth (mbgs)		2.7 to 3.1	2.7 to 3.1
Metals meet Table 3 SCS			

LEGEND

- PROPERTY BOUNDARY
- MW24-1 — MONITORING WELL NUMBER & LOCATION (*EXP*, 2024)
- BH98-1 — BOREHOLE NUMBER & LOCATION (*GOLDER*, 1998)
- SOIL SAMPLE EXCEEDS TABLE 3 SCS
- SOIL SAMPLE MEETS TABLE 3 SCS

ORIGINAL SHEET SIZE = 8.5" x 11"

0 4m 8m 16m

HORIZONTAL 1:400

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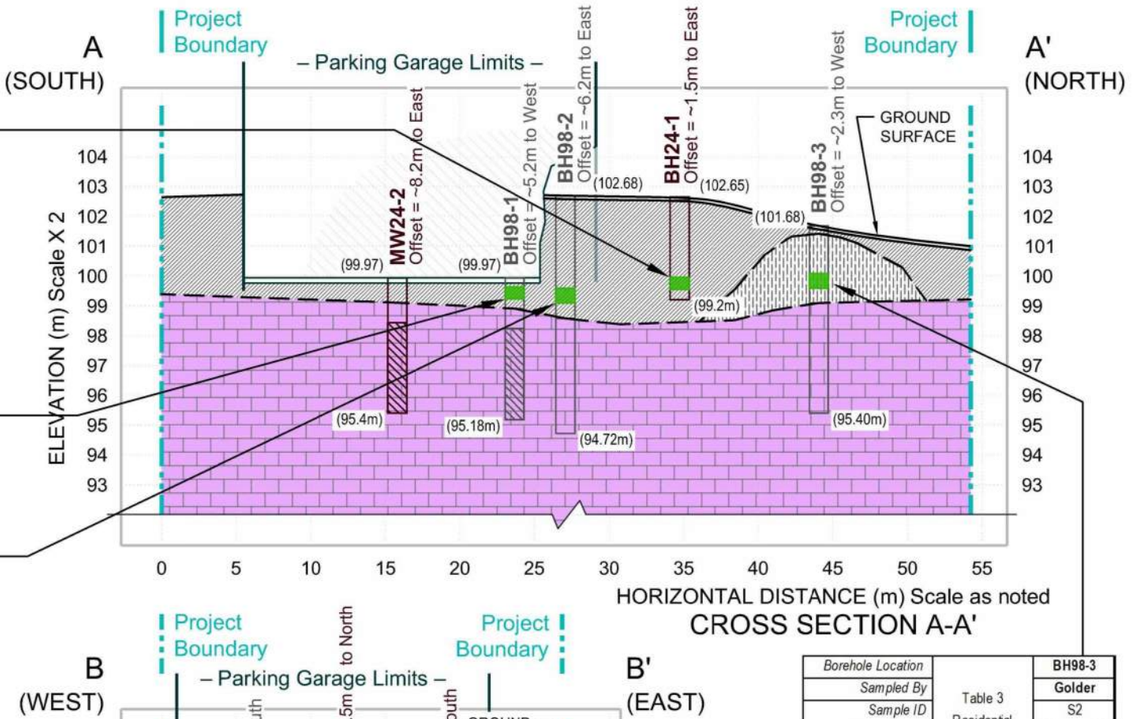
DATE: APRIL 2024	PROJECT: PHASE TWO ENVIRONMENTAL SITE ASSESSMENT 265 CARLING AVENUE, OTTAWA, ONTARIO	project no. OTT-23015404-A0
DESIGN: LW / CHECKED: LW		scale: 1:400
DRAWN BY: AS	TITLE: SOIL ANALYTICAL RESULTS – METALS	FIG 9

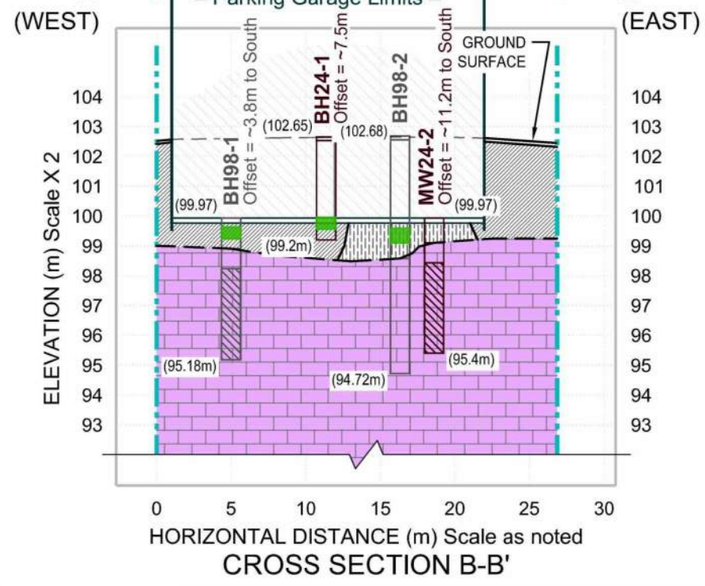
Filename: E:\OTT\OTT-23015404-A0\60 Execution\65 Drawings\OTT-23015404-A0_Ph-2.dwg
Last Saved: Apr 9, 2024 4:07 PM Last Plotted: Apr 9, 2024 4:11 PM Plotted by: SeverA

Borehole Location	Table 3 Residential	BH/MW24-1	
Sampled By		EXP	
Sample ID		BH/MW24-1	DUP
Sample Date		28-Feb-24	28-Feb-24
Sample Depth (mbgs)		2.7 to 3.1	2.7 to 3.1
BTEX and PHC meet Table 3 SCS			

Borehole Location	Table 3 Residential	BH98-1
Sampled By		Golder
Sample ID		S1
Sample Date		21-Aug-98
Sample Depth (mbgs)		0.3 to 0.7
BTEX meet Table 3 SCS		

Borehole Location	Table 3 Residential	BH98-2
Sampled By		Golder
Sample ID		S4
Sample Date		21-Aug-98
Sample Depth (mbgs)		3.1 to 3.6
BTEX meet Table 3 SCS		





Borehole Location	Table 3 Residential	BH98-3
Sampled By		Golder
Sample ID		S2
Sample Date		21-Aug-98
Sample Depth (mbgs)		1.6 to 2.1
BTEX meet Table 3 SCS		

APPROXIMATE PROPERTY BOUNDARY

OVERBURDEN (FILL, CRUSHED LIMESTONE)

OVERBURDEN (SILTY SAND, SANDY SILT)

LIMESTONE BEDROCK

BOREHOLE/MONITORING WELL:

Ground Surface Elevation (m)

Bedrock Elevation (m)

Screen

BH/MW Bottom Elevation (m)

SOIL SAMPLE EXCEEDS TABLE 3 SCS

SOIL SAMPLE MEETS TABLE 3 SCS

ORIGINAL SHEET SIZE = 17" x 11"

0 4m 8m 16m

HORIZONTAL 1:400

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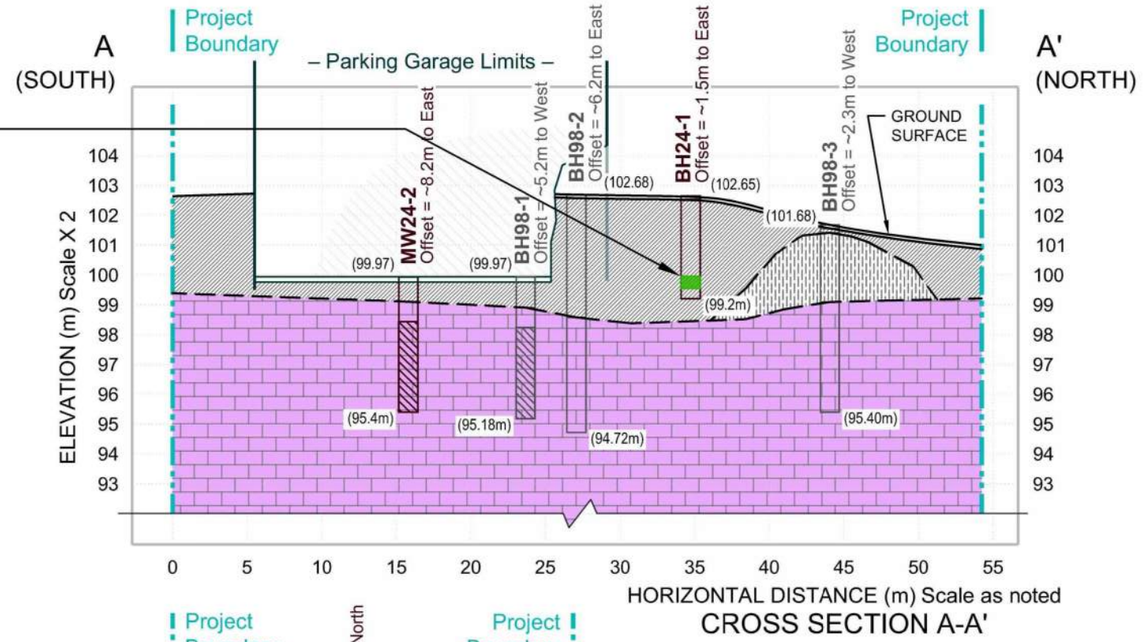
DATE	PROJECT:	project no.
APRIL 2024	PHASE TWO ENVIRONMENTAL SITE ASSESSMENT 265 CARLING AVENUE, OTTAWA, ONTARIO	OTT-23015404-A0
DESIGN: LW / CHECKED: LW		scale: 1:400
DRAWN BY: AS	TITLE: SOIL CROSS SECTIONS A-A' & B-B' – BTEX & PHC	FIG 10

Filename: E:\OTT\OTT-23015404-A0\60 Execution\65 Drawings\OTT-23015404-A0_Ph-2.dwg
Last Saved: Apr 9, 2024 4:07 PM Last Plotted: Apr 9, 2024 4:12 PM Plotted by: SeverA

Borehole Location	Table 3 Residential	BH/MW24-1	
Sampled By		EXP	
Sample ID		BH/MW24-1	DUP
Sample Date		28-Feb-24	28-Feb-24
Sample Depth (mbgs)		2.7 to 3.1	2.7 to 3.1
PAH meet Table 3 SCS			



APPROXIMATE PROPERTY BOUNDARY

OVERBURDEN (FILL, CRUSHED LIMESTONE)

OVERBURDEN (SILTY SAND, SANDY SILT)

LIMESTONE BEDROCK

BOREHOLE/MONITORING WELL:

Ground Surface Elevation (m)

Bedrock Elevation (m)

Screen

BH/MW Bottom Elevation (m)

SOIL SAMPLE EXCEEDS TABLE 3 SCS

SOIL SAMPLE MEETS TABLE 3 SCS

ORIGINAL SHEET SIZE = 17" x 11"

0 4m 8m 16m

HORIZONTAL 1:400

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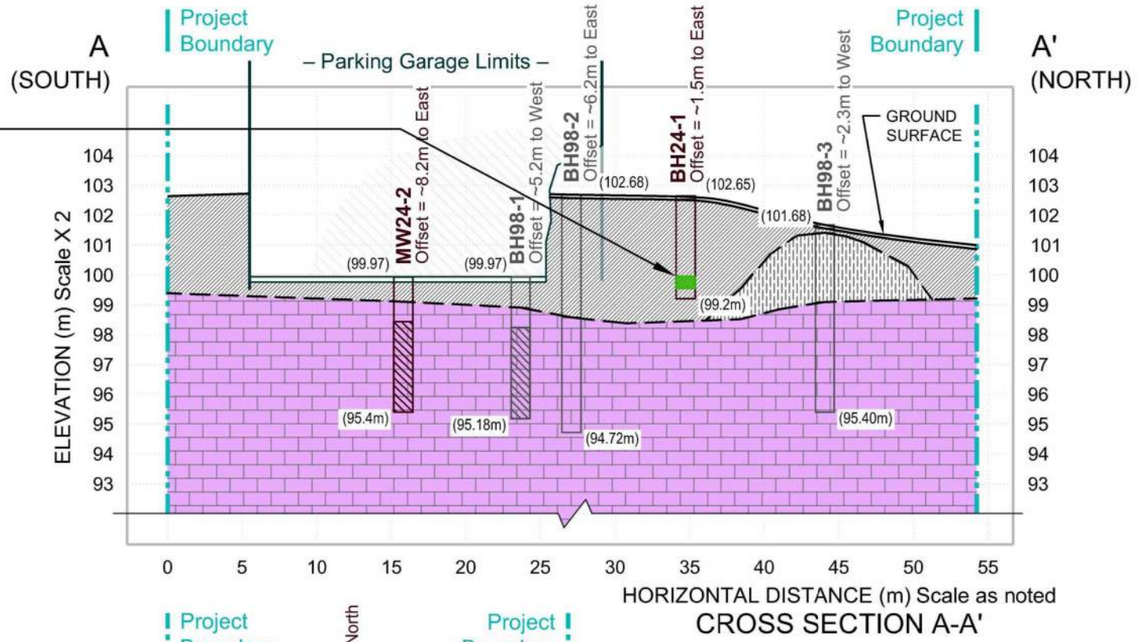
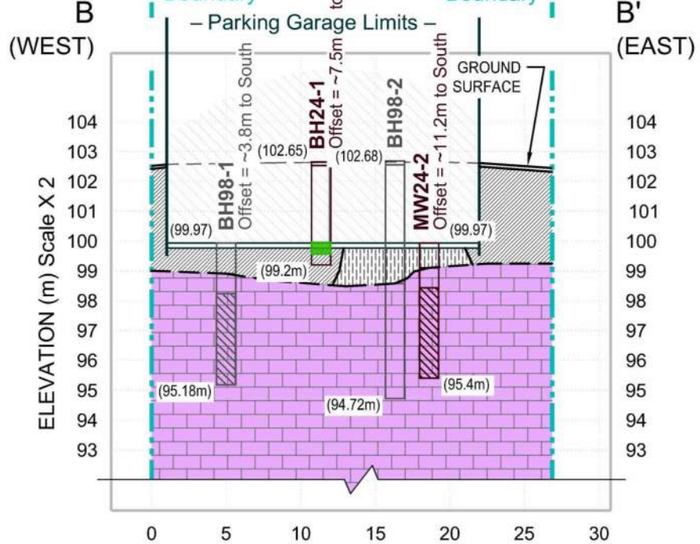
APRIL 2024	PHASE TWO ENVIRONMENTAL SITE ASSESSMENT 265 CARLING AVENUE, OTTAWA, ONTARIO	OTT-23015404-A0
DESIGN: LW / CHECKED: LW		scale: 1:400
DRAWN BY: AS	TITLE: SOIL CROSS SECTIONS A-A' & B-B' – PAH	FIG 11

Filename: E:\OTT\OTT-23015404-A0\60 Execution\65 Drawings\OTT-23015404-A0_Ph-2.dwg
Last Saved: Apr 9, 2024 4:07 PM Last Plotted: Apr 9, 2024 4:13 PM Plotted by: SeverA

Borehole Location	Table 3 Residential	BH/MW24-1	
Sampled By		EXP	
Sample ID		BH/MW24-1	DUP
Sample Date		28-Feb-24	28-Feb-24
Sample Depth (mbgs)		2.7 to 3.1	2.7 to 3.1
Metals meet Table 3 SCS			



CROSS SECTION A-A'



CROSS SECTION B-B'

APPROXIMATE PROPERTY BOUNDARY

OVERBURDEN (FILL, CRUSHED LIMESTONE)

OVERBURDEN (SILTY SAND, SANDY SILT)

LIMESTONE BEDROCK

BOREHOLE/MONITORING WELL:
Ground Surface Elevation (m)
Bedrock Elevation (m)
Screen
BH/MW Bottom Elevation (m)

SOIL SAMPLE EXCEEDS TABLE 3 SCS

SOIL SAMPLE MEETS TABLE 3 SCS

ORIGINAL SHEET SIZE = 17" x 11"

0 4m 8m 16m

HORIZONTAL 1:400

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DESIGN LW / CHECKED LW		scale 1:400
DRAWN BY AS	TITLE: SOIL CROSS SECTIONS A-A' & B-B' – METALS	FIG 12

Filename: E:\OTT\OTT-23015404-A0\60 Execution\65 Drawings\OTT-23015404-A0_Ph-2.dwg
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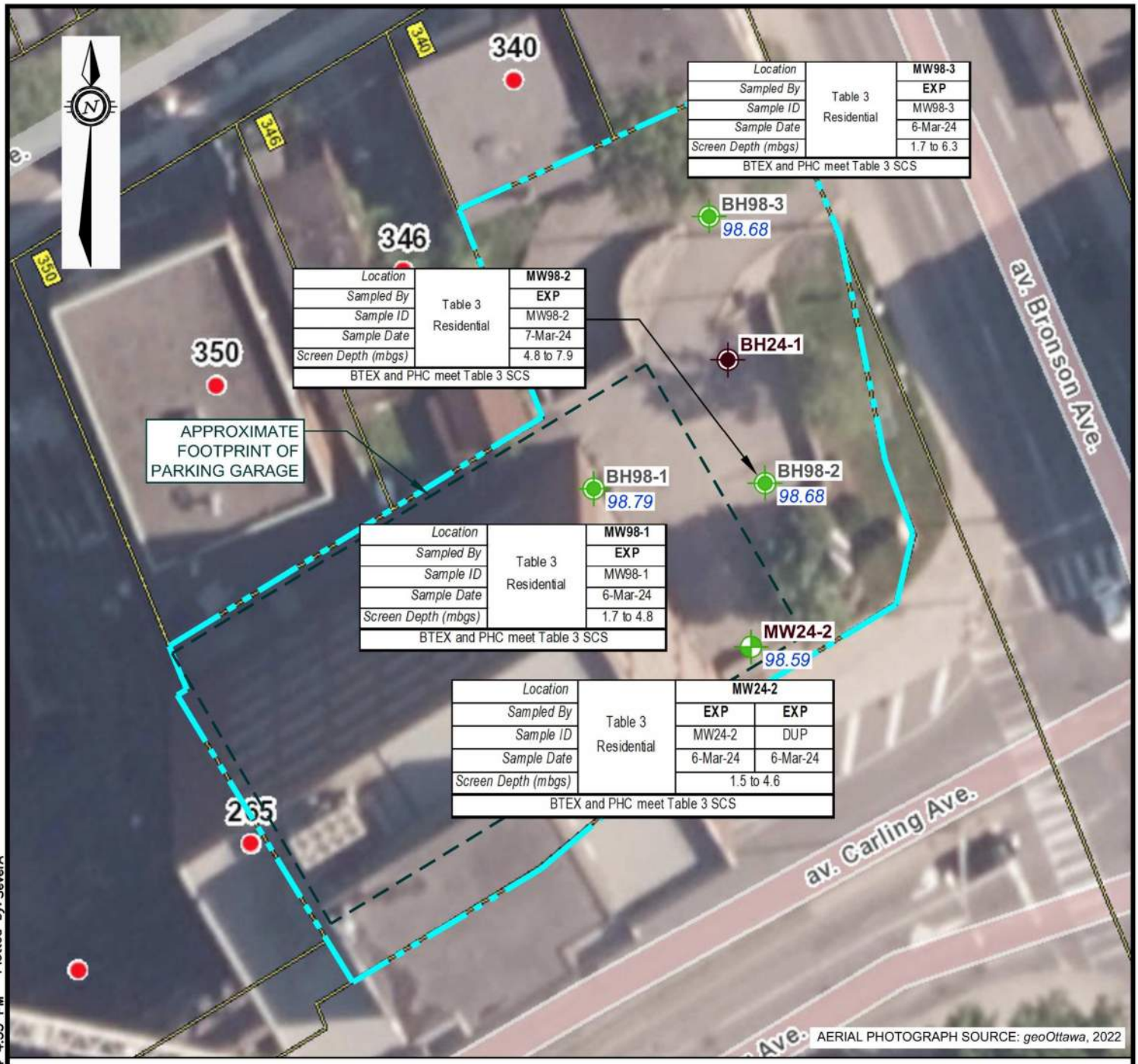

LEGEND

- PROPERTY BOUNDARY
- MW24-1 — MONITORING WELL NUMBER & LOCATION (*EXP*, 2024)
- BH98-1 — BOREHOLE NUMBER & LOCATION (*GOLDER*, 1998)
- 98.79 — GROUNDWATER LEVEL
- GROUNDWATER SAMPLE EXCEEDS TABLE 3 SCS
- GROUNDWATER SAMPLE MEETS TABLE 3 SCS

ORIGINAL SHEET SIZE = 8.5" x 11"

0 4m 8m 16m

HORIZONTAL 1:400

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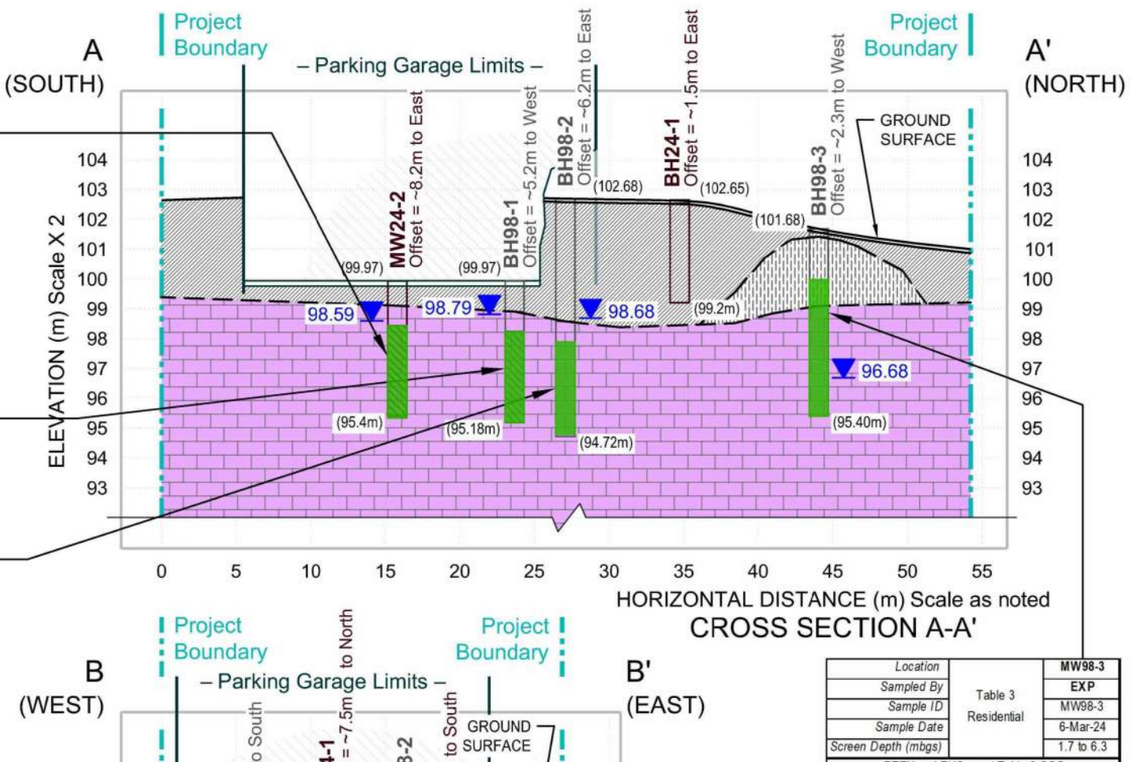
DESIGN: LW / CHECKED: LW		scale: 1:400
DRAWN BY: AS	TITLE: GROUNDWATER ANALYTICAL RESULTS – BTEX & PHC	FIG 13

Filename: E:\OTT\OTT-23015404-A0\60 Execution\65 Drawings\OTT-23015404-A0_Ph-2.dwg
Last Saved: Apr 9, 2024 4:34 PM Last Plotted: Apr 9, 2024 4:35 PM Plotted by: SeverA

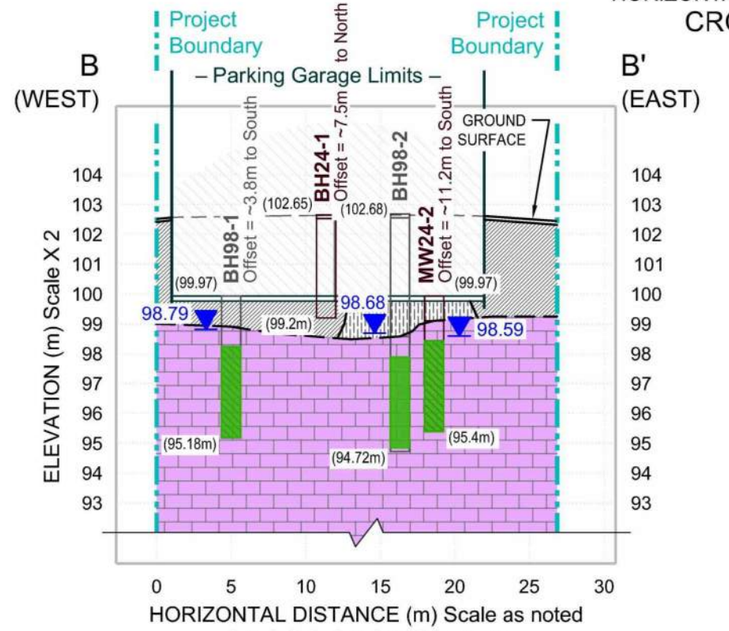
Location	Table 3 Residential	MW24-2	
Sampled By		EXP	EXP
Sample ID		MW24-2	DUP
Sample Date		6-Mar-24	6-Mar-24
Screen Depth (mbgs)		1.5 to 4.6	
BTEX and PHC meet Table 3 SCS			

Location	Table 3 Residential	MW98-1
Sampled By		EXP
Sample ID		MW98-1
Sample Date		6-Mar-24
Screen Depth (mbgs)		1.7 to 4.8
BTEX and PHC meet Table 3 SCS		

Location	Table 3 Residential	MW98-2
Sampled By		EXP
Sample ID		MW98-2
Sample Date		7-Mar-24
Screen Depth (mbgs)		4.8 to 7.9
BTEX and PHC meet Table 3 SCS		



CROSS SECTION A-A'



CROSS SECTION B-B'

Location	Table 3 Residential	MW98-3
Sampled By		EXP
Sample ID		MW98-3
Sample Date		6-Mar-24
Screen Depth (mbgs)		1.7 to 6.3
BTEX and PHC meet Table 3 SCS		

APPROXIMATE PROPERTY BOUNDARY

OVERBURDEN (FILL, CRUSHED LIMESTONE)

OVERBURDEN (SILTY SAND, SANDY SILT)

LIMESTONE BEDROCK

BOREHOLE/MONITORING WELL:
Ground Surface Elevation (m)
Bedrock Elevation (m)
Screen
BH/MW Bottom Elevation (m)

98.59 GROUNDWATER ELEVATION AT BOREHOLE

GROUNDWATER SAMPLE EXCEEDS TABLE 3 SCS

GROUNDWATER SAMPLE MEETS TABLE 3 SCS

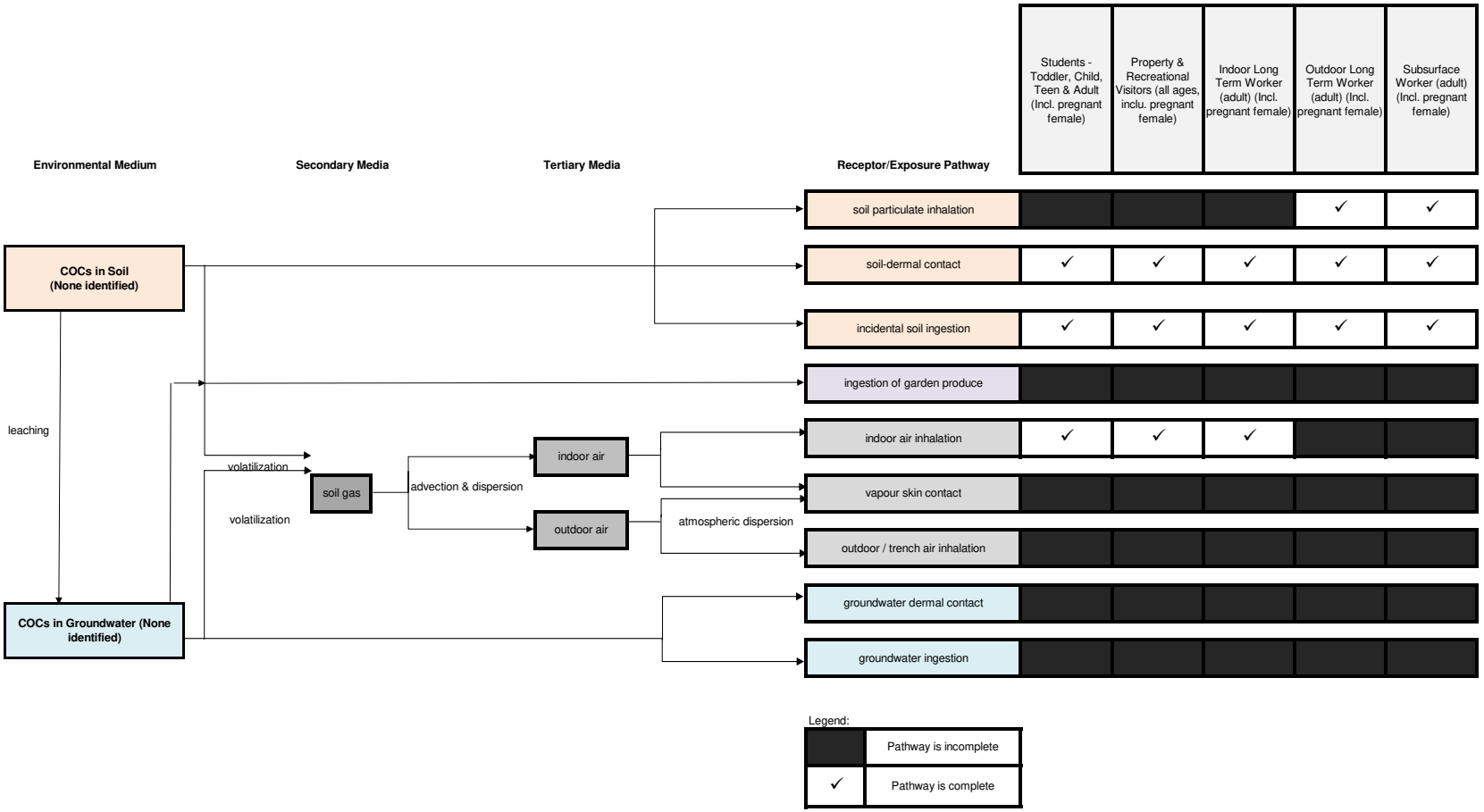
ORIGINAL SHEET SIZE = 17" x 11"

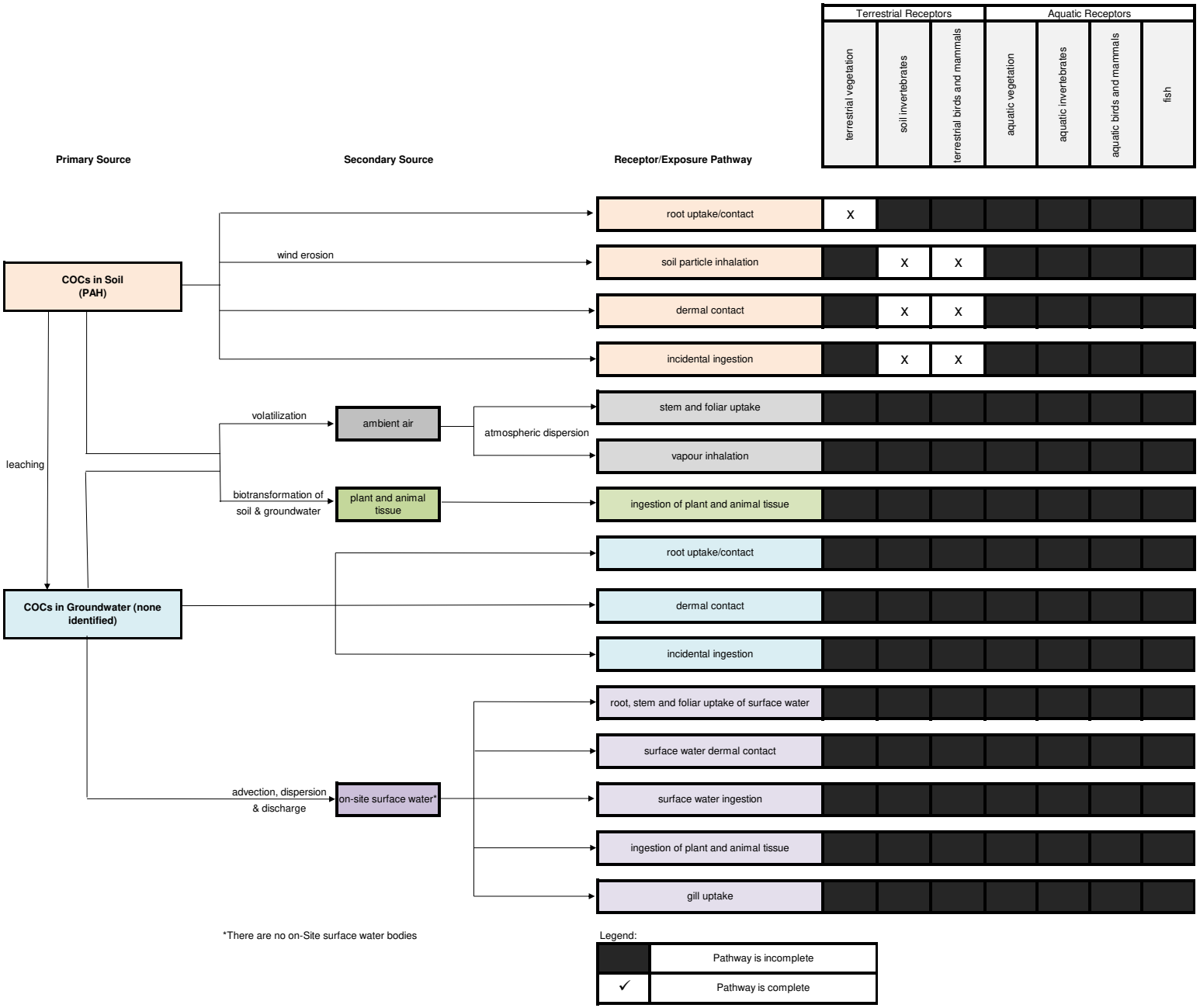
0 4m 8m 16m
HORIZONTAL 1:400

EXP Services Inc. www.exp.com
t: +1.613.688.1899 | f: +1.613.225.7337
2650 Queensview Drive, Suite 100
Ottawa, ON K2B 8H6, Canada

DATE	PROJECT:	project no.
APRIL 2024	PHASE TWO ENVIRONMENTAL SITE ASSESSMENT 265 CARLING AVENUE, OTTAWA, ONTARIO	OTT-23015404-A0
DESIGN: LW / CHECKED: LW		scale: 1:400
DRAWN BY: AS	TITLE: GROUNDWATER CROSS SECTIONS A-A' & B-B' – BTEX & PHC	FIG 14

Filename: E:\OTT\OTT-23015404-A0\60 Execution\65 Drawings\OTT-23015404-A0_Ph-2.dwg
Last Saved: Apr 9, 2024 4:38 PM Last Plotted: Apr 9, 2024 4:39 PM Plotted by: SeverA


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


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

Appendix B: Survey Plan

Distances shown on this plan are ground distances and can be converted to grid distances by multiplying by the combined scale factor of 0.999936.

Bearings are grid, derived from Can-Net 2016 Real Time Network GPS observations on reference points A and B, shown hereon, having a bearing of N58°00'40"E and are referenced to Specified Control Points 01919680005 and 01919680105, MTM Zone 9 (76°30' West Longitude) NAD-83 (original).

Coordinates are derived from Can-Net 2016 Real Time Network GPS observations referenced to Specified Control Points 01919680005 and 01919680105, MTM Zone 9 (76°30' West Longitude) NAD-83 (original).

Coordinate values are to urban accuracy in accordance with O. Reg. 216/10.

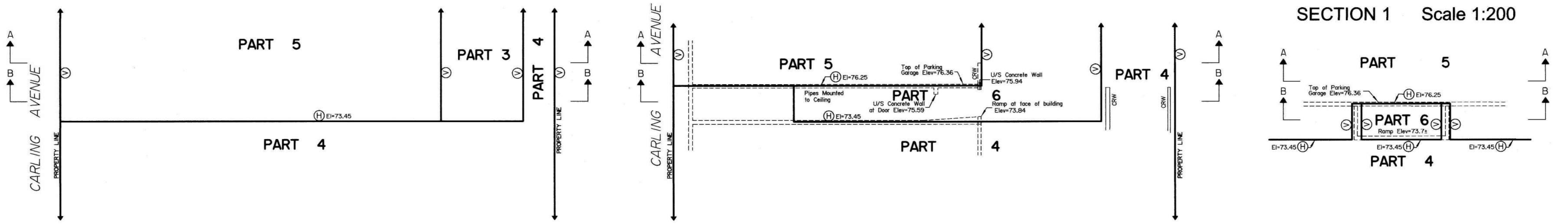
. 01919680005	Northing	5027191.26	Easting	361496.76
. 01919680105	Northing	5024915.16	Easting	373971.65
. Point A	Northing	5029338.94	Easting	367336.99
. Point B	Northing	5029387.62	Easting	367414.92

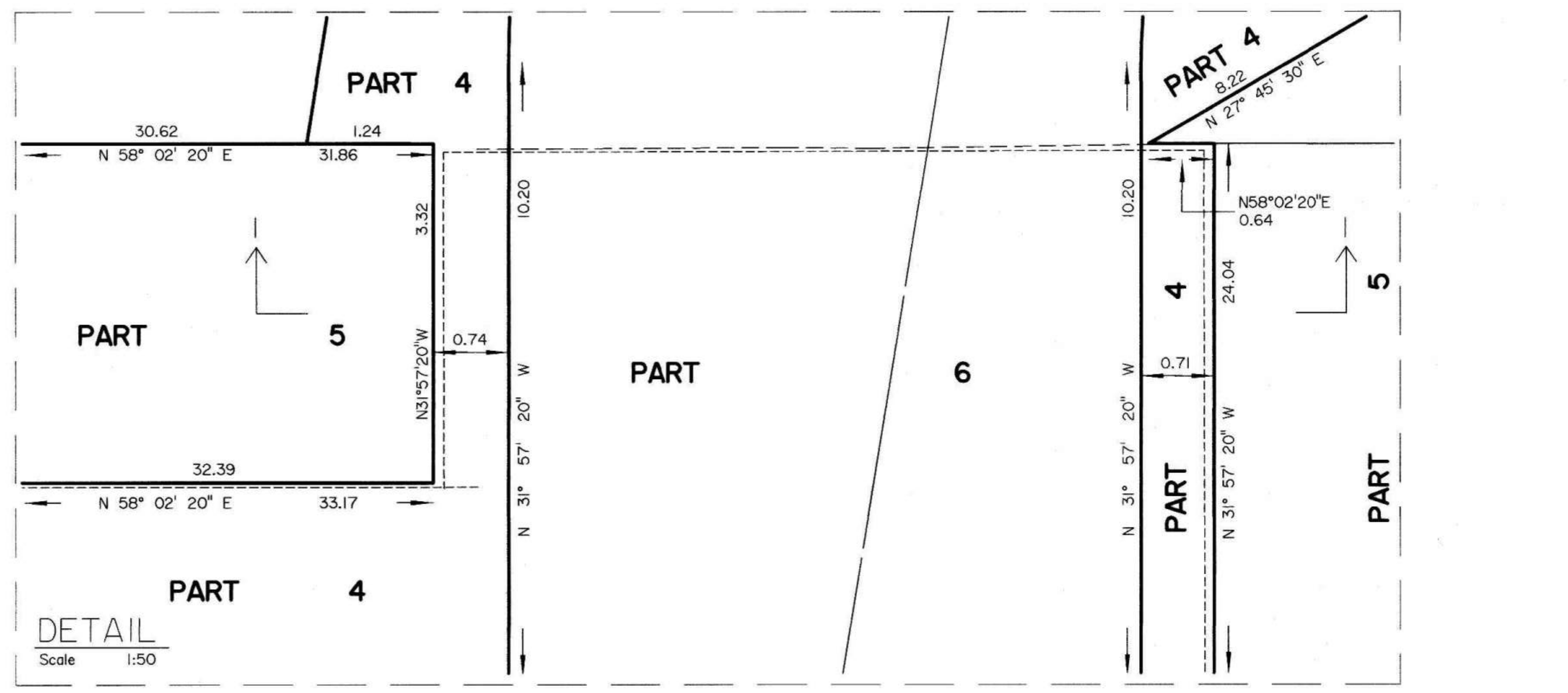
Caution: Coordinates cannot, in themselves, be used to re-establish corners or boundaries shown on this plan.

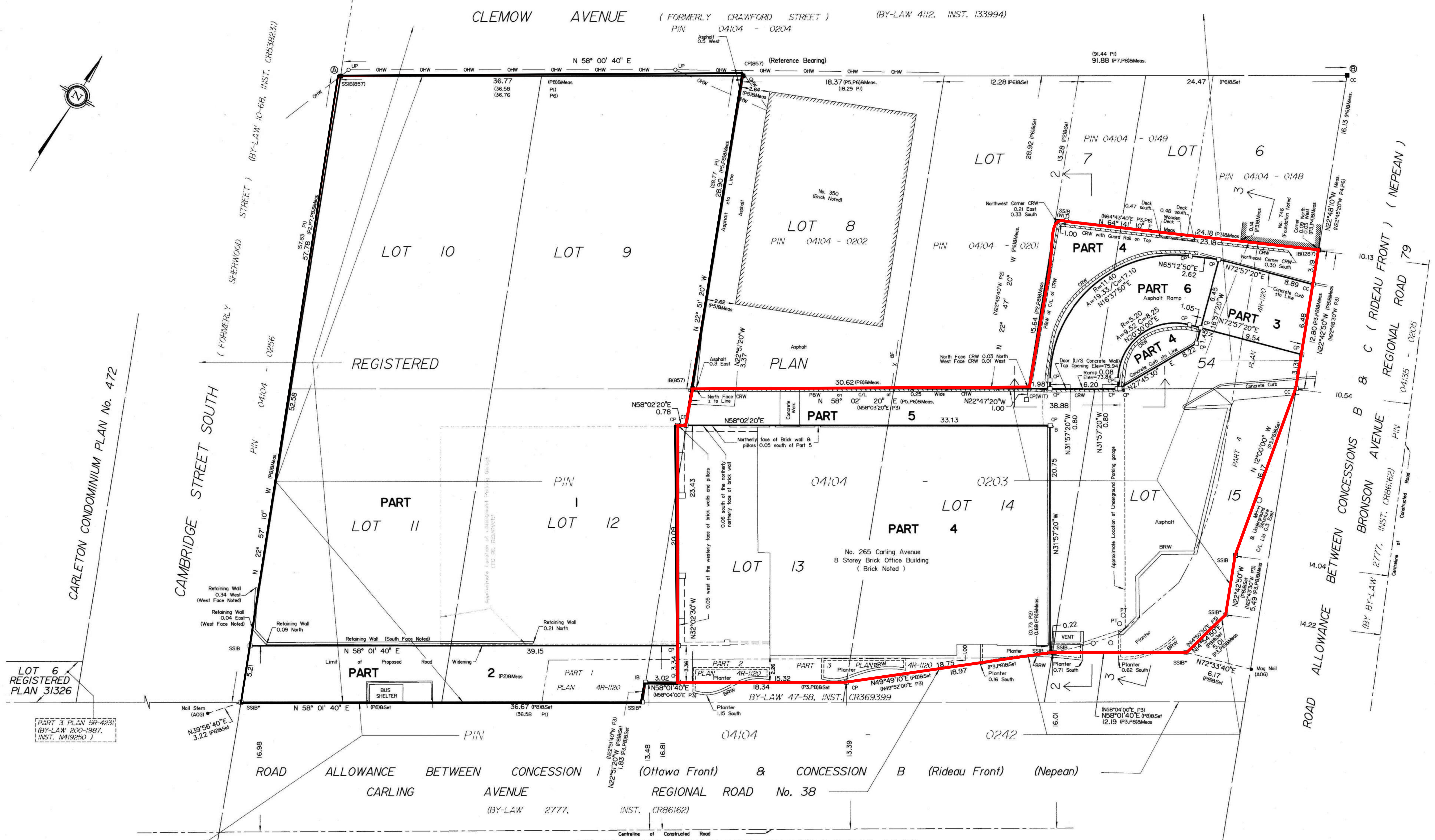
SECTION 3 Scale 1:200

SECTION 2 Scale 1:200

SECTION 1 Scale 1:200







PLAN VIEW FOR THE PERIMETER AND
DIAGRAM A : PLAN VIEW OF CONFIGURATION OF PARTS
AT ELEVATION 78.00

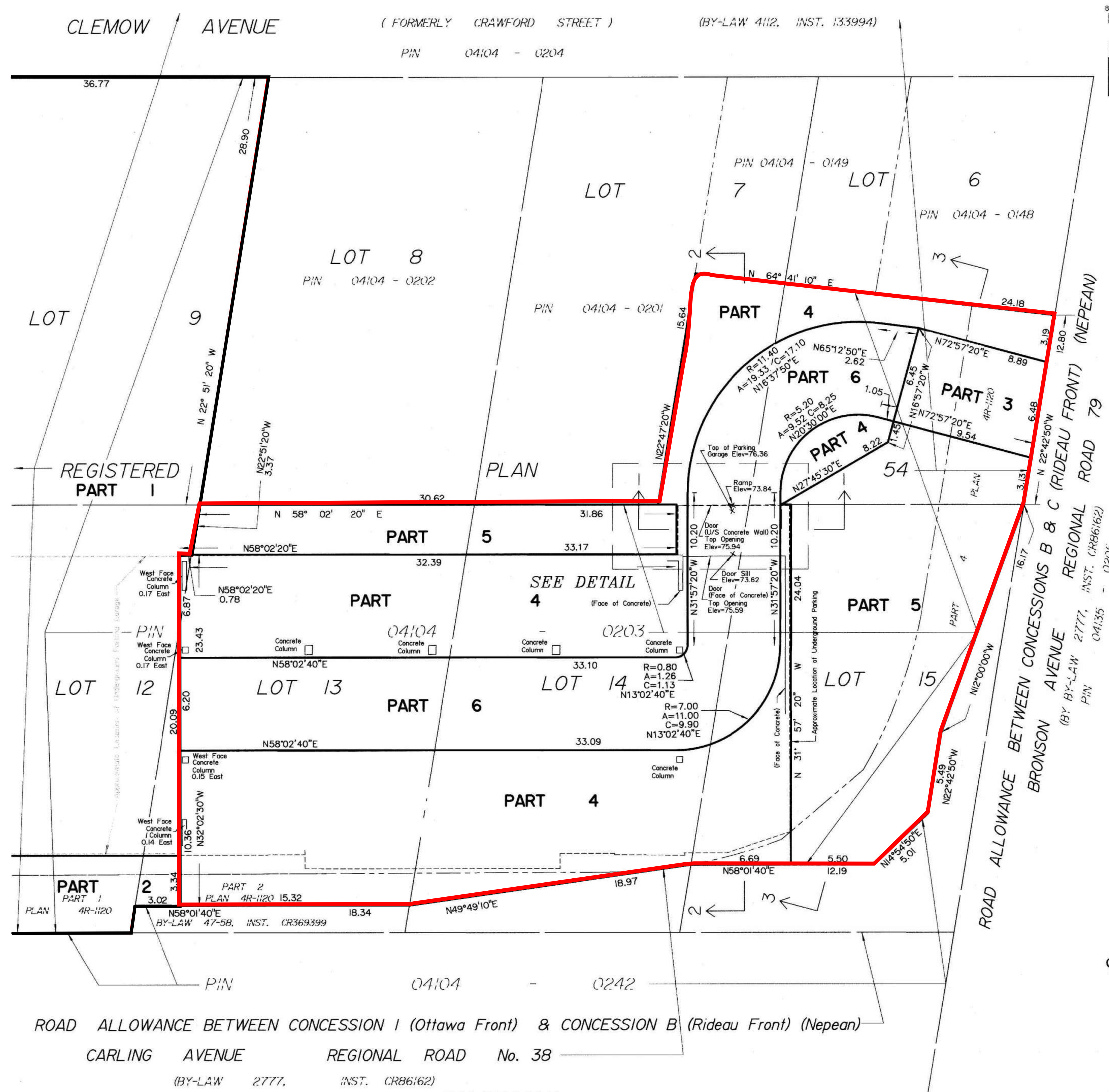


DIAGRAM B :
PLAN VIEW OF CONFIGURATION OF PARTS
AT ELEVATION 75.00

I REQUIRE THIS PLAN TO BE DEPOSITED UNDER THE LAND TITLES ACT. DATE: Oct. 1, 2018 [signature] E.H. HERWEYER ONTARIO LAND SURVEYOR	PLAN 4R-31424 RECEIVED AND DEPOSITED DATE: Oct 01, 2018 "Guy Noel Nkwmuing" REPRESENTATIVE FOR LAND REGISTRAR FOR THE LAND TITLES DIVISION OF OTTAWA-CARLETON NO. 4.

SCHEDULE

PART	LOT	PLAN	PIN
1	All of 9 , 10, Part of 11, 12 and 13	54	All of 04104-0203
2	Part of 11, 12 and 13		
3	Part of 6		
4	Part of 6, 7, 12, 13, 14 and 15		
5	Part of 6, 13, 14 and 15		
6	Part of 6, 7, 13, 14 and 15		

STRATA PLAN OF SURVEY OF

LOTS 9, 10, 11 AND 12
PART OF LOTS 6, 7, 13, 14 AND 15
(South of Clemow Avenue)
REGISTERED PLAN 54
CITY OF OTTAWA

Surveyed by Annis, O'Sullivan, Vollebekk Ltd.

Scale 1 : 200

8.0 6.0 4.0 2.0 0 4 8 Metres

Metric

DISTANCES AND COORDINATES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048.

Notes & Legend

—□—	Denotes	Survey Monument Planted
—■—	"	Survey Monument Found
SIB	"	Standard Iron Bar
SSIB	"	Short Standard Iron Bar
IB	"	Iron Bar
CC	"	Cut Cross
CP	"	Concrete Pin
*	"	Survey Monument 0.3 Long
(WIT)	"	Witness
(AOG)	"	Annis, O'Sullivan, Vollebekk Ltd.
Meas.	"	Measured
Acc.	"	Accepted
NT	"	Non Tangent
(P1)	"	Registered Plan 54
(P2)	"	(857) Plan, February 12, 1975
(P3)	"	Plan 4R-1120
(P4)	"	(1287) Plan, September 26, 1988
(P5)	"	(857) Plan, September 17, 2001
(P6)	"	(AOG) Plan, December 13, 1991
(P7)	"	(632) Field Notes, June 28, 1950
(P8)	"	(AOG) Ref # 12495-11
(P9)	"	(AOG) Field notes, December 11, 1991
(section arrow)	"	See Section 1 for Vertical Limits
(arrow A)	"	See Diagram 1 for Horizontal Limits
↓	"	Downwards Without Limit
↑	"	Upwards Without Limit
Ⓒ	"	Face of Concrete Wall
Ⓥ	"	Vertical Plane
Ⓗ	"	Horizontal Plane
UP	"	Utility Pole
OHW	"	Overhead Wires
CRW	"	Concrete Retaining Wall
BRW	"	Block Retaining Wall
BF	"	Board Fence
P&W	"	Post & Wire Fence
C/L	"	Cetreline
○ MH-H	"	Maintenance Hole (Hydro)

Elevations are geodetic referred to the City of Ottawa Benchmark No. 3599, having an elevation of 76.50 metres.

Parts 3, 4,5 and 6 are limited verically.

Surveyor's Certificate

I CERTIFY THAT :

1. This survey and plan are correct and in accordance with the Surveys Act, the Surveyors Act and the Land Titles Act and the regulations made under them.
2. The survey was completed on the 23th day of July, 2018.

Oct. 1, 2018
Date

[signature]
E. H. Herweyer
Ontario Land Surveyor

Surveyor's Certificate

I CERTIFY THAT :

1. The structures shown on this plan are in existence.
2. The dimensions shown on the plan have been verified by actual measurements.

Oct. 1, 2018
Date

[signature]
E. H. Herweyer
Ontario Land Surveyor

ANNIS, O'SULLIVAN, VOLLEBEKK LTD.
14 Concourse Gate, Suite 500
Nepean, Ont. K2E 7S6
Phone: (613) 727-0850 / Fax: (613) 727-1079
Email: Nepean@aovltd.com
Ontario Land Surveyors

Job No. 18441-18 Taggart Pt Lts 9 -13 RP54 R F

Appendix C: Sampling and Analysis Plan

1 Introduction

This appendix presents the Sampling and Analysis Plan (SAAP) that was developed in support of the Phase Two Environmental Site Assessment (ESA) for the property located at 265 Carling Avenue in Ottawa, Ontario (hereinafter referred to as the 'site'). The SAAP presents the procedures and measures that will be undertaken during field investigative activities to characterize the site conditions and meet the data quality objectives of the Phase Two ESA.

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

2 Field Sampling Program

The field sampling program was developed to provide for the collection of samples of the soil and groundwater. Soil samples will be submitted for chemical analysis of petroleum hydrocarbons (PHC), benzene, toluene, ethylbenzene, xylene (BTEX), polycyclic aromatic hydrocarbons (PAH), and metals. The soil sampling media is to consist of the overburden materials. The soil sampling will be location-specific to assess for the potential presence of PHC, BTEX, PAH, and metals based on the identification of potential areas of potential environmental concern identified in a Phase One ESA completed by EXP in 2024. Vapour readings will also be taken in the field to determine samples to be submitted for laboratory analysis.

Each of the groundwater samples will be submitted for analysis of BTEX and PHC. The monitoring well network is to comprise of one new monitoring well and three existing monitoring wells that were installed in 1998.

Vertical control of the boreholes and monitoring wells will be obtained through the completion of an elevation survey. Groundwater flow and direction in the bedrock aquifer will also be determined through groundwater level measurements and the elevations established in the site elevation survey.

3 Field Methods

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

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

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

3.1 Borehole Drilling

Boreholes will be advanced at the site to facilitate the collection of soil samples for chemical analysis and geologic characterization; and, for the installation of groundwater monitoring wells. A total of two (2) boreholes are proposed to be advanced at the site, up to a maximum overburden depth of approximately 3 m below grade, to provide for the collection of samples of the surficial and overburden materials beneath the site. The borehole locations will be selected to delineate the extent and magnitude of PCOC related impacts to the soils and the groundwater.

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

3.2 Soil Sampling

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

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

3.3 Monitoring Well Installation

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

3.4 Monitoring Well Development

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

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

3.5 Groundwater Level Measurements

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

3.6 Elevation Survey

An elevation survey will be conducted to obtain vertical control of all monitoring well locations. The top of casing and ground surface elevation of each monitoring well location will be surveyed against a suitable arbitrary benchmark.

3.7 Groundwater Sampling

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

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

4 Field Quality Assurance/Quality Control Program

The objective of the field quality assurance/quality control (QA/QC) program is to obtain soil and groundwater samples and other field measurements that provide data of acceptable quality that meets the objectives of the

Phase Two ESA. The objectives of the QA/QC program will be achieved through the implementation of procedures for the collection of unbiased (i.e. non-contaminated) samples, sample documentation and the collection of appropriate QC samples to provide a measure of sample reproducibility and accuracy. The field QA/QC measures will comprise:

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

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

4.1 Decontamination Protocols

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

4.2 Equipment Calibration

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

4.3 Sample Preservation

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

4.4 Sample Documentation

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

4.5 Field Quality Control

Field quality controls samples will be collected to evaluate the accuracy and reproducibility of the field sampling procedures. For soil and groundwater sampling, one (1) field duplicate is to be collected for every ten samples

submitted for chemical analysis. The field duplicate samples will be assessed by calculating the relative percent difference and comparing to the analytical test group specific acceptance criteria.

Appendix D: Borehole Logs

Log of Borehole BH24-1

Project No: OTT-23015404-A0

Project: Phase Two ESA

Location: 265 Carling Avenue, Ottawa, Ontario

Figure No. B-1

Page. 1 of 1

Date Drilled: Feburary 28, 2024

Drill Type: Portable Drill

Datum: Approximate Elevation

Logged by: P.O. Checked by: L.W.

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

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

GWL	SYMBOL	SOIL DESCRIPTION	Approximate Elevation m	Depth	Standard Penetration Test N Value / Shear Strength kPa (20 40 60 80 / 50 100 150 200)	Combustible Vapour Reading (ppm) 250 500 750 / Natural Moisture Content % Atterberg Limits (% Dry Weight) 20 40 60	SAMPLES	Natural Unit Wt. kN/m³
		ASPHALT ~80mm	102.65	0				
		FILL	102.6					
		Sand and gravel fill, bown, moist, some asphalt, brick, and concrete debris present.		1			SS1 SS2 SS3	
				2			SS4	
				3			SS5	
			99.2					
		Borehole Refusal at 3.5 m Depth						

LOG OF BOREHOLE 265 CARLING BH LOGS.GPJ TROW OTTAWA.GDT 3/21/24

NOTES:

1. Borehole data requires interpretation by EXP before use by others
2. Borehole backfilled with soil cuttings upon completion.
3. Field work was supervised by an EXP representative.
4. See Notes on Sample Descriptions
5. Log to be read with EXP Report OTT-23015404-A0

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

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

Log of Borehole MW24-2

Project No: OTT-23015404-A0

Project: Phase Two ESA

Location: 265 Carling Avenue, Ottawa, Ontario

Figure No. B-2

Page. 1 of 1

Date Drilled: 2/26/24

Drill Type: Portable Drill

Datum: Approximate Elevation

Logged by: P.O. Checked by: L.W.

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

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

GWL	SYMBOL	SOIL DESCRIPTION	Approximate Elevation m	Depth
		CONCRETE SLAB	99.97	0
		FILL	99.8	
		Crushed limestone fill		
			99.1	
		LIMESTONE BEDROCK		1
			98.72	
				2
				3
				4
			95.4	
		Borehole Terminated at 4.6 m Depth		

Standard Penetration Test N Value: 20 40 60 80
Shear Strength: 50 100 150 200 kPa

Combustible Vapour Reading (ppm): 250 500 750
Natural Moisture Content % Atterberg Limits (% Dry Weight): 20 40 60

SAMPLES

Natural Unit Wt. kN/m³

NOTES:

1. Borehole data requires interpretation by EXP before use by others
2. A 32 mm diameter slotted standpipe was installed upon completion.
3. Field work was supervised by an EXP representative.
4. See Notes on Sample Descriptions
5. Log to be read with EXP Report OTT-23015404-A0

WATER LEVEL RECORDS

Date	Water Level (m)	Hole Open To (m)

CORE DRILLING RECORD

Run No.	Depth (m)	% Rec.	RQD %

LOG OF BOREHOLE 265 CARLING BH LOGS.GPJ TROW OTTAWA.GDT 3/21/24

PROJECT: 981-2777

LOCATION: See Site Plan

DIP:

RECORD OF BOREHOLE 98-1

BORING DATE: August 21, 1998

SAMPLER HAMMER, kg; DROP, mm

SHEET 1 OF 1

DATUM: Local

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	RECOVERY %	LAB. TESTING	COMBUSTABLE VAPOUR ppm (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s	WATER CONTENT, PERCENT (Wp — W — Wl)	MONITORING INSTALLATIONS GROUNDWATER AND ENVIRONMENTAL OBSERVATIONS
0	200mm Diam. Power Auger / 200mm Diam. Hollow Stem	GROUND SURFACE		99.97									
		CONCRETE.		0.00									
		Compact grey crushed limestone. (FILL)		0.18	1	DO	50 / 30			⊕			Native Backfill; Bentonite Seal
1				98.90									
		LIMESTONE BEDROCK.		1.07									Sand
2													
3													
4													Screen
				95.18									
5		END OF BOREHOLE		4.79									W.L. in Screen at Elev. 98.34m on Aug. 21, 1998.
6													
7													
8													
9													
10													

DEPTH SCALE (ALONG HOLE)

1 to 50

Golder Associates

LOGGED: RJL

CHECKED:

DATA INPUT: 98-1-777.BHS WM

ENVIROM6

.....7.BHS

PROJECT: 981-2777

LOCATION: See Site Plan

DIP:

RECORD OF BOREHOLE 98-2

BORING DATE: August 21, 1998

SAMPLER HAMMER, kg; DROP, mm

SHEET 1 OF 1

DATUM: Local

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	RECOVERY %	LAB. TESTING	COMBUSTABLE VAPOUR ppm (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s / WATER CONTENT, PERCENT Wp W Wl	MONITORING INSTALLATIONS GROUNDWATER AND ENVIRONMENTAL OBSERVATIONS
0	200mm Diam. Power Auger 175mm Diam. Hollow Stem	GROUND SURFACE		102.68								
		ASPHALT.		0.06 / 102.41								
		Grey crushed limestone. (FILL)		0.27								
1		Very loose to compact brown fine to medium sand. (FILL)			1	50 DO	18					
2					2	50 DO	5					
3					3	50 DO	2					
4				98.57	4	50 DO	3					
		LIMESTONE BEDROCK.		4.11								
5												
6												
7												
8				94.72 / 7.96								
		END OF BOREHOLE										
9												
10												

Flush Cap
Sand
Native Backfill
Bentonite Seal
Sand
Screen

W.L. in screen at Elev. 98.89m on August 25, 1998.

DEPTH SCALE (ALONG HOLE)

1 to 50

Golder Associates

LOGGED: RJL

CHECKED:

DATA INPUT: 98-2-777.BHS WM

ENVIROM6

PROJECT: 981-2777

LOCATION: See Site Plan

DIP:

RECORD OF BOREHOLE 98-3

BORING DATE: August 21, 1998

SAMPLER HAMMER, kg; DROP, mm

SHEET 1 OF 1

DATUM: Local

DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	SAMPLES: RECOVERY %	SAMPLES: LAB. TESTING	COMBUSTABLE VAPOUR ppm (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s / WATER CONTENT, PERCENT (Wp, W, Wl)	MONITORING INSTALLATIONS GROUNDWATER AND ENVIRONMENTAL OBSERVATIONS
0	200mm Diam. Power Auger; 200mm Diam. Hollow Stem	GROUND SURFACE		101.68						⊕		
		ASPHALT.		0.06								
		Grey crushed limestone. (FILL)		101.41								
				0.27								
1		Loose brown SILTY SAND, and SANDY SILT, with cobbles.			1	50 DO	7					
2					2	50 DO	9			⊕		
				99.09								
				2.59								
3												
4		LIMESTONE BEDROCK.								⊕		
5												
6				95.40								
		END OF BOREHOLE		6.28								
7												
8												
9												
10												

Native Backfill

Bentonite Seal

Sand

Screen

W.L. in screen at Elev. 96.61m on August 25, 1998.

DEPTH SCALE (ALONG HOLE)

1 to 50

Golder Associates

LOGGED: RJL

CHECKED:

DATA INPUT: 98-3-777 BHS WM

ENVIROM6

Appendix E: Analytical Summary Tables

Table 1 - Analytical Results in Soil - PHC and VOC
265 Carling Avenue, Ottawa, Ontario
OTT-23015404-A0

Sample ID	UNITS	Provincial						
		MECP Table 3 Residential[1]	MECP Table 1 Residential[1]	BH98-1 S1	BH98-2 S4	BH98-3 S2	BH/MW24-1	BH/MW24-5 (DUP BH/MW24-1)
Sampling Date		Orange	**Bold**	**21-Aug-98**	**21-Aug-98**	**21-Aug-98**	**28-Feb-24**	**28-Feb-24**
Sample Depth (mbgs)				0.3 to 0.7	3.1 to 3.6	1.6 to 2.1	2.7 to 3.1	2.7 to 3.1
Petroleum Hydrocarbons								
F1 PHC (C6-C10)	µg/g	55	25	-	-	-	<5	<5
F2 PHC (C10-C16)	µg/g	98	10	-	-	-	<10	<10
F3 PHC (C16-C34)	µg/g	300	240	-	-	-	<50	<50
F4 PHC (C34-C50)	µg/g	2800	120	-	-	-	<50	<50
Total Petroluem Hydrocarbons	µg/g	NV	NV	<20	<20	<20	-	-
Volatile Organic Compounds								
Benzene	µg/g	0.21	0.02	<0.05	<0.05	<0.05	<0.02	<0.02
Ethylbenzene	µg/g	2	0.05	<0.1	<0.1	<0.1	<0.05	<0.05
Toluene	µg/g	2.3	0.2	<0.1	<0.1	<0.1	<0.05	<0.05
Xylene, m,p-	µg/g	NV	NV	<0.2	<0.2	<0.2	<0.05	<0.05
Xylene, o-	µg/g	NV	NV	<0.1	<0.1	<0.1	<0.05	<0.05
Total Xylenes	µg/g	3.1	0.05	-	-	-	<0.05	<0.05

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

Table 2 - Analytical Results in Soil - PAH
265 Carling Avenue, Ottawa, Ontario
OTT-23015404-A0

Sample ID	UNITS	Provincial		Samples	
		MECP Table 3 Residential[1]	MECP Table 1 Residential[1]	BH/MW24-1	BH/MW24-5 (DUP BH/MW24-1)
Sampling Date		Orange	**Bold**	**28-Feb-24**	**28-Feb-24**
Sample Depth (mbgs)				2.7 to 3.1	2.7 to 3.1
Polycyclic Aromatic Hydrocarbons					
Acenaphthene	µg/g	7.9	0.072	<0.05	<0.05
Acenaphthylene	µg/g	0.15	0.093	<0.05	<0.05
Anthracene	µg/g	0.67	0.16	<0.05	0.1
Benzo(a)anthracene	µg/g	0.5	0.36	0.09	0.14
Benzo(a)pyrene	µg/g	0.3	0.3	0.1	0.12
Benzo(b)fluoranthene	µg/g	0.78	0.47	0.19	0.29
Benzo(g,h,i)perylene	µg/g	6.6	0.68	0.09	0.08
Benzo(k)fluoranthene	µg/g	0.78	0.48	0.16	0.17
Chrysene	µg/g	7	2.8	0.18	0.26
Dibenzo(a,h)anthracene	µg/g	0.1	0.1	<0.05	<0.05
Fluoranthene	µg/g	0.69	0.56	0.24	0.52
Fluorene	µg/g	62	0.12	<0.05	<0.05
Indeno(1,2,3,-cd)pyrene	µg/g	0.38	0.23	<0.05	<0.05
Methylnaphthalene 2-(1-)	µg/g	0.99	0.59	<0.05	<0.05
Naphthalene	µg/g	0.6	0.09	<0.05	<0.05
Phenanthrene	µg/g	6.2	0.69	0.14	0.33
Pyrene	µg/g	78	1	0.19	0.41

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

Table 3 - Analytical Results in Soil - Inorganic Parameters
265 Carling Avenue, Ottawa, Ontario
OTT-23015404-A0

Sample ID	UNITS	Provincial		Samples	
		MECP Table 3 Residential[1]	MECP Table 1 Residential[1]	BH/MW24-1	BH/MW24-5 (DUP BH/MW24-1)
Sampling Date		Orange	**Bold**	**28-Feb-24**	**28-Feb-24**
Sample Depth (mbgs)				2.7 to 3.1	2.7 to 3.1
Metals					
Antimony	µg/g	7.5	1.3	<0.8	<0.8
Arsenic	µg/g	18	18	1	1
Barium	µg/g	390	220	42.7	26.9
Beryllium	µg/g	4	2.5	<0.5	<0.5
Boron (Total)	µg/g	120	36	<5	<5
Cadmium	µg/g	1.2	1.2	<0.5	<0.5
Chromium (Total)	µg/g	160	70	7	6
Cobalt	µg/g	22	21	2.8	2.5
Copper	µg/g	140	92	7.2	6.2
Lead	µg/g	120	120	21	17
Molybdenum	µg/g	6.9	2	<0.5	<0.5
Nickel	µg/g	100	82	5	4
Selenium	µg/g	2.4	1.5	<0.8	<0.8
Silver	µg/g	20	0.5	<0.5	<0.5
Thallium	µg/g	1	1	<0.5	<0.5
Uranium	µg/g	23	2.5	<0.50	<0.50
Vanadium	µg/g	86	86	12.4	12.1
Zinc	µg/g	340	290	33	27

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

Table 4 - Analytical Results in Groundwater - PHC and BTEX
265 Carling Avenue, Ottawa, Ontario
OTT-23015404-A0

Sample ID	UNITS	Provincial	Samples					
		MECP Table 3 Residential[1]	MW98-1	MW98-2	MW98-3	MW24-2	MW24-5 (DUP MW24-2)	Trip Blank
Sampling Date			**6-Mar-24**	**7-Mar-24**	**6-Mar-24**	**6-Mar-24**	**6-Mar-24**	**6-Mar-24**
Screen Depth (mbgs)			1.7 to 4.8	4.8 to 7.9	1.7 to 6.3	1.5 to 4.6	1.5 to 4.6	N/A
Petroleum Hydrocarbons								
F1 PHC (C6-C10)	µg/L	750	<25	<25	<25	<25	<25	-
F2 PHC (C10-C16)	µg/L	150	<100	<100	<100	<100	<100	-
F3 PHC (C16-C34)	µg/L	500	<100	<100	<100	<100	<100	-
F4 PHC (C34-C50)	µg/L	500	<100	<100	<100	<100	<100	-
Volatile Organic Compounds								
Benzene	µg/L	44	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Ethylbenzene	µg/L	2300	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Toluene	µg/L	18000	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
m & p-Xylene	µg/L	NV	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
o-Xylene	µg/L	NV	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Xylenes (Total)	µg/L	4200	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20

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)

ND (RDL) Non-detectable results are shown as "ND (RDL)" where RDL represents the reporting detection limit.
NV No Value
- Parameter not analyzed
m bgs Metres below ground surface
Indicates groundwater exceedance of MECP Table 3 SCS

Table 5 - Maximum Concentrations in Soil
265 Carling Avenue, Ottawa, Ontario
OTT-23015404-A0

Parameter	Sample Location	Sample Depth (m bgs)	Sampling Date	Maximum Concentration	MECP Table 3 Residential
Petroleum Hydrocarbons					
F1 PHC (C6-C10)	BH/MW24-1	2.7 to 3.1	28-Feb-24	<5	55
F2 PHC (C10-C16)	BH/MW24-1	2.7 to 3.1	28-Feb-24	<10	98
F3 PHC (C16-C34)	BH/MW24-1	2.7 to 3.1	28-Feb-24	<50	300
F4 PHC (C34-C50)	BH/MW24-1	2.7 to 3.1	28-Feb-24	<50	2800
Volatile Organic Compounds					
Benzene	All sample locations	0.3 to 3.6	All 1998 and 2024 sampling dates	<0.02	0.21
Ethylbenzene	All sample locations	0.3 to 3.6	All 1998 and 2024 sampling dates	<0.05	2
Toluene	All sample locations	0.3 to 3.6	All 1998 and 2024 sampling dates	<0.05	2.3
Xylene, m,p-	All sample locations	0.3 to 3.6	All 1998 and 2024 sampling dates	<0.05	NV
Xylene, o-	All sample locations	0.3 to 3.6	All 1998 and 2024 sampling dates	<0.05	NV
Total Xylenes	All sample locations	0.3 to 3.6	All 1998 and 2024 sampling dates	<0.05	3.1
Polycyclic Aromatic Hydrocarbons					
Acenaphthene	BH/MW24-1	2.7 to 3.1	28-Feb-24	<0.05	7.9
Acenaphthylene	BH/MW24-1	2.7 to 3.1	28-Feb-24	<0.05	0.15
Anthracene	BH/MW24-1	2.7 to 3.1	28-Feb-24	0.1	0.67
Benzo(a)anthracene	BH/MW24-1	2.7 to 3.1	28-Feb-24	0.14	0.5
Benzo(a)pyrene	BH/MW24-1	2.7 to 3.1	28-Feb-24	0.12	0.3
Benzo(b)fluoranthene	BH/MW24-1	2.7 to 3.1	28-Feb-24	0.29	0.78
Benzo(g,h,i)perylene	BH/MW24-1	2.7 to 3.1	28-Feb-24	0.08	6.6
Benzo(k)fluoranthene	BH/MW24-1	2.7 to 3.1	28-Feb-24	0.17	0.78
Chrysene	BH/MW24-1	2.7 to 3.1	28-Feb-24	0.26	7
Dibenzo(a,h)anthracene	BH/MW24-1	2.7 to 3.1	28-Feb-24	<0.05	0.1
Fluoranthene	BH/MW24-1	2.7 to 3.1	28-Feb-24	0.52	0.69
Fluorene	BH/MW24-1	2.7 to 3.1	28-Feb-24	<0.05	62
Indeno(1,2,3,-cd)pyrene	BH/MW24-1	2.7 to 3.1	28-Feb-24	<0.05	0.38
Methylnaphthalene 2-(1-)	BH/MW24-1	2.7 to 3.1	28-Feb-24	<0.05	0.99
Naphthalene	BH/MW24-1	2.7 to 3.1	28-Feb-24	<0.05	0.6
Phenanthrene	BH/MW24-1	2.7 to 3.1	28-Feb-24	0.33	6.2
Pyrene	BH/MW24-1	2.7 to 3.1	28-Feb-24	0.41	78
Metals					
Antimony	BH/MW24-1	2.7 to 3.1	28-Feb-24	<0.8	7.5
Arsenic	BH/MW24-1	2.7 to 3.1	28-Feb-24	1	18
Barium	BH/MW24-1	2.7 to 3.1	28-Feb-24	42.7	390
Beryllium	BH/MW24-1	2.7 to 3.1	28-Feb-24	<0.5	4
Boron (Total)	BH/MW24-1	2.7 to 3.1	28-Feb-24	<5	120
Cadmium	BH/MW24-1	2.7 to 3.1	28-Feb-24	<0.5	1.2
Chromium (Total)	BH/MW24-1	2.7 to 3.1	28-Feb-24	7	160
Cobalt	BH/MW24-1	2.7 to 3.1	28-Feb-24	2.8	22
Copper	BH/MW24-1	2.7 to 3.1	28-Feb-24	7.2	140
Lead	BH/MW24-1	2.7 to 3.1	28-Feb-24	21	120
Molybdenum	BH/MW24-1	2.7 to 3.1	28-Feb-24	<0.5	6.9
Nickel	BH/MW24-1	2.7 to 3.1	28-Feb-24	5	100
Selenium	BH/MW24-1	2.7 to 3.1	28-Feb-24	<0.8	2.4
Silver	BH/MW24-1	2.7 to 3.1	28-Feb-24	<0.5	20
Thallium	BH/MW24-1	2.7 to 3.1	28-Feb-24	<0.5	1
Uranium	BH/MW24-1	2.7 to 3.1	28-Feb-24	<0.50	23
Vanadium	BH/MW24-1	2.7 to 3.1	28-Feb-24	12.4	86
Zinc	BH/MW24-1	2.7 to 3.1	28-Feb-24	33	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 6 - Maximum Concentrations in Groundwater
265 Carling Avenue, Ottawa, Ontario
OTT-23015404-A0

Parameter	Sample Location	Sample Depth (m bgs)	Sampling Date	Maximum Concentration	MECP Table 3 Residential
Petroleum Hydrocarbons					
F1 PHC (C6-C10)	All sample locations	1.5 to 7.9	6-Mar-24	<25	750
F2 PHC (C10-C16)	All sample locations	1.5 to 7.9	6-Mar-24	<100	150
F3 PHC (C16-C34)	All sample locations	1.5 to 7.9	6-Mar-24	<200	500
F4 PHC (C34-C50)	All sample locations	1.5 to 7.9	6-Mar-24	<200	500
Volatile Organic Compounds					
Benzene	All sample locations	1.5 to 7.9	6-Mar-24	<0.20	44
Ethylbenzene	All sample locations	1.5 to 7.9	6-Mar-24	<0.20	2300
Toluene	All sample locations	1.5 to 7.9	6-Mar-24	<0.20	18000
Xylene, m,p-	All sample locations	1.5 to 7.9	6-Mar-24	<0.40	NV
Xylene, o-	All sample locations	1.5 to 7.9	6-Mar-24	<0.20	NV
Total Xylenes	All sample locations	1.5 to 7.9	6-Mar-24	<0.40	4200

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 7 - Relative Percent Differences - PHC and VOC in Soil
265 Carling Avenue, Ottawa, Ontario
OTT-23015404-A0

Parameter	Units	RDL	BH/MW24-1	BH/MW24-5	RPD (%)	Alert Limit (%)
			28-Feb-2024	28-Feb-2024		
Petroleum Hydrocarbons						
F1 PHC (C6 - C10) - BTEX	ug/g dry	10	<5	<5	nc	60
F2 PHC (C10-C16)	ug/g dry	5	<10	<10	nc	60
F3 PHC (C16-C34)	ug/g dry	10	<50	<50	nc	60
F4 PHC (C34-C50)	ug/g dry	10	<50	<50	nc	60
Volatiles						
Benzene	ug/g dry	0.0060	<0.02	<0.02	nc	100
Ethylbenzene	ug/g dry	0.010	<0.05	<0.05	nc	100
Toluene	ug/g dry	0.020	<0.05	<0.05	nc	100
Xylenes, total	ug/g dry	0.020	<0.05	<0.05	nc	100

NOTES:

Analysis by Caduceon Environmental Labratories

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 8 - Relative Percent Differences - PAH in Soil
265 Carling Avenue, Ottawa, Ontario
OTT-23015404-A0

Parameter	Units	RDL	BH/MW24-1	BH/MW24-5	RPD (%)	Alert Limit (%)
			28-Feb-2024	28-Feb-2024		
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	ug/g dry	0.05	<0.05	<0.05	nc	80
Acenaphthylene	ug/g dry	0.05	<0.05	<0.05	nc	80
Anthracene	ug/g dry	0.05	<0.05	0.1	nc	80
Benzo(a)anthracene	ug/g dry	0.05	0.09	0.14	nc	80
Benzo(a)pyrene	ug/g dry	0.05	0.1	0.12	nc	80
Benzo(b)fluoranthene	ug/g dry	0.05	0.19	0.29	nc	80
Benzo(g,h,i)perylene	ug/g dry	0.05	0.09	0.1	nc	80
Benzo(k)fluoranthene	ug/g dry	0.05	0.16	0.2	nc	80
Chrysene	ug/g dry	0.05	0.18	0.26	nc	80
Dibenzo(a,h)anthracene	ug/g dry	0.05	<0.05	<0.05	nc	80
Fluoranthene	ug/g dry	0.05	0.24	0.52	nc	80
Fluorene	ug/g dry	0.05	<0.05	<0.05	nc	80
Indeno(1,2,3,-cd)pyrene	ug/g dry	0.05	<0.05	<0.05	nc	80
Methylnaphthalene 2-(1-)	ug/g dry	0.05	<0.05	<0.05	nc	80
Naphthalene	ug/g dry	0.05	<0.05	<0.05	nc	80
Phenanthrene	ug/g dry	0.05	0.14	0.33	nc	80
Pyrene	ug/g dry	0.05	0.19	0.41	nc	80

NOTES:

Analysis by Caduceon Environmental Labratories

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 9 - Relative Percent Differences - Inorganics in Soil
265 Carling Avenue, Ottawa, Ontario
OTT-23015404-A0

Parameter	Units	RDL	BH/MW24-1	BH/MW24-5	RPD (%)	Alert Limit (%)
			28-Feb-2024	28-Feb-2024		
Metals						
Antimony	ug/g dry	0.5	<0.8	<0.8	nc	60
Arsenic	ug/g dry	0.5	1	1	nc	60
Barium	ug/g dry	1	42.7	26.9	45	60
Beryllium	ug/g dry	0.2	<0.5	<0.5	nc	60
Boron	ug/g dry	0.5	<5	<5	nc	60
Cadmium	ug/g dry	0.5	<0.5	<0.5	nc	60
Chromium	ug/g dry	1	7	6	15	60
Cobalt	ug/g dry	1	2.8	2.5	nc	60
Copper	ug/g dry	1	7.2	6.2	15	60
Lead	ug/g dry	5	21	17	nc	60
Molybdenum	ug/g dry	1	<0.5	<0.5	nc	60
Nickel	ug/g dry	1	5	4	nc	60
Selenium	ug/g dry	0.5	<0.8	<0.8	nc	60
Silver	ug/g dry	0.2	<0.5	<0.5	nc	60
Thallium	ug/g dry	0.1	<0.5	<0.5	nc	60
Uranium	ug/g dry	0.100	<0.50	<0.50	nc	60
Vanadium	ug/g dry	1.0	12.4	12.1	2	60
Zinc	ug/g dry	3.0	33	27	20	60

NOTES:

Analysis by Caduceon Environmental Labratories

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 10 - Relative Percent Differences - PHC and BTEX in Groundwater
265 Carling Avenue, Ottawa, Ontario
OTT-23015404-A0

Parameter	Units	RDL	MW24-2	MW24-5	RPD (%)	Alert Limit (%)
			6-Mar-2024	6-Mar-2024		
Petroleum Hydrocarbons						
F1 PHC (C6 - C10) - BTEX	ug/g dry	25	<25	<25	nc	60
F2 PHC (C10-C16)	ug/g dry	100	<100	<100	nc	60
F3 PHC (C16-C34)	ug/g dry	200	<100	<100	nc	60
F4 PHC (C34-C50)	ug/g dry	200	<100	<100	nc	60
Volatiles						
Benzene	ug/g dry	0.0060	<0.20	<0.20	nc	100
Ethylbenzene	ug/g dry	0.010	<0.20	<0.20	nc	100
Toluene	ug/g dry	0.020	<0.10	<0.10	nc	100
Xylenes, total	ug/g dry	0.040	<0.20	<0.20	nc	100

NOTES:

Analysis by Bueau Veritas Labratories

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**

Appendix F: Laboratory Certificates of Analysis

AGAT Laboratories

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FAX (418)653-2335
http://www.agatlabs.com

CLIENT NAME: EXP SERVICES INC
2650 QUEENSVIEW DRIVE, UNIT 100
OTTAWA, ON K2B8H6
(613) 688-1899
ATTENTION TO: Mark McCalla
PROJECT: OTT-23015404-A0
AGAT WORK ORDER: 24Z124629
SOIL ANALYSIS REVIEWED BY: Nivine Basily, Inorganic Team Lead
TRACE ORGANICS REVIEWED BY: Neli Popnikolova, Senior Chemist
DATE REPORTED: Mar 07, 2024
PAGES (INCLUDING COVER): 12
VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (418) 266-5511

Notes

Disclaimer:

- *All work conducted herein has been done using accepted standard protocols, and generally accepted practices and methods. AGAT test methods may incorporate modifications from the specified reference methods to improve performance.*
- *All samples will be disposed of within 30 days after receipt unless a Long Term Storage Agreement is signed and returned. Some specialty analysis may be exempt, please contact your Client Project Manager for details.*
- *AGAT's liability in connection with any delay, performance or non-performance of these services is only to the Client and does not extend to any other third party. Unless expressly agreed otherwise in writing, AGAT's liability is limited to the actual cost of the specific analysis or analyses included in the services.*
- *This Certificate shall not be reproduced except in full, without the written approval of the laboratory.*
- *The test results reported herewith relate only to the samples as received by the laboratory.*
- *Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, warranties of merchantability, fitness for a particular purpose, or non-infringement. AGAT assumes no responsibility for any errors or omissions in the guidelines contained in this document.*
- *All reportable information as specified by ISO/IEC 17025:2017 is available from AGAT Laboratories upon request.*
- *For environmental samples in the Province of Quebec: The analysis is performed on and results apply to samples as received. A temperature above 6°C upon receipt, as indicated in the Sample Reception Notification (SRN), could indicate the integrity of the samples has been compromised if the delay between sampling and submission to the laboratory could not be minimized.*

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Certificate of Analysis

AGAT WORK ORDER: 24Z124629

PROJECT: OTT-23015404-A0

CLIENT NAME: EXP SERVICES INC

SAMPLING SITE:

ATTENTION TO: Mark McCalla

SAMPLED BY:Philip Oliveira

O. Reg. 153(511) - Metals (Including Hydrides) (Soil)

DATE RECEIVED: 2024-02-28

DATE REPORTED: 2024-03-07

				SAMPLE DESCRIPTION:	BH/MW24-1	BH/MW24-5
				SAMPLE TYPE:	Soil	Soil
				DATE SAMPLED:	2024-02-28 10:45	2024-02-28 09:45
Parameter	Unit	G / S	RDL		5687143	5687146
Antimony	µg/g		0.8		<0.8	<0.8
Arsenic	µg/g		1		1	1
Barium	µg/g		2.0		42.7	26.9
Beryllium	µg/g		0.5		<0.5	<0.5
Boron	µg/g		5		<5	<5
Cadmium	µg/g		0.5		<0.5	<0.5
Chromium	µg/g		5		7	6
Cobalt	µg/g		0.8		2.8	2.5
Copper	µg/g		1.0		7.2	6.2
Lead	µg/g		1		21	17
Molybdenum	µg/g		0.5		<0.5	<0.5
Nickel	µg/g		1		5	4
Selenium	µg/g		0.8		<0.8	<0.8
Silver	µg/g		0.5		<0.5	<0.5
Thallium	µg/g		0.5		<0.5	<0.5
Uranium	µg/g		0.50		<0.50	<0.50
Vanadium	µg/g		2.0		12.4	12.1
Zinc	µg/g		5		33	27

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:

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Certificate of Analysis

AGAT WORK ORDER: 24Z124629

PROJECT: OTT-23015404-A0

CLIENT NAME: EXP SERVICES INC

ATTENTION TO: Mark McCalla

SAMPLING SITE:

SAMPLED BY:Philip Oliveira

O. Reg. 153(511) - ORPs (Soil)

DATE RECEIVED: 2024-02-28

DATE REPORTED: 2024-03-07

				SAMPLE DESCRIPTION:	BH/MW24-1	BH/MW24-5
				SAMPLE TYPE:	Soil	Soil
				DATE SAMPLED:	2024-02-28 10:45	2024-02-28 09:45
Parameter	**Unit**	**G / S**	**RDL**		**5687143**	**5687146**
pH, 2:1 CaCl2 Extraction	pH Units		NA		7.70	7.97

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

5687143-5687146 pH was determined on the 0.01M CaCl2 extract obtained from 2:1 leaching procedure (2 parts extraction fluid:1 part wet soil).

Analysis performed at AGAT Toronto (unless marked by *)

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Certificate of Analysis

AGAT WORK ORDER: 24Z124629

PROJECT: OTT-23015404-A0

CLIENT NAME: EXP SERVICES INC

ATTENTION TO: Mark McCalla

SAMPLING SITE:

SAMPLED BY:Philip Oliveira

O. Reg. 153(511) - PAHs (Soil)

DATE RECEIVED: 2024-02-28

DATE REPORTED: 2024-03-07

				SAMPLE DESCRIPTION:	BH/MW24-1	BH/MW24-5
				SAMPLE TYPE:	Soil	Soil
				DATE SAMPLED:	2024-02-28 10:45	2024-02-28 09:45
Parameter	**Unit**	**G / S**	**RDL**		**5687143**	**5687146**
Naphthalene	µg/g		0.05		<0.05	<0.05
Acenaphthylene	µg/g		0.05		<0.05	<0.05
Acenaphthene	µg/g		0.05		<0.05	<0.05
Fluorene	µg/g		0.05		<0.05	<0.05
Phenanthrene	µg/g		0.05		0.14	0.33
Anthracene	µg/g		0.05		<0.05	0.10
Fluoranthene	µg/g		0.05		0.24	0.52
Pyrene	µg/g		0.05		0.19	0.41
Benz(a)anthracene	µg/g		0.05		0.09	0.14
Chrysene	µg/g		0.05		0.18	0.26
Benzo(b)fluoranthene	µg/g		0.05		0.19	0.29
Benzo(k)fluoranthene	µg/g		0.05		0.16	0.17
Benzo(a)pyrene	µg/g		0.05		0.10	0.12
Indeno(1,2,3-cd)pyrene	µg/g		0.05		<0.05	<0.05
Dibenz(a,h)anthracene	µg/g		0.05		<0.05	<0.05
Benzo(g,h,i)perylene	µg/g		0.05		0.09	0.08
2-and 1-methyl Naphthalene	µg/g		0.05		<0.05	<0.05
Moisture Content	%		0.1		9.8	8.3
Surrogate	**Unit**	**Acceptable Limits**				
Naphthalene-d8	%	50-140			85	65
Acridine-d9	%	50-140			75	85
Terphenyl-d14	%	50-140			80	75

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

5687143-5687146 Results are based on the dry weight of the soil.
Note: The result for Benzo(b)Fluoranthene is the total of the Benzo(b)&j)Fluoranthene isomers because the isomers co-elute on the GC column.
2- and 1-Methyl Naphthalene is a calculated parameter. The calculated value is the sum of 2-Methyl Naphthalene and 1-Methyl Naphthalene.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By: N Popowich

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Certificate of Analysis

AGAT WORK ORDER: 24Z124629

PROJECT: OTT-23015404-A0

CLIENT NAME: EXP SERVICES INC

ATTENTION TO: Mark McCalla

SAMPLING SITE:

SAMPLED BY:Philip Oliveira

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

DATE RECEIVED: 2024-02-28

DATE REPORTED: 2024-03-07

				SAMPLE DESCRIPTION:	BH/MW24-1	BH/MW24-5
				SAMPLE TYPE:	Soil	Soil
				DATE SAMPLED:	2024-02-28 10:45	2024-02-28 09:45
Parameter	**Unit**	**G / S**	**RDL**		**5687143**	**5687146**
Benzene	µg/g		0.02		<0.02	<0.02
Toluene	µg/g		0.05		<0.05	<0.05
Ethylbenzene	µg/g		0.05		<0.05	<0.05
m & p-Xylene	µg/g		0.05		<0.05	<0.05
o-Xylene	µg/g		0.05		<0.05	<0.05
Xylenes (Total)	µg/g		0.05		<0.05	<0.05
F1 (C6 to C10)	µg/g		5		<5	<5
F1 (C6 to C10) minus BTEX	µg/g		5		<5	<5
F2 (C10 to C16)	µg/g		10		<10	<10
F3 (C16 to C34)	µg/g		50		<50	<50
F4 (C34 to C50)	µg/g		50		<50	<50
Gravimetric Heavy Hydrocarbons	µg/g		50		NA	NA
Moisture Content	%		0.1		15.2	14.0
Surrogate	**Unit**	**Acceptable Limits**				
Toluene-d8	% Recovery	60-140			91	96
Terphenyl	%	60-140			63	98

Certified By:

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Certificate of Analysis

AGAT WORK ORDER: 24Z124629

PROJECT: OTT-23015404-A0

CLIENT NAME: EXP SERVICES INC

ATTENTION TO: Mark McCalla

SAMPLING SITE:

SAMPLED BY:Philip Oliveira

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

DATE RECEIVED: 2024-02-28 **DATE REPORTED: 2024-03-07**

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

5687143-5687146 Results are based on sample dry weight.
The C6-C10 fraction is calculated using Toluene response factor.
Xylenes is a calculated parameter. The calculated value is the sum of m&p-Xylene and o-Xylene.
C6–C10 (F1 minus BTEX) is a calculated parameter. The calculated value is F1 minus BTEX.
The calculated parameters are non-accredited. The parameters that are components of the calculation are accredited.
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and n-C34.
Gravimetric Heavy Hydrocarbons are not included in the Total C16-C50 and are only determined if the chromatogram of the C34 - C50 hydrocarbons indicates that hydrocarbons >C50 are present.
The chromatogram has returned to baseline by the retention time of nC50.
Total C6 - C50 results are corrected for BTEX contribution.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
nC10, nC16 and nC34 response factors are within 10% of their average.
C50 response factor is within 70% of nC10 + nC16 + nC34 average.
Linearity is within 15%.
Extraction and holding times were met for this sample.
Fractions 1-4 are quantified with the contribution of PAHs. Under Ontario Regulation 153, results are considered valid without determining the PAH contribution if not requested by the client.
Quality Control Data is available upon request.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By: N Popowkolof

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Quality Assurance

CLIENT NAME: EXP SERVICES INC

AGAT WORK ORDER: 24Z124629

PROJECT: OTT-23015404-A0

ATTENTION TO: Mark McCalla

SAMPLING SITE:

SAMPLED BY:Philip Oliveira

Soil Analysis

RPT Date: Mar 07, 2024			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - Metals (Including Hydrides) (Soil)															
Antimony	5687143	5687143	<0.8	<0.8	NA	< 0.8	105%	70%	130%	104%	80%	120%	107%	70%	130%
Arsenic	5687143	5687143	1	1	NA	< 1	106%	70%	130%	110%	80%	120%	108%	70%	130%
Barium	5687143	5687143	42.7	36.8	14.8%	< 2.0	115%	70%	130%	107%	80%	120%	113%	70%	130%
Beryllium	5687143	5687143	<0.5	<0.5	NA	< 0.5	99%	70%	130%	102%	80%	120%	98%	70%	130%
Boron	5687143	5687143	<5	<5	NA	< 5	73%	70%	130%	83%	80%	120%	76%	70%	130%
Cadmium	5687143	5687143	<0.5	<0.5	NA	< 0.5	116%	70%	130%	98%	80%	120%	105%	70%	130%
Chromium	5687143	5687143	7	7	NA	< 5	102%	70%	130%	93%	80%	120%	109%	70%	130%
Cobalt	5687143	5687143	2.8	3.1	NA	< 0.8	91%	70%	130%	105%	80%	120%	107%	70%	130%
Copper	5687143	5687143	7.2	7.5	4.1%	< 1.0	100%	70%	130%	96%	80%	120%	95%	70%	130%
Lead	5687143	5687143	21	25	17.4%	< 1	112%	70%	130%	92%	80%	120%	103%	70%	130%
Molybdenum	5687143	5687143	<0.5	<0.5	NA	< 0.5	110%	70%	130%	103%	80%	120%	103%	70%	130%
Nickel	5687143	5687143	5	5	0.0%	< 1	90%	70%	130%	95%	80%	120%	95%	70%	130%
Selenium	5687143	5687143	<0.8	<0.8	NA	< 0.8	96%	70%	130%	100%	80%	120%	100%	70%	130%
Silver	5687143	5687143	<0.5	<0.5	NA	< 0.5	106%	70%	130%	101%	80%	120%	97%	70%	130%
Thallium	5687143	5687143	<0.5	<0.5	NA	< 0.5	116%	70%	130%	105%	80%	120%	105%	70%	130%
Uranium	5687143	5687143	<0.50	0.55	NA	< 0.50	106%	70%	130%	103%	80%	120%	97%	70%	130%
Vanadium	5687143	5687143	12.4	13.5	8.5%	< 2.0	125%	70%	130%	92%	80%	120%	97%	70%	130%
Zinc	5687143	5687143	33	38	14.1%	< 5	106%	70%	130%	99%	80%	120%	101%	70%	130%

Comments: NA Signifies Not Applicable.
Duplicate NA: results are under 5X the RDL and will not be calculated.

O. Reg. 153(511) - ORPs (Soil)									
pH, 2:1 CaCl2 Extraction	5713121	7.14	7.22	1.1%	NA	100%	80%	120%	

Comments: NA signifies Not Applicable.
pH duplicates QA acceptance criteria was met relative as stated in Table 5-15 of Analytical Protocol document.

Duplicate NA: results are under 5X the RDL and will not be calculated.

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Quality Assurance

CLIENT NAME: EXP SERVICES INC

AGAT WORK ORDER: 24Z124629

PROJECT: OTT-23015404-A0

ATTENTION TO: Mark McCalla

SAMPLING SITE:

SAMPLED BY:Philip Oliveira

Trace Organics Analysis

RPT Date: Mar 07, 2024			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - PHCs F1 - F4 (Soil)															
Benzene	5688459		<0.02	<0.02	NA	< 0.02	77%	60%	140%	116%	60%	140%	77%	60%	140%
Toluene	5688459		<0.05	<0.05	NA	< 0.05	105%	60%	140%	110%	60%	140%	96%	60%	140%
Ethylbenzene	5688459		<0.05	<0.05	NA	< 0.05	100%	60%	140%	76%	60%	140%	82%	60%	140%
m & p-Xylene	5688459		<0.05	<0.05	NA	< 0.05	89%	60%	140%	107%	60%	140%	94%	60%	140%
o-Xylene	5688459		<0.05	<0.05	NA	< 0.05	83%	60%	140%	72%	60%	140%	110%	60%	140%
F1 (C6 to C10)	5688459		<5	<5	NA	< 5	95%	60%	140%	99%	60%	140%	94%	60%	140%
F2 (C10 to C16)	5676428		< 10	< 10	NA	< 10	118%	60%	140%	108%	60%	140%	104%	60%	140%
F3 (C16 to C34)	5676428		< 50	< 50	NA	< 50	121%	60%	140%	106%	60%	140%	116%	60%	140%
F4 (C34 to C50)	5676428		< 50	< 50	NA	< 50	61%	60%	140%	76%	60%	140%	101%	60%	140%
Comments: When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).															
O. Reg. 153(511) - PAHs (Soil)															
Naphthalene	5727046		<0.05	<0.05	NA	< 0.05	109%	50%	140%	73%	50%	140%	81%	50%	140%
Acenaphthylene	5727046		<0.05	<0.05	NA	< 0.05	115%	50%	140%	68%	50%	140%	75%	50%	140%
Acenaphthene	5727046		<0.05	<0.05	NA	< 0.05	107%	50%	140%	70%	50%	140%	70%	50%	140%
Fluorene	5727046		<0.05	<0.05	NA	< 0.05	105%	50%	140%	73%	50%	140%	86%	50%	140%
Phenanthrene	5727046		0.25	0.31	21.4%	< 0.05	106%	50%	140%	78%	50%	140%	75%	50%	140%
Anthracene	5727046		0.06	0.08	NA	< 0.05	91%	50%	140%	73%	50%	140%	88%	50%	140%
Fluoranthene	5727046		0.34	0.50	38.1%	< 0.05	102%	50%	140%	98%	50%	140%	73%	50%	140%
Pyrene	5727046		0.27	0.21	NA	< 0.05	97%	50%	140%	93%	50%	140%	68%	50%	140%
Benz(a)anthracene	5727046		0.07	0.08	NA	< 0.05	110%	50%	140%	70%	50%	140%	65%	50%	140%
Chrysene	5727046		0.14	0.17	NA	< 0.05	108%	50%	140%	75%	50%	140%	73%	50%	140%
Benzo(b)fluoranthene	5727046		0.14	0.13	NA	< 0.05	98%	50%	140%	100%	50%	140%	80%	50%	140%
Benzo(k)fluoranthene	5727046		0.06	0.08	NA	< 0.05	82%	50%	140%	103%	50%	140%	73%	50%	140%
Benzo(a)pyrene	5727046		0.06	0.08	NA	< 0.05	98%	50%	140%	93%	50%	140%	94%	50%	140%
Indeno(1,2,3-cd)pyrene	5727046		<0.05	<0.05	NA	< 0.05	106%	50%	140%	95%	50%	140%	102%	50%	140%
Dibenz(a,h)anthracene	5727046		<0.05	<0.05	NA	< 0.05	86%	50%	140%	73%	50%	140%	78%	50%	140%
Benzo(g,h,i)perylene	5727046		<0.05	<0.05	NA	< 0.05	97%	50%	140%	80%	50%	140%	101%	50%	140%

Certified By: N Popowkof

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Method Summary

CLIENT NAME: EXP SERVICES INC

AGAT WORK ORDER: 24Z124629

PROJECT: OTT-23015404-A0

ATTENTION TO: Mark McCalla

SAMPLING SITE:

SAMPLED BY:Philip Oliveira

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Antimony	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Arsenic	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Barium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Beryllium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Boron	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Cadmium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Chromium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Cobalt	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Copper	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Lead	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Molybdenum	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Nickel	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Selenium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Silver	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Thallium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Uranium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Vanadium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Zinc	MET 93 -6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
pH, 2:1 CaCl2 Extraction	INOR-93-6075	modified from EPA 9045D, MCKEAGUE 3.11 E3137	PC TITRATE

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Québec, Québec
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TEL (418)266-5511
FAX (418)653-2335
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Method Summary

CLIENT NAME: EXP SERVICES INC

AGAT WORK ORDER: 24Z124629

PROJECT: OTT-23015404-A0

ATTENTION TO: Mark McCalla

SAMPLING SITE:

SAMPLED BY:Philip Oliveira

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Naphthalene	ORG-91-5106	modified from EPA 3570 and EPA 8270E	GC/MS
Acenaphthylene	ORG-91-5106	modified from EPA 3570 and EPA 8270E	GC/MS
Acenaphthene	ORG-91-5106	modified from EPA 3570 and EPA 8270E	GC/MS
Fluorene	ORG-91-5106	modified from EPA 3570 and EPA 8270E	GC/MS
Phenanthrene	ORG-91-5106	modified from EPA 3570 and EPA 8270E	GC/MS
Anthracene	ORG-91-5106	modified from EPA 3570 and EPA 8270E	GC/MS
Fluoranthene	ORG-91-5106	modified from EPA 3570 and EPA 8270E	GC/MS
Pyrene	ORG-91-5106	modified from EPA 3570 and EPA 8270E	GC/MS
Benz(a)anthracene	ORG-91-5106	modified from EPA 3570 and EPA 8270E	GC/MS
Chrysene	ORG-91-5106	modified from EPA 3570 and EPA 8270E	GC/MS
Benzo(b)fluoranthene	ORG-91-5106	modified from EPA 3570 and EPA 8270E	GC/MS
Benzo(k)fluoranthene	ORG-91-5106	modified from EPA 3570 and EPA 8270E	GC/MS
Benzo(a)pyrene	ORG-91-5106	modified from EPA 3570 and EPA 8270E	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-91-5106	modified from EPA 3570 and EPA 8270E	GC/MS
Dibenz(a,h)anthracene	ORG-91-5106	modified from EPA 3570 and EPA 8270E	GC/MS
Benzo(g,h,i)perylene	ORG-91-5106	modified from EPA 3570 and EPA 8270E	GC/MS
2-and 1-methyl Naphthalene	ORG-91-5106	modified from EPA 3570 and EPA 8270E	GC/MS
Naphthalene-d8	ORG-91-5106	modified from EPA 3570 and EPA 8270E	GC/MS
Acridine-d9	ORG-91-5106	modified from EPA 3570 and EPA 8270E	GC/MS
Terphenyl-d14	ORG-91-5106	modified from EPA 3570 and EPA 8270E	GC/MS
Moisture Content	VOL-91-5009	modified from CCME Tier 1 Method	BALANCE
Benzene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
Toluene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
Ethylbenzene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
m & p-Xylene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
o-Xylene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
Xylenes (Total)	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
F1 (C6 to C10)	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/FID
F1 (C6 to C10) minus BTEX	VOL-91-5009	modified from CCME Tier 1 Method	P&T GC/FID
Toluene-d8	VOL-91-5009	modified from EPA SW-846 5030C & 8260D	(P&T)GC/MS
F2 (C10 to C16)	VOL-91-5009	modified from CCME Tier 1 Method	GC/FID
F3 (C16 to C34)	VOL-91-5009	modified from CCME Tier 1 Method	GC/FID
F4 (C34 to C50)	VOL-91-5009	modified from CCME Tier 1 Method	GC/FID

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Method Summary

CLIENT NAME: EXP SERVICES INC

AGAT WORK ORDER: 24Z124629

PROJECT: OTT-23015404-A0

ATTENTION TO: Mark McCalla

SAMPLING SITE:

SAMPLED BY:Philip Oliveira

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Gravimetric Heavy Hydrocarbons	VOL-91-5009	modified from CCME Tier 1 Method	BALANCE
Terphenyl	VOL-91-5009	modified from CCME Tier 1 Method	GC/FID

AGAT Laboratories

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5835 Coopers Avenue
Mississauga, Ontario L4Z 1Y2
Ph: 905.712.5100 Fax: 905.712.5122
webearth.agatlabs.com

Chain of Custody Record

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

Report Information:

Company: EXP SERVICES INC.
Contact: Mark McCalla
Address: 2650 QUEENSVIEW DR. OTTAWA
Phone: 613-688-1899 Fax:
Reports to be sent to:
1. Email: Mark.McCalla@exp.com
2. Email: Philip.Oliveira@exp.com

Project Information:

Project: OTT-23015404-A0
Site Location:
Sampled By: Philip Oliveira
AGAT Quote #: PO:
Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☒ No ☐
Company: EXP SERVICES INC.
Contact: ACCOUNTS Payable.
Address:
Email:

Regulatory Requirements:

(Please check all applicable boxes)

☐ Regulation 153/04
Table (Indicate One) ☐ Ind/Com ☐ Res/Park ☐ Agriculture
Soil Texture (Check One) ☐ Coarse ☐ Fine

☐ Regulation 406
Table (Indicate One)
☐ Regulation 558
☐ CCME

☐ Sewer Use ☐ Sanitary ☐ Storm
(Region)
☐ Prov. Water Quality Objectives (PWQO)
☐ Other
(Indicate One)

Is this submission for a **Record of Site Condition?** ☐ Yes ☐ No

Report Guideline on *Certificate of Analysis* ☐ Yes ☐ No

Laboratory Use Only

Work Order #: 24Z124629
Cooler Quantity: one - ice packs
Arrival Temperatures: 7.2 | 7.7 | 7.5 | 3.1 | 3.5 | 3.6
Custody Seal Intact: ☐ Yes ☐ No ☐ N/A
Notes: bag seal.

Turnaround Time (TAT) Required:

Regular TAT ☒ 5 to 7 Business Days
Rush TAT (Rush Surcharges Apply)
☐ 3 Business Days ☐ 2 Business Days ☐ Next Business Day
OR Date Required (Rush Surcharges May Apply):
Please provide prior notification for rush TAT
**TAT is exclusive of weekends and statutory holidays*
For 'Same Day' analysis, please contact your AGAT CPM

Sample Matrix Legend

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

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Field Filtered - Metals, Hg, CrVI, DOC (Y/N)	O. Reg 153: Metals & Inorganics	O. Reg 153: Metals - ☐ CrVI, ☐ Hg, ☐ HWSB	O. Reg 153: BTEX, F1-F4 PHCs	VOC	PAHs	PCBs	PCBs: Aroclors ☐	O. Reg 558: Landfill Disposal Characterization TCLP: ☐ M&I ☐ VOCs ☐ ABNs ☐ B(a)P ☐ PCBs	O. Reg 406: Regulation 406 SPLP Rainwater Leach SPLP: ☐ Metals ☐ VOCs ☐ SVOCs	O. Reg 406: Regulation 406 Characterization Package pH, ICPMS Metals, BTEX, F1-F4	Corrosivity: ☐ Moisture ☐ Sulphide	Potentially Hazardous or High Concentration (Y/N)
1. BH/MW 24-1	Feb 28/24	10h45 AM/PM	3	Soil					X									
2. BH/MW 24-5	Feb 28/24	9h45 AM/PM	3	Soil					X									
3.		AM/PM																
4.		AM/PM																
5.		AM/PM																
6.		AM/PM																
7.		AM/PM																
8.		AM/PM																
9.		AM/PM																
10.		AM/PM																
11.		AM/PM																

Samples Relinquished By (Print Name and Sign)	Date	Time	Samples Received By (Print Name and Sign)	Date	Time
Philip Oliveira	Feb 28, 2024	11h50	C. Griffith	02/28/24	11h52
Philip Oliveira			T. Patten	Feb 29	8:55
C to Pure	02/28/24	15h00			

Page 1 of 1
N°: T-148028

Pink Copy - Client | Yellow Copy - AGAT | White Copy - AGAT

Document ID: DW-78-1011-022

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http://www.agatlabs.com

CLIENT NAME: EXP SERVICES INC
2650 QUEENSVIEW DRIVE, UNIT 100
OTTAWA, ON K2B8H6
(613) 688-1899
ATTENTION TO: Mark McCalla
PROJECT: OTT-23015404-A0
AGAT WORK ORDER: 24Z126970
TRACE ORGANICS REVIEWED BY: Neli Popnikolova, Senior Chemist
DATE REPORTED: Mar 12, 2024
PAGES (INCLUDING COVER): 7
VERSION*: 1

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

Notes

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 24Z126970

PROJECT: OTT-23015404-A0

CLIENT NAME: EXP SERVICES INC

SAMPLING SITE:

ATTENTION TO: Mark McCalla

SAMPLED BY:Philip Oliveira

O. Reg. 153(511) - BTEX (Water)

DATE RECEIVED: 2024-03-06

DATE REPORTED: 2024-03-12

				SAMPLE DESCRIPTION:	TRIP BLANK
				SAMPLE TYPE:	Water
				DATE SAMPLED:	2024-03-06 10:00
Parameter	**Unit**	**G / S**	**RDL**	**5704719**	
Benzene	µg/L		0.20	<0.20	
Toluene	µg/L		0.20	<0.20	
Ethylbenzene	µg/L		0.10	<0.10	
m & p-Xylene	µg/L		0.20	<0.20	
o-Xylene	µg/L		0.10	<0.10	
Xylenes (Total)	µg/L		0.20	<0.20	
Surrogate	**Unit**	**Acceptable Limits**			
Toluene-d8	% Recovery	50-140		98	
4-Bromofluorobenzene	% Recovery	50-140		89	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

5704719 Results relate only to the items tested.
Xylenes total is a calculated parameter. The calculated value is the sum of m&p-Xylene + o-Xylene. The calculated parameter is non-accredited. The parameters that are components of the calculation are accredited.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By: N Popnikolof

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 24Z126970

PROJECT: OTT-23015404-A0

CLIENT NAME: EXP SERVICES INC

SAMPLING SITE:

ATTENTION TO: Mark McCalla

SAMPLED BY:Philip Oliveira

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

DATE RECEIVED: 2024-03-06

DATE REPORTED: 2024-03-12

				SAMPLE DESCRIPTION:	MW24-5	MW98-3	MW98-1	MW24-2
				SAMPLE TYPE:	Water	Water	Water	Water
				DATE SAMPLED:	2024-03-06 10:00	2024-03-06 11:00	2024-03-06 12:05	2024-03-06 13:45
Parameter	**Unit**	**G / S**	**RDL**		**5704714**	**5704716**	**5704717**	**5704718**
Benzene	µg/L		0.20		<0.20	<0.20	<0.20	<0.20
Toluene	µg/L		0.20		<0.20	<0.20	<0.20	<0.20
Ethylbenzene	µg/L		0.10		<0.10	<0.10	<0.10	<0.10
m & p-Xylene	µg/L		0.20		<0.20	<0.20	<0.20	<0.20
o-Xylene	µg/L		0.10		<0.10	<0.10	<0.10	<0.10
Xylenes (Total)	µg/L		0.20		<0.20	<0.20	<0.20	<0.20
F1 (C6 to C10)	µg/L		25		<25	<25	<25	<25
F1 (C6 to C10) minus BTEX	µg/L		25		<25	<25	<25	<25
F2 (C10 to C16)	µg/L		100		<100	<100	<100	<100
F3 (C16 to C34)	µg/L		100		<100	<100	<100	<100
F4 (C34 to C50)	µg/L		100		<100	<100	<100	<100
Gravimetric Heavy Hydrocarbons	µg/L		500		NA	NA	NA	NA
Sediment					1	1	1	1
Surrogate	**Unit**	**Acceptable Limits**						
Toluene-d8	% Recovery	60-140			110	101	118	96.2
Terphenyl	% Recovery	60-140			71	69	72	68

Certified By: NPopowich

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Certificate of Analysis

AGAT WORK ORDER: 24Z126970

PROJECT: OTT-23015404-A0

CLIENT NAME: EXP SERVICES INC

ATTENTION TO: Mark McCalla

SAMPLING SITE:

SAMPLED BY:Philip Oliveira

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

DATE RECEIVED: 2024-03-06 **DATE REPORTED: 2024-03-12**

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

5704714-5704718
The C6-C10 fraction is calculated using Toluene response factor.
Xylenes total is a calculated parameter. The calculated value is the sum of m&p-Xylene and o-Xylene.
C6–C10 (F1 minus BTEX) is a calculated parameter. The calculated value is F1 minus BTEX.
The calculated parameters are non-accredited. The parameters that are components of the calculation are accredited.
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and nC34.
Gravimetric Heavy Hydrocarbons are not included in the Total C16 - C50 and are only determined if the chromatogram of the C34 - C50 Hydrocarbons indicated that hydrocarbons >C50 are present.
The chromatogram has returned to baseline by the retention time of nC50.
Total C6-C50 results are corrected for BTEX contribution.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
nC10, nC16 and nC34 response factors are within 10% of their average.
C50 response factor is within 70% of nC10 + nC16 nC34 average.
Linearity is within 15%.
Extraction and holding times were met for this sample.
Fractions 1-4 are quantified with the contribution of PAHs. Under Ontario Regulation 153/04, results are considered valid without determining the PAH contribution if not requested by the client.
NA = Not Applicable

Sediment parameter is comment only based on visual inspection of the sample prior to extraction and is not an accredited test.
Legend: 1 = no sediment present; 2 = sediment present; 3 = sediment present in trace amounts

Analysis performed at AGAT Toronto (unless marked by *)

Certified By: 

AGAT Laboratories

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CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

Quality Assurance

CLIENT NAME: EXP SERVICES INC

AGAT WORK ORDER: 24Z126970

PROJECT: OTT-23015404-A0

ATTENTION TO: Mark McCalla

SAMPLING SITE:

SAMPLED BY:Philip Oliveira

Trace Organics Analysis

RPT Date: Mar 12, 2024			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - PHCs F1 - F4 (Water)															
Benzene	5700747		<0.20	<0.20	NA	< 0.20	102%	60%	140%	110%	60%	140%	83%	60%	140%
Toluene	5700747		0.40	0.41	NA	< 0.20	87%	60%	140%	93%	60%	140%	94%	60%	140%
Ethylbenzene	5700747		<0.10	<0.10	NA	< 0.10	84%	60%	140%	91%	60%	140%	98%	60%	140%
m & p-Xylene	5700747		<0.20	<0.20	NA	< 0.20	92%	60%	140%	96%	60%	140%	96%	60%	140%
o-Xylene	5700747		<0.10	<0.10	NA	< 0.10	101%	60%	140%	108%	60%	140%	85%	60%	140%
F1 (C6 to C10)	5700747		<25	<25	NA	< 25	97%	60%	140%	92%	60%	140%	91%	60%	140%
F2 (C10 to C16)	5702306		163	215	NA	< 100	113%	60%	140%	87%	60%	140%	85%	60%	140%
F3 (C16 to C34)	5702306		739	728	1.5%	< 100	114%	60%	140%	90%	60%	140%	63%	60%	140%
F4 (C34 to C50)	5702306		< 100	< 100	NA	< 100	95%	60%	140%	82%	60%	140%	110%	60%	140%
O. Reg. 153(511) - BTEX (Water)															
Benzene	5704647		<0.20	<0.20	NA	< 0.20	99%	50%	140%	107%	60%	130%	84%	50%	140%
Toluene	5704647		<0.20	<0.20	NA	< 0.20	106%	50%	140%	113%	60%	130%	90%	50%	140%
Ethylbenzene	5704647		<0.10	<0.10	NA	< 0.10	102%	50%	140%	107%	60%	130%	82%	50%	140%
m & p-Xylene	5704647		<0.20	<0.20	NA	< 0.20	109%	50%	140%	115%	60%	130%	93%	50%	140%
o-Xylene	5704647		<0.10	<0.10	NA	< 0.10	109%	50%	140%	115%	60%	130%	93%	50%	140%

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

Certified By:

AGAT Laboratories

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MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
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Method Summary

CLIENT NAME: EXP SERVICES INC

AGAT WORK ORDER: 24Z126970

PROJECT: OTT-23015404-A0

ATTENTION TO: Mark McCalla

SAMPLING SITE:

SAMPLED BY:Philip Oliveira

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Benzene	VOL-91-5001	modified from EPA SW-846 5030C & 8260D	(P&T)GC/MS
Toluene	VOL-91-5001	modified from EPA SW-846 5030C & 8260D	(P&T)GC/MS
Ethylbenzene	VOL-91-5001	modified from EPA SW-846 5030C & 8260D	(P&T)GC/MS
m & p-Xylene	VOL-91-5001	modified from EPA SW-846 5030C & 8260D	(P&T)GC/MS
o-Xylene	VOL-91-5001	modified from EPA SW-846 5030C & 8260D	(P&T)GC/MS
Xylenes (Total)	VOL-91-5001	modified from EPA SW-846 5030C & 8260D	(P&T)GC/MS
Toluene-d8	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91- 5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Benzene	VOL-91-5010	modified from MOE PHC-E3421	(P&T)GC/MS
Toluene	VOL-91-5010	modified from MOE PHC-E3421	(P&T)GC/MS
Ethylbenzene	VOL-91-5010	modified from MOE PHC-E3421	(P&T)GC/MS
m & p-Xylene	VOL-91-5010	modified from MOE PHC-E3421	(P&T)GC/MS
o-Xylene	VOL-91-5010	modified from MOE PHC-E3421	(P&T)GC/MS
Xylenes (Total)	VOL-91-5010	modified from MOE PHC-E3421	(P&T)GC/MS
F1 (C6 to C10)	VOL-91-5010	modified from MOE PHC-E3421	(P&T)GC/FID
F1 (C6 to C10) minus BTEX	VOL - 5010	MOE E3421	(P&T)GC/MS
Toluene-d8	VOL-91-5010	modified from MOE PHC-E3421	(P&T)GC/MS
F2 (C10 to C16)	VOL-91-5010	modified from MOE PHC-E3421	GC/FID
F3 (C16 to C34)	VOL-91-5010	modified from MOE PHC-E3421	GC/FID
F4 (C34 to C50)	VOL-91-5010	modified from MOE PHC-E3421	GC/FID
Gravimetric Heavy Hydrocarbons	VOL-91-5010	modified from MOE PHC-E3421	BALANCE
Terphenyl	VOL-91-5010	modified from MOE PHC-E3421	GC/FID
Sediment			N/A

AGAT Laboratories

Have feedback? Scan here for a quick survey!

5835 Coopers Avenue
Mississauga, Ontario L4Z 1Y2
Ph: 905.712.5100 Fax: 905.712.5122
webearth.agatlabs.com

Chain of Custody Record

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

Report Information:

Company: EXP Services
Contact: Mark McCalla
Address: 2650 Queensview Dr
Ottawa, ON, K2B 8K1
Phone: 613-688-1899 Fax:
Reports to be sent to:
1. Email: mark.mccalla@exp.com
2. Email: philip.oliveria@exp.com

Project Information:

Project: OTT-23015404-A0
Site Location:
Sampled By: Philip Oliveira
AGAT Quote #: PO:
Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☑ No ☐
Company:
Contact:
Address:
Email:

Regulatory Requirements:

(Please check all applicable boxes)

☐ Regulation 153/04
Table _____ *Indicate One*
☐ Ind/Com ☐ Res/Park ☐ Agriculture
Soil Texture *(Check One)* ☐ Coarse ☐ Fine

☐ Regulation 406
Table _____ *Indicate One*
☐ Regulation 558
☐ CCME

☐ Sewer Use ☐ Sanitary ☐ Storm
_____ *Region*
☐ Prov. Water Quality Objectives (PWQO)
☐ Other
_____ *Indicate One*

Is this submission for a **Record of Site Condition?** ☐ Yes ☐ No

Report Guideline on *Certificate of Analysis* ☐ Yes ☐ No

Sample Matrix Legend

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

Laboratory Use Only

Work Order #: 24Z126970
Cooler Quantity: ONE - ICE PACKS
Arrival Temperatures: 1.5 | 1.9 | 1.6 | 2-3 | 2-1 | 1-4
Custody Seal Intact: ☐ Yes ☐ No ☐ N/A
Notes: Duggedin

Turnaround Time (TAT) Required:

Regular TAT ☒ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

☐ 3 Business Days ☐ 2 Business Days ☐ Next Business Day

OR Date Required (Rush Surcharges May Apply):

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

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

	Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Field Filtered - Metals, Hg, CrVI, DOC (Y/N)	O. Reg 153: Metals & Inorganics	O. Reg 153: Metals - ☐ CrVI, ☐ Hg, ☐ HWSB	O. Reg 153: BTEX, F1-F4 PHCs	VOC	PAHs	PCBs	PCBs: Aroclors ☐	O. Reg 558: Landfill Disposal Characterization TCLP: ☐ M&I ☐ VOCs ☐ ABNs ☐ B(a)P ☐ PCBs	O. Reg 406: Regulation 406 SPLP Rainwater Leach SPLP: ☐ Metals ☐ VOCs ☐ SVOCs	O. Reg 406: Regulation 406 Characterization Package pH, ICPMS Metals, BTEX, F1-F4	Corrosivity: ☐ Moisture ☐ Sulphide	Potentially Hazardous or High Concentration (Y/N)
1.	MW24-5	MAR 06/24	10h00 AM/PM	5	GW					☑								
2.	MW98-3	↓	11h00 AM/PM	↓	↓					↓								
3.	MW98-1		12h05 AM/PM															
4.	MW24-2		13h45 AM/PM															
5.			AM/PM															
6.			AM/PM															
7.	TRIP Blank	MAR 06/24	10h00 AM/PM	3	D.I	BTEX only				✓								
8.			AM/PM															
9.			AM/PM															
10.			AM/PM															
11.			AM/PM															

Samples Relinquished By (Print Name and Sign): Philip Oliveira	Date: MAR 06/24	Time: 14h25	Samples Received By (Print Name and Sign): C. Cristante
Samples Relinquished By (Print Name and Sign): Philip Oliveira	Date:	Time:	Samples Received By (Print Name and Sign): Tiffany Persaud
Samples Relinquished By (Print Name and Sign): CC to Philip	Date: 03/06/24	Time: 15h00	Samples Received By (Print Name and Sign):

Date: 03/06/24	Time: 14h30	
Date: Mar 7	Time: 8:55 Am	Page 1 of 1
Date:	Time:	N°:

Pink Copy - Client ! Yellow Copy - AGAT ! White Copy - AGAT

AGAT Laboratories

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

CLIENT NAME: EXP SERVICES INC
2650 QUEENSVIEW DRIVE, UNIT 100
OTTAWA, ON K2B8H6
(613) 688-1899
ATTENTION TO: Mark McCalla
PROJECT: OTT-23012404-A0
AGAT WORK ORDER: 24Z127350
TRACE ORGANICS REVIEWED BY: Oksana Gushyla, Trace Organics Lab Supervisor
DATE REPORTED: Mar 14, 2024
PAGES (INCLUDING COVER): 6
VERSION*: 1

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

Notes

Disclaimer:

- *All work conducted herein has been done using accepted standard protocols, and generally accepted practices and methods. AGAT test methods may incorporate modifications from the specified reference methods to improve performance.*
- *All samples will be disposed of within 30 days after receipt unless a Long Term Storage Agreement is signed and returned. Some specialty analysis may be exempt, please contact your Client Project Manager for details.*
- *AGAT's liability in connection with any delay, performance or non-performance of these services is only to the Client and does not extend to any other third party. Unless expressly agreed otherwise in writing, AGAT's liability is limited to the actual cost of the specific analysis or analyses included in the services.*
- *This Certificate shall not be reproduced except in full, without the written approval of the laboratory.*
- *The test results reported herewith relate only to the samples as received by the laboratory.*
- *Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, warranties of merchantability, fitness for a particular purpose, or non-infringement. AGAT assumes no responsibility for any errors or omissions in the guidelines contained in this document.*
- *All reportable information as specified by ISO/IEC 17025:2017 is available from AGAT Laboratories upon request.*
- *For environmental samples in the Province of Quebec: The analysis is performed on and results apply to samples as received. A temperature above 6°C upon receipt, as indicated in the Sample Reception Notification (SRN), could indicate the integrity of the samples has been compromised if the delay between sampling and submission to the laboratory could not be minimized.*

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Certificate of Analysis

AGAT WORK ORDER: 24Z127350

PROJECT: OTT-23012404-A0

CLIENT NAME: EXP SERVICES INC

SAMPLING SITE:

ATTENTION TO: Mark McCalla

SAMPLED BY:Philip Oliveria

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

DATE RECEIVED: 2024-03-07

DATE REPORTED: 2024-03-14

			SAMPLE DESCRIPTION:	**MW98-2**
			SAMPLE TYPE:	**Water**
			DATE SAMPLED:	**2024-03-07 09:30**
Parameter	**Unit**	**G / S**	**RDL**	**5708670**
Benzene	µg/L		0.20	<0.20
Toluene	µg/L		0.20	<0.20
Ethylbenzene	µg/L		0.10	<0.10
m & p-Xylene	µg/L		0.20	<0.20
o-Xylene	µg/L		0.10	<0.10
Xylenes (Total)	µg/L		0.20	<0.20
F1 (C6 to C10)	µg/L		25	<25
F1 (C6 to C10) minus BTEX	µg/L		25	<25
F2 (C10 to C16)	µg/L		100	<100
F3 (C16 to C34)	µg/L		100	<100
F4 (C34 to C50)	µg/L		100	<100
Gravimetric Heavy Hydrocarbons	µg/L		500	NA
Sediment				1
Surrogate	**Unit**	**Acceptable Limits**		
Toluene-d8	% Recovery	60-140		86.5
Terphenyl	% Recovery	60-140		85

Certified By:

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 24Z127350

PROJECT: OTT-23012404-A0

CLIENT NAME: EXP SERVICES INC

ATTENTION TO: Mark McCalla

SAMPLING SITE:

SAMPLED BY:Philip Oliveria

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

DATE RECEIVED: 2024-03-07 **DATE REPORTED: 2024-03-14**

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

5708670

The C6-C10 fraction is calculated using Toluene response factor.
Xylenes total is a calculated parameter. The calculated value is the sum of m&p-Xylene and o-Xylene.
C6–C10 (F1 minus BTEX) is a calculated parameter. The calculated value is F1 minus BTEX.
The calculated parameters are non-accredited. The parameters that are components of the calculation are accredited.
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and nC34.
Gravimetric Heavy Hydrocarbons are not included in the Total C16 - C50 and are only determined if the chromatogram of the C34 - C50 Hydrocarbons indicated that hydrocarbons >C50 are present.
The chromatogram has returned to baseline by the retention time of nC50.
Total C6-C50 results are corrected for BTEX contribution.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
nC10, nC16 and nC34 response factors are within 10% of their average.
C50 response factor is within 70% of nC10 + nC16 nC34 average.
Linearity is within 15%.
Extraction and holding times were met for this sample.
Fractions 1-4 are quantified with the contribution of PAHs. Under Ontario Regulation 153/04, results are considered valid without determining the PAH contribution if not requested by the client.
NA = Not Applicable

Sediment parameter is comment only based on visual inspection of the sample prior to extraction and is not an accredited test.
Legend: 1 = no sediment present; 2 = sediment present; 3 = sediment present in trace amounts

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:

AGAT Laboratories

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MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
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Quality Assurance

CLIENT NAME: EXP SERVICES INC

AGAT WORK ORDER: 24Z127350

PROJECT: OTT-23012404-A0

ATTENTION TO: Mark McCalla

SAMPLING SITE:

SAMPLED BY:Philip Oliveria

Trace Organics Analysis

RPT Date: Mar 14, 2024			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - PHCs F1 - F4 (Water)															
Benzene	5711366		<0.20	<0.20	NA	< 0.20	98%	60%	140%	109%	60%	140%	107%	60%	140%
Toluene	5711366		<0.20	<0.20	NA	< 0.20	93%	60%	140%	77%	60%	140%	90%	60%	140%
Ethylbenzene	5711366		<0.10	<0.10	NA	< 0.10	102%	60%	140%	81%	60%	140%	90%	60%	140%
m & p-Xylene	5711366		<0.20	<0.20	NA	< 0.20	103%	60%	140%	77%	60%	140%	90%	60%	140%
o-Xylene	5711366		<0.10	<0.10	NA	< 0.10	90%	60%	140%	84%	60%	140%	102%	60%	140%
F1 (C6 to C10)	5711366		<25	<25	NA	< 25	106%	60%	140%	98%	60%	140%	94%	60%	140%
F2 (C10 to C16)	5702363		< 100	< 100	NA	< 100	121%	60%	140%	77%	60%	140%	79%	60%	140%
F3 (C16 to C34)	5702363		< 100	< 100	NA	< 100	111%	60%	140%	86%	60%	140%	89%	60%	140%
F4 (C34 to C50)	5702363		< 100	< 100	NA	< 100	78%	60%	140%	78%	60%	140%	87%	60%	140%

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

Certified By:

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Method Summary

CLIENT NAME: EXP SERVICES INC

AGAT WORK ORDER: 24Z127350

PROJECT: OTT-23012404-A0

ATTENTION TO: Mark McCalla

SAMPLING SITE:

SAMPLED BY:Philip Oliveria

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Benzene	VOL-91-5010	modified from MOE PHC-E3421	(P&T)GC/MS
Toluene	VOL-91-5010	modified from MOE PHC-E3421	(P&T)GC/MS
Ethylbenzene	VOL-91-5010	modified from MOE PHC-E3421	(P&T)GC/MS
m & p-Xylene	VOL-91-5010	modified from MOE PHC-E3421	(P&T)GC/MS
o-Xylene	VOL-91-5010	modified from MOE PHC-E3421	(P&T)GC/MS
Xylenes (Total)	VOL-91-5010	modified from MOE PHC-E3421	(P&T)GC/MS
F1 (C6 to C10)	VOL-91-5010	modified from MOE PHC-E3421	(P&T)GC/FID
F1 (C6 to C10) minus BTEX	VOL - 5010	MOE E3421	(P&T)GC/MS
Toluene-d8	VOL-91-5010	modified from MOE PHC-E3421	(P&T)GC/MS
F2 (C10 to C16)	VOL-91-5010	modified from MOE PHC-E3421	GC/FID
F3 (C16 to C34)	VOL-91-5010	modified from MOE PHC-E3421	GC/FID
F4 (C34 to C50)	VOL-91-5010	modified from MOE PHC-E3421	GC/FID
Gravimetric Heavy Hydrocarbons	VOL-91-5010	modified from MOE PHC-E3421	BALANCE
Terphenyl	VOL-91-5010	modified from MOE PHC-E3421	GC/FID
Sediment			N/A

AGAT Laboratories

Have feedback? Scan here for a quick survey!

5835 Coopers Avenue
Mississauga, Ontario L4Z 1Y2
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webearth.agatlabs.com

Chain of Custody Record

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

Laboratory Use Only

Work Order #: 24Z127350

Cooler Quantity: one - ice packs

Arrival Temperatures: 5.6 | 5.5 | 5.5
2.9 | 2.5 | 2.9

Custody Seal Intact: ☐Yes ☐No ☐N/A

Notes: Yaggen.

Report Information:

Company: EXP Services
Contact: Mark McCalla
Address: 2650 Queensview Dr
Ottawa, ON, K2B 8K1
Phone: 613-688-1899 Fax:
Reports to be sent to:
1. Email: mark.mccalla@exp.com
2. Email: philip.oliveria@exp.com

Regulatory Requirements:

(Please check all applicable boxes)

☐ Regulation 153/04
Table (Indicate One) ☐Ind/Com ☐Res/Park ☐Agriculture
Soil Texture (Check One) ☐Coarse ☐Fine

☐ Regulation 406
Table (Indicate One)

☐ Regulation 558

☐ CCME

☐ Sewer Use ☐Sanitary ☐Storm
(Region)

☐ Prov. Water Quality Objectives (PWQO)

☐ Other
(Indicate One)

Is this submission for a **Record of Site Condition?** ☐ Yes ☐ No

Report Guideline on *Certificate of Analysis* ☐ Yes ☐ No

Turnaround Time (TAT) Required:

Regular TAT ☒ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

☐ 3 Business Days ☐ 2 Business Days ☐ Next Business Day

OR Date Required (Rush Surcharges May Apply):

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

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

Project Information:

Project: OTT-23015404-A0
Site Location:
Sampled By: Philip Oliveira
AGAT Quote #: PO:
Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☑ No ☐

Company:
Contact:
Address:
Email:

Sample Matrix Legend

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

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Field Filtered - Metals, Hg, CrVI, DOC (Y/N)	O. Reg 153: Metals & Inorganics	O. Reg 153: Metals - ☐CrVI, ☐Hg, ☐HWSB	O. Reg 153: BTEX, F1-F4 PHCs	VOC	PAHs	PCBs	PCBs: Arocolors ☐	O. Reg 558: Landfill Disposal Characterization TCLP: ☐M&I ☐VOCs ☐ABNs ☐B(a)P ☐PCBs	O. Reg 406: Regulation 406 SPLP Rainwater Leach SPLP: ☐Metals ☐VOCs ☐SVOCs	O. Reg 406: Regulation 406 Characterization Package pH, ICPMS Metals, BTEX, F1-F4	Corrosivity: ☐Moisture ☐Sulphide	Potentially Hazardous or High Concentration (Y/N)
1. MW98-2	Mar 07/24	9h30 AM/PM	5	GW					X									
2.		AM/PM																
3.		AM/PM																
4.		AM/PM																
5.		AM/PM																
6.		AM/PM																
7.		AM/PM																
8.		AM/PM																
9.		AM/PM																
10.		AM/PM																
11.		AM/PM																

Samples Relinquished By (Print Name and Sign)	Date	Time	Samples Received By (Print Name and Sign)	Date	Time
Philip Oliveira	Mar. 07/24	11h40	C. Guillotin	03/07/24	11h43
Philip Oliveira	Date	Time	(Samples Received By (Print Name and Sign))	Date Mar 8	Time 9:05
Philip Oliveira	03/07/24	15h00	Samples Received By (Print Name and Sign)	Date	Time

Page ____ of ____

N°:

Pink Copy - Client | Yellow Copy - AGAT | White Copy - AGAT

Appendix G: Hydraulic Conductivity Data

265 Carling Avenue, Ottawa **MW24-2** **7-Mar-24**
Rising Head Test Analysis Test 1
Hvorslev Method (1951)

H_0 1.18 m
(static water level in metres)

Time (sec)	Water Level (m)	Drawdown (m)	H-h/H-h0
0	3.01	1.83	1.00
30	3.93	2.75	1.50
60	2.88	1.70	0.93
90	2.84	1.66	0.91
120	2.81	1.63	0.89
150	2.78	1.60	0.87
180	2.74	1.56	0.85
240	2.69	1.51	0.83
300	2.64	1.46	0.80
360	2.56	1.38	0.75
420	2.53	1.35	0.74
480	2.48	1.30	0.71
600	2.39	1.21	0.66
720	2.3	1.12	0.61
840	2.22	1.04	0.57
1140	2.03	0.85	0.46
1440	1.87	0.69	0.38
1740	1.73	0.55	0.30
2040	1.6	0.42	0.23
2340	1.5	0.32	0.17
2760	1.38	0.20	0.11
3060	1.27	0.09	0.05
3360	1.2	0.02	0.01
	To constant=	0.37	

L/R	ln(L/R)
122.0	4.804021

input
r= 0.0032 (pipe radius)
L= 3.05 (effective screen length, if straddles water)
R= 0.03 (hole radius)
To= 770

$$K = \frac{r^2 \ln(L/R)}{2(To)(L)}$$

K= 1.05E-08 m/sec or **1.05E-06 cm/sec**