REPORT

Phase Two Environmental Site Assessment

Holland Cross Expansion Building, Part of 1560 Scott Street, Ottawa, Ontario

Submitted to:

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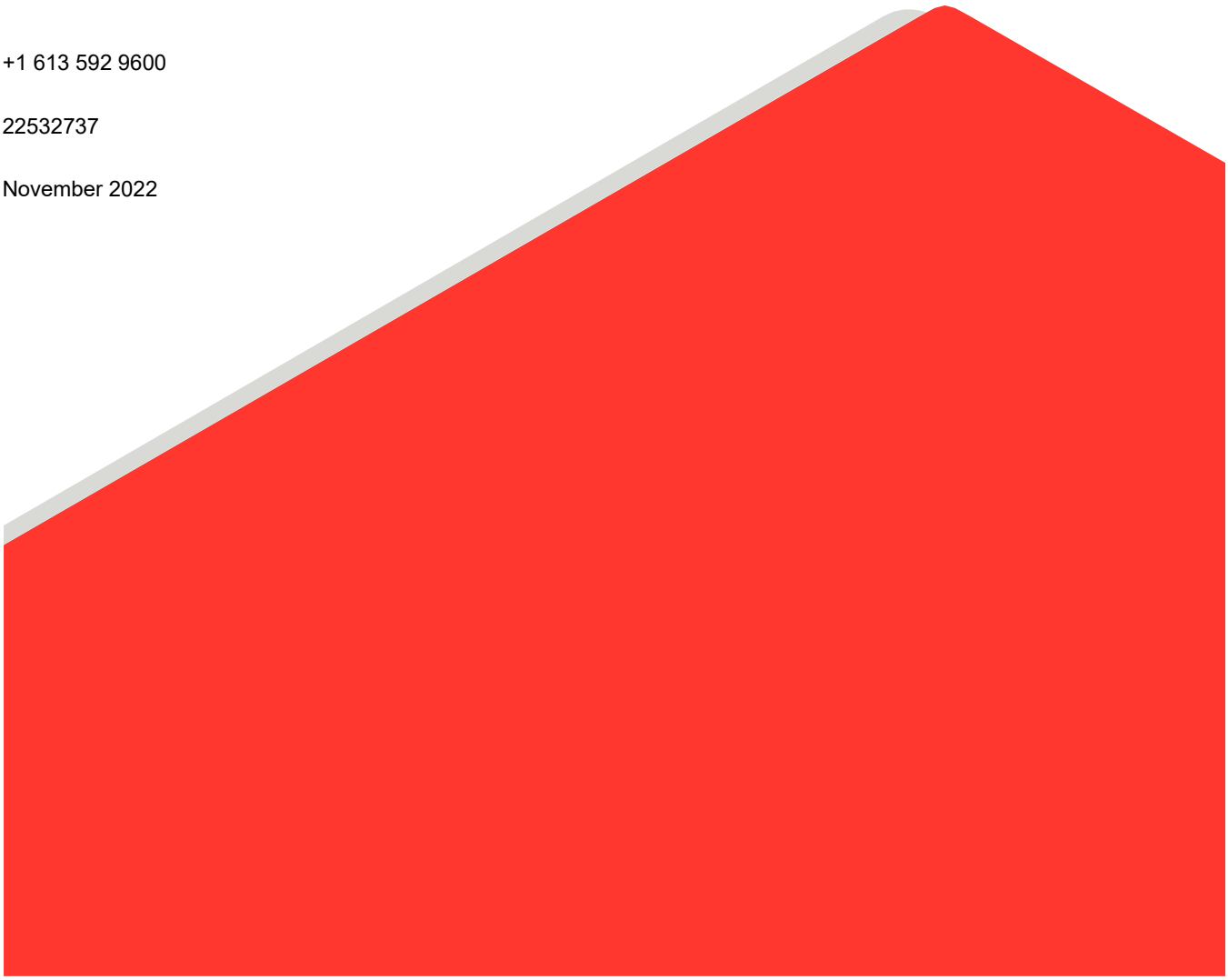

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Record of Issue

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1.0 EXECUTIVE SUMMARY

Golder Associates Ltd. (Golder) was retained by Stantec Inc. (Stantec or the Client) on behalf of Lasalle Investment Management Inc. (the Owner) to conduct a Phase Two Environmental Site Assessment (ESA) for the property located at 1560 Scott Street in Ottawa, Ontario (the Site, Phase Two Property or RSC Property). The location of the Phase Two Property is provided in **Figure 1A**.

It is understood that the Phase Two Property is to be redeveloped with a 25-storey residential building with two subsurface levels for underground parking following the demolition of a section of the current commercial office building located on the Site. The Site being the southeast corner of the Holland Cross office complex.

Golder previously completed a Phase One ESA for the Site, the results of which were documented in the report titled "*Phase One Environmental Site Assessment, Holland Cross Expansion Building, Part of 1560 Scott Street, Ottawa, Ontario*", dated November 2022 (2022 Phase One ESA). Based on the findings of the Phase One ESA, Golder completed a Phase Two ESA investigation for the Phase Two Property. This report is required to support the eventual filing of Records of Site Condition (RSC) under Ontario Regulation 153/04 (O. Reg. 153/04).

This Phase Two ESA investigated two areas of potential concern (APECs). Based on the analytical results of the soil and groundwater samples submitted as part of this Phase Two ESA, the reported concentrations of the contaminants of potential concern in soil and groundwater were above the applicable site condition standards as of September 30, 2022. As such, further delineation of the identified impacts followed by either remediation or risk assessment will be required to support the RSC submission.

2.0 INTRODUCTION

Golder Associates Ltd. (Golder) was retained by Stantec Inc. (Stantec) on behalf of Lasalle Investment Management Inc. (the Owner) to conduct a Phase Two Environmental Site Assessment (ESA) for the property located at 1560 Scott Street in Ottawa, Ontario (the "Phase Two Property). The location of the Phase Two Property is provided in **Figure 1A**.

The Phase Two Property consists of an irregularly shaped 0.25-hectare (ha) parcel of land almost entirely occupied by a building and two storey below-grade parking structure. Currently the Site building is attached to and part of the Holland Cross office complex.

2.1 Site Description

Golder was retained by Stantec to conduct a Phase Two ESA of the following property:

Municipal Address	1619 Carling Avenue
Property Identification Number	Part of 1560 Scott Street, Ottawa, Ontario
Property Identification Number	04034-0192 (LT)
Legal Description	Even Lots 1924-1314, Odd Lots 1307-1325, Even Lots 1468A-1496, Odd Lots 1493-1495 Pt Lots 1497 1501-1521 Pt Hinton Street PL 157, Pt 1-9, 11-13 4R6847 and Pt 1-28, 4R13713
Size of the Phase Two Property	0.25 hectares

The location of the Phase Two Property, which is the same as the RSC property, is provided in **Figure 1A**.

2.2 Property Ownership

The contact information for the Phase Two Property owner is as follows:

LaSalle Management Inc. c/o Stantec Inc.	Serene Shahzadeh (Stantec) 300 – 1331 Clyde Avenue Ottawa, ON K2C 3G4	Email: Serene.Shahzadeh@stantec.com

2.3 Current and Proposed Future Uses

The Site was developed for industrial purposes with at least one building since at least 1920 and developed to its present condition in 1991 which includes a commercial office building with two below-grade levels of parking.

It is understood that the Phase Two Property is to be redeveloped with a 25-storey residential building with two basement levels following the demolition of a section of the current office building located on the Site which forms the southeast corner of the Holland Cross office complex. The proposed future use of the Phase Two Property is residential.

2.4 Applicable Site Condition Standard

The analytical results were compared to the Table 7 (residential property use) presented in the MECP document "*Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*", dated April 15, 2011. The applicable site condition standards were selected based on the following rationale:

- The Phase Two Property and all other properties located, in whole or in part, within 250 metres (m) of the Phase Two Property are supplied by the City of Ottawa municipal drinking water system and there are no water supply wells which are in use.
- Based on the descriptions in the borehole logs, the texture of overburden soils is generally coarse-grained.
- The Ottawa River is located within 1.2km north of the Site. No areas of natural significance were identified within the Phase One Study Area.
- The average pH of surface soil is 5≤pH≤9 (based on three soil samples). The pH of one soil sample collected between 0.8 to 1.4 mbgs at borehole 22-03 exceeded the requirement for surface soil pH, however, the average pH of surface soil on Site satisfies the requirement. Due to limited recovery of subsurface soil, subsurface soil was not analyzed for pH.
- The intended use for the Phase Two Property is residential.
- Based on the stratigraphy described in the borehole logs, the overburden thickness on Site is less than 2 m over more than one-third of the Phase Two Property. In the area of the Site building, the overburden has been excavated and the parking garage overlays bedrock.

3.0 BACKGROUND INFORMATION

This section presents the background conditions of the Phase Two Property including a description of the physical setting and a summary of past investigations conducted.

The objectives of the Phase Two ESA were to obtain information about environmental conditions in the soil and groundwater on, in or under the Site, and to develop the information necessary to complete an RSC for the property. The objectives of this Phase Two ESA were achieved by:

- Developing an understanding of the geological and hydrogeological conditions at the Phase Two Property; and,
- Conducting field sampling for all contaminants of concern (COCs) associated with each area of potential environmental concern (APEC) identified in the Phase One ESA.

3.1 Physical Setting

The topography of the Site and surrounding areas was generally flat. Land uses surrounding the Phase Two Property include commercial and residential as shown on **Figure 1A**. The Ottawa River is located 1.2 km north of the Site.

3.2 Past Investigations

Golder reviewed the following previous environmental reports for the proposed development), which contains the current Phase Two Property:

- *"Geotechnical Engineering Design Input Holland Cross Expansion, 1560 Scott Street, Ottawa, Ontario."* Prepared by Golder, dated December 2013 (2013 Geotechnical Report).
- *"Phase One ESA, Portion of 1560 Scott Street, Ottawa, Ontario."* Prepared by Stantec Inc., dated July 2020. (2020 Stantec Phase One ESA).
- "*Phase One Environmental Site Assessment, Holland Cross Expansion Building, Part of 1560 Scott Street, Ottawa, Ontario*". Prepared by Golder for Stantec Inc., dated November 2022. 22532737. (2022 Phase One ESA).

2013 Geotechnical Report

A geotechnical investigation was carried out at the Site by Golder as part of the proposed expansion to the Holland Cross facility, which is described in the report entitled "Geotechnical Engineering Design Input Holland Cross Expansion, 1560 Scott Street, Ottawa, Ontario," dated December 2013 (2013 Golder Geotechnical Report). The purpose of the geotechnical investigation was to assess the subsurface conditions at the Site by means of review of existing geotechnical information and based on an interpretation of the factual information available.

Based on the geotechnical investigation, the subsurface conditions are anticipated to consist of surficial fill material overlaying glacial till and then by bedrock with the bedrock surface located at depths varying from about 0.5 to 2.8 m below the original ground surface. Published bedrock geology mapping indicates that the Site is underlain by dolomite and limestone of the Bobcaygeon Formation.

2020 Stantec Phase One ESA

Golder was provided with a previous Phase One ESA report prepared by Stantec entitled "Phase One ESA, Portion of 1560 Scott Street, Ottawa, Ontario," dated July 2020. The Phase One ESA identified one PCA (the foundry) on the site but concluded that due to the subsequent development and removal of all overburden from the site, it was not considered an area of potential environmental concern.

2022 Phase One ESA

Golder conducted a Phase One ESA entitled, "*Draft Phase One Environmental Site Assessment, Holland Cross Expansion Building, Part of 1560 Scott Street, Ottawa, Ontario*", dated November 2022, to assess the likelihood of soil and/or groundwater contamination resulting from historic or present activities at the Phase Two Property and surrounding area. This included a review of available historical information on the Site and surrounding area, interviews with persons familiar with the Site and a Site reconnaissance. Potentially Contaminating Activities (PCAs) associated with the Site and with properties within 250 m of the Site are shown in **Figure 1B.** The APECs identified in the 2022 Phase One ESA pertaining to the Phase Two Property are summarized in Section 4.3 and shown on **Figure 1C.**

Reliance

Data from the following previous investigations were relied upon in this Phase Two ESA:

- The 2022 Phase One ESA (prepared by the Qualified Person, Keith Holmes).

4.0 SCOPE OF THE INVESTIGATION

4.1 Overview of Site Investigation

The Phase Two ESA Investigation activities were completed between August 23, 2022 and September 30, 2022 and included the following tasks:

- **Health and Safety Plan**: Preparation of a Health and Safety Plan for internal and subcontractor use prior to initiating any field work at the Site.
- **Utility Clearances**: Coordination of utility clearances with local utility companies along with retaining the services of a private locator to assess for possible services in the areas of the proposed test locations.
- **Borehole Advancement and Monitoring Well Installation**: The borehole drilling and monitoring well installation program included drilling of three boreholes, which were all completed as groundwater monitoring wells and subsequently sampled for groundwater. The rationale for the selected location of the boreholes is provided in the Sampling and Analysis Plan provided in **Appendix A**. The location of the boreholes and monitoring wells are provided in **Figure 1D**. The monitoring well construction details are presented in **Table 1**. The record of boreholes is provided in **Appendix B**.
- **Soil Sampling**: Soil samples were collected from the boreholes between August 29, 2022, and August 30, 2022 and selected soil samples were submitted for chemical analysis of one or more of the following: PHC, BTEX, PAH, metals, hydride-forming metals (antimony, arsenic, selenium), pH and/or Other Regulated Parameters (ORP) including hexavalent chromium, cyanide, hot-water soluble boron and mercury. The Certificates of Analysis for both soil and groundwater are provided in **Appendix C**.

- **Groundwater Monitoring and Sampling**: Groundwater samples were collected on September 28, 2022. Groundwater samples were submitted for analysis of one or more of the following: PHC, BTEX, PAH, VOC, metals, hydride-forming metals and ORP (hexavalent chromium and mercury). The Certificates of Analysis for both soil and groundwater are provided in **Appendix C.**
- **Surveying**: An elevation survey of the boreholes and monitoring wells was completed by Golder on September 26, 2022 using a Trimble R10 Global Navigation Satellite System handheld GPS with accuracy of less than 0.020 m horizontal and 0.030 m vertical.
- **Reporting**: Golder compiled and assessed the field and laboratory results from the above noted activities into this report.

The Phase Two investigation was carried out in general accordance with Golder's standard operating procedures, which conform to the requirements of O. Reg. 153/04. The data from the Phase Two ESA investigation completed by Golder at the Site were incorporated into this Phase Two ESA report following the Phase Two ESA report format required by O. Reg. 153/04.

There were no impediments or access limitations that would affect the conclusions of this Phase Two ESA report.

4.2 Media Investigated

To address the potential environmental issues identified in the Phase One ESA, the Phase Two ESA field program included sampling of subsurface soil and of groundwater from wells screened within the overburden at the Site. No sediment was present at the Site and therefore no sediment sampling was completed. A summary of media investigated, and the applicable contaminants of potential concern are provided in **Tables 2A and 2B**. The sampling and analysis plan outlines the rationale for the field investigation activities carried out at the Site and the associated methodologies used to meet the objectives of this Phase Two ESA.

4.3 Phase One Conceptual Site Model

The following key Site features are presented in **Figures 1A, 1B and 1C**:

- Existing buildings and structures;
- Water bodies and areas of natural significance located in the Phase One Study Area;
- Roads (including names) within the Phase One Study Area;
- Uses of properties adjacent to the Phase One Property; and,
- Location of identified PCAs in the Phase One Study Area (including any storage tanks).

The following describes the Phase One ESA CSM based on the information obtained and reviewed as part of this Phase One ESA:

- The Phase One Property consisted of a building attached to a main larger building to west and northwest and is approximately 950 m^2 in area.
- No water bodies or areas of natural significance were identified on or within 30 m of the Phase One Property.

- Potable water in the vicinity of the Phase One Property is provided by the City of Ottawa and is obtained from the Ottawa River. Seventy-three well records for observation wells were identified within the Phase One Study Area.
- At the time of the Phase One ESA, the Phase One Property was developed as a commercial building with a paved underground parking garage. Historically, the Phase One Property has been used industrially since at least 1920. The Site was redeveloped some time between 1976 and 1991 with a commercial building. There are no indications that the Phase One Property was used for an industrial use or any of the following commercial uses: vehicle garage, bulk liquid dispensing facility, or dry-cleaning facility.
- At the time of the Phase One ESA, the neighbouring properties within the Phase One Study Area consisted of residential and commercial land uses.
- Seventeen potentially contaminating activities (PCAs) were identified, resulting in the identification of two APECs. The following PCAs requiring the identification of an APEC and the associated contaminants of concern were identified:

Area of Potential Environmental Concern	Location of Area of Potential Environmental Concern on Phase Two 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)
APEC 1 – Former Beech foundry.	West portion of the Site where the foundry was located	(#32) Iron and Steel Manufacturing and Processing (PCA A)	On-Site	PHC, BTEX, PAH, metals, hydride-forming metals, ORP, VOC	Soil and groundwater
APEC 2 – Manufacturing, gas stations, service garages and commercial printing to the south of the Phase One Property within 150 metres, including a documented VOC contaminated site.	South portion of the Site.	(#34) Metal Fabrication (PCA B, M, N), (#28) Gasoline and Associated products in Fixed Tanks (PCA B, C), (#10) Commercial Autobody Shops (PCA C), (#19) Electronics and Computer Equipment Manufacturing (PCA N), (NA) Commercial Printing (PCA L), (31) Ink Manufacturing, Processing and Bulk Storage (PCA L), and (59) Wood Treating and Preserve Facility and Bulk Storage of Treated and Preserved Wood Products (PCA N).	Off-Site	PHC, BTEX, PAH, metals, hydride-forming metals, ORP, VOC	Soil and Groundwater

4.4 Deviations from Sampling and Analysis Plan

The sampling and analysis plan (SAP) for the 2022 investigation program is provided in **Appendix A**. The sampling and analysis plans outline the rationale for the field investigation activities carried out at the Site and the associated methodologies used to meet the objectives of this Phase Two ESA. This plan dated August 2022 covers the activities undertaken during the Phase Two ESA. The following deviations from the sampling and analysis plan were noted:

- Sufficient soil volume was not recovered and therefore a PID was not used to screen the soil samples for headspace vapours. Additionally, low recovery prevented the collection of a duplicate soil sample.
- The duplicate was not submitted for the analysis of ORP.

No further material deviations from the sampling and analysis plan were identified in the course of the investigation. The deviations from the Sampling and Analysis Plan did not detract from the completeness of the site characterization.

4.5 Impediments

No physical impediments to the Phase Two ESA investigation were encountered. Access to the Phase Two Property was not denied or restricted.

5.0 INVESTIGATION METHOD

5.1 General

The following sections describe the field investigation methodology employed during the Phase Two ESA. The field work was conducted between August 23, 2022 and September 30, 2022.

Prior to initiating the field work, Golder developed and implemented Site-specific protocols to protect the health and safety of its employees and subcontractors through the preparation of a site-specific Health and Safety Plan. An assessment of potential health and safety hazards at the Phase Two Property and those associated with the proposed work was completed each day of the field program. A health and safety tail gate meeting was held with Golder's subcontractors each day prior to completion of the field work. The document was reviewed and signed on-Site by field personnel prior to commencing work. Additionally, prior to any intrusive investigations, including drilling, Golder completed public and private utility clearances.

5.2 Underground Utility Locates

Prior to commencing the intrusive field program, Golder retained the services of a private utility location contractor (USL-1 Locates) in August 2022 to arrange the identification of public utilities within the work area, to locate private utilities within the work area; mark the locations of the utilities; and clear the proposed drilling locations.

5.3 Borehole Advancement

Golder retained Marathon Underground of Greely, Ontario (Marathon) for borehole drilling and monitoring well installation. Marathon is a licensed and insured environmental drilling company with all operators being licensed technicians under the requirements of O.Reg. 903 of the Environmental Protection Act. Borehole locations are provided in **Figure 1D.** The table below provides a summary of the borehole installations. A description of the quality assurance/quality control measures taken to minimize the potential for cross-contamination between sampling locations is provided in Section 5.15.

Boreholes were advanced using a truck-mounted CME hollow stem auger drill rig. Soil sampling was carried out at regular depth intervals in each borehole using 35-mm inside diameter split spoon sampling equipment. The split spoon sampler was decontaminated between samples using water containing a phosphate-free detergent followed by a potable water rinse. Upon encountering refusal, selected boreholes were extended into the bedrock using rotary diamond drilling techniques while retrieving NQ sized core.

A total of three boreholes were advanced during this investigation in 2022. Borehole logs can be found on the Record of Borehole sheets in **Appendix B**. A brief summary of the boreholes is included in the following table:

Borehole	Boring Date	Subcontractor	Drilling Method	Casing	Total Depth (mbgs)
22-01	August 29, 2022	Marathon	200-mm OD Power auger and Rotary drilling	108-mm ID Hollow-Stem Auger, NQ core	6.3
22-02B	August 29, 2022	Marathon	200-mm OD Power auger and Rotary drilling	108-mm ID Hollow-Stem Auger, NQ core	9.0
22-03	August 30, 2022	Marathon	200-mm OD Power auger and Rotary drilling	108-mm ID Hollow-Stem Auger, NQ core	9.0

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5.4 Soil: Sampling

Soil samples were collected from undisturbed locations and placed into laboratory-prepared container with minimal headspace and stored in a cooler for potential laboratory analysis. Due to shallow soil conditions, one soil sample representing inferred worst-case conditions at each sampling location was selected for laboratory analysis based on encountered depth, presence of fill material, visual observations (e.g., staining, discoloration and/or free product, if any), and olfactory observations (if any). Soil samples were submitted to the analytical laboratory under chain-of-custody procedures. A summary of analyzed soil samples is provided in **Table 2A.**

Geologic descriptions, visual and olfactory observations are presented on the Record of Borehole sheets in **Appendix B**.

5.5 Field Screening Measurements

All samples were field screened for visual and olfactory evidence of environmental impacts including staining and odours. Soil samples were selected for submission to the laboratory based on visual and olfactory observations. Headspace vapour measurements were not collected due to limited soil recovery.

5.6 Groundwater: Monitoring Well Installation

The wells were constructed of a 44-mm diameter polyvinyl chloride (PVC) pipe and a #10 slotted PVC well screen, approximately 3.05 m in length placed, where required, to intercept the inferred groundwater table. A sand-pack consisting of clean silica sand was placed within the annulus space surrounding the screened section of the wells and extended 0.3 m above the top of the screen. Bentonite chips were placed on the top of the sand layer to within 0.3 m of the surface to prevent surface water infiltration along the PVC riser. A locking J-Plug cap was placed at the top of each well pipe and a protective steel monument protective casing was cemented at surface to protect the wells. New disposable nitrile gloves were donned prior to the handling of the well materials. The monitoring wells were installed and registered in accordance with O. Reg. 903 – Wells, made under the Ontario Water Resources

Act. Following monitoring well installation activities, the wells were equipped with dedicated Waterra™ tubing (1.25 cm in diameter) and inertial lift foot valve for well development purposes. The wells were developed to remove any groundwater impacted by drilling activities and to reduce the amount of sediment within the well.

- Three boreholes were installed with monitoring wells between August 29, 2022, and August 30, 2022 (22-01, 22-02 and 22-03).

A summary of wells installed during this field program are provided in **Table 1.**

5.7 Groundwater: Well Development

Following groundwater monitoring well installation, monitoring wells were developed to remove fine-grained materials from the well and filter packs and to stabilize the filter pack around the well screens. Development was completed by purging the well dry three times if the well was considered a “low yield” monitoring well or by removing at least three times the well volume. At monitoring well 22-01, only one well volume was removed due to low recovery.

5.8 Groundwater: Monitoring and Sample Collection

The groundwater level was measured prior to the collection of groundwater samples. Groundwater samples were collected through conventional means following the purging of three well volumes. At the low-yield monitoring wells 22-01, at least one well volume was purged prior to groundwater collection. Field parameters (temperature, pH and electrical conductivity) were collected using a pocket meter prior to sampling. During purging for groundwater collection, qualitative observations were made of water colour, clarity, and the presence of hydrocarbon sheen or odour.

Water quality parameters were taken obtained using the HI 98129 pocket meter. Specifications for the pocket meter are summarized in the following table:

Parameter	Measurement Range	Resolution	Accuracy
pH	0.00 to 14.00 pH	0.01 pH	±0.02 pH
Conductivity	0.00 to 3999 µS/cm	1 µS/cm	± 2%
Temperature	0 to 60.0 ºC	0.1 ºC	± 0.5ºC

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Following purging and the collection of water quality parameters, laboratory-supplied containers were filled with the groundwater samples conventionally. The groundwater monitoring details are provided in **Table 3.**

New nitrile gloves were donned prior to the handling of well and sampling materials at each monitoring well location.

Groundwater samples were placed in laboratory-prepared containers and stored in a cooler until delivery to the analytical laboratory under chain-of-custody procedures. A summary of the groundwater samples submitted for analysis is presented in **Table 2B**.

5.9 Sediment: Sampling

No sediment samples were collected as part of this investigation.

5.10 Analytical Testing

The contact information for the analytical laboratory: AGAT Laboratories Ltd., 5835 Coopers Avenue, Mississauga, Ontario, L4Z 1Y2 (Travis Judd, Client Project Manager, 905-712-5130).

The analytical laboratory is accredited in accordance with the International Standard ISO/IEC 17025 (CALA) (General Requirement for the Competence of Testing and Calibration Laboratories, May 5, 2005, as amended).

5.11 Hydraulic Testing

Single well response testing was carried out at all boreholes using a falling head test at 22-01 and a rising head test at 22-02B and 22-03 on October 3, 2022. The falling head tests were completed by rapidly raising the water level in the test well using a slug and monitoring the recovery using a water level tape and a pressure transducer. The rising head tests were completed by rapidly lowering the water level in the test well by purging water from the monitoring well using dedicated Waterra™ tubing with inertial foot-valves and then removing the Waterra™ tubing from the well, causing a rapid drop in water levels. The subsequent recovery (rise) of water level was recorded using the pressure transducer (rising head test).

The results of the hydraulic conductivity testing were analyzed using the Hvorslev (1951) and Bouwer and Rice (1976) methods, where appropriate, and are presented in **Appendix D**.

Hvorslev (1951) Slug Test Analysis

The Hvorslev Slug Test Analysis was applied to the falling head test data at 22-02B:

$$K = \frac{r_c^2}{2L_e} ln\left[\frac{L_e}{2R_e} + \sqrt{1 + \left(\frac{L_e}{2R_e}\right)^2}\right]\left[\frac{ln\left(\frac{h_1}{h_2}\right)}{(t_2 - t_1)}\right]$$

where:

- K = hydraulic conductivity (m/seconds (s))
- r_c = casing radius (m)
- R_e = filter pack radius (m)
- L_e = length of screened interval (m)
- t = time (s)
- h_t = head at time t (m)

Bouwer and Rice (1976)

The Bouwer and Rice (1976) method was applied to the falling head test data at 22-01 and 22-03:

$$K = \frac{r_c^2 \, ln(\frac{R_e}{r_w})}{2L_e} \frac{1}{t} ln\left[\frac{y_o}{y_t}\right]$$

where:

- K = hydraulic conductivity (m/s)
- r_c = casing radius (m)
- r_e = effective radius (m)
- L_e = length of screen interval (m)
- r_w = radial distance to undisturbed aquifer (m)
- yo = initial drawdown (m)
- yt = drawdown at time t (s)

5.12 Residue Management Procedures

All residues produced during the investigation (e.g., soil cuttings from drilling, groundwater from well development purging, wash water from equipment decontamination) were placed in sealed drums and stored at the Phase Two Property for disposal by the owner.

5.13 Elevation Surveying

Ground surface elevations were geodetically surveyed in-house on September 26, 2022 for three boreholes on Site (22-01, 22-02B and 22-03). Elevations were determined relative to sea level, following calibration to the following benchmark:

- ON Ottawa Base: easting: 372,181.260 m, northing: 5026,864.287 m. elevation: 95.231 metres above sea level (masl), datum: NAD 1983 (Canadian Spatial Reference System 2010), Zone: Modified TM Zone 09, Geoid Model: CGVD 1928.

5.14 Quality Assurance and Quality Control Measures

Golder's quality assurance program for environmental investigations was implemented to ensure that analytical data obtained by the investigation were valid and representative. The quality assurance program included the following measures:

- The use of standard operating procedures for all field investigation activities;
- All monitoring wells were developed following installation to remove fine particles from the filter pack and any fluids introduced during drilling.
- Monitoring wells were appropriately purged prior to groundwater sample collection to remove stagnant water from the well bore and improve sample representativeness, minimizing sample agitation and aeration to the extent practicable.
- Initial calibration of field equipment was performed at the start of each field day, with daily checks of calibration, as needed, using a standard of known concentration.

- Soil and groundwater samples were handled and stored in accordance with the sample collection and preservation requirement of the MECP "*Protocol for Analytical Methods Used in the Assessment of Properties Under Part XV.I of the Environmental Protection Act*", July 1, 2011. Samples were collected directly into pre-cleaned, laboratory-supplied sample containers with the appropriate preservative for the analyte group. Upon collection, samples were placed in insulated coolers with ice for storage and transport to the analytical laboratory under chain-of-custody.
- Dedicated sampling equipment (tubing and footvalves) and clean disposable Nitrile™ gloves were used at each sampling location to prevent cross-contamination. All non-dedicated sampling equipment (e.g., water level meters, split spoons) was decontaminated between sampling locations using the following steps: cleaned by mechanical means; washed with a phosphate-free, laboratory-grade detergent (e.g., LiquiNox); and thoroughly rinsed with analyte-free water.
- Detailed field records documenting the methods and circumstances of collection for each field sample were prepared at the time of sample collection. Each sample was assigned a unique sample identification number recorded in the field notes, along with the date and time of sample collection, the sample matrix, and the requested analyses.
- The submission of samples to the analytical laboratory in accordance with standard chain of custody procedures.

Below is a summary of primary and duplicate samples collected.

Media	Date	Sample ID	Duplicate ID	Analysis
Groundwater	September 28, 2022	22-02	MW22-DUP	PHC, BTEX, PAH, Hydride-forming metals, metals, VOC

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There was limited sample recovery during drilling which limited the number of soil duplicates collected in 2022. Golder reviewed the historical QA/QC samples collected and has deemed the data to be reliable for use in development of the conceptual site model.

6.0 REVIEW AND EVALUATION

This section of the report presents a review and evaluation of the results of the drilling, monitoring and sampling activities conducted and assessed as part of the Phase Two ESA, which includes previous investigations.

6.1 Geology

The soil conditions encountered during the present investigation are shown in the Record of Boreholes provided in **Appendix B**.

The subsurface soil conditions encountered in the boreholes consisted generally of asphaltic concrete overlaying fill of variable depths (between maximum depths of 0.8 mbgs at boreholes 22-01 and 22-02B and 1.4 mbgs at 22-03). The fill materials encountered at the Phase Two Property predominantly consisted of silty sands at 22-01 and 22-02B and gravel with trace sand at 22-03. The fill layer overlay a till layer of sandy gravel to gravel between depths of 0.8 (22-01) to 1.52 mbgs (22-03). A till layer of silty sand was observed between 0.8 to 1.5 mbgs at 22-02B. The ground surface at 22-03 consisted of a concrete block extending up to 0.8 mbgs. Weathered bedrock

(potentially cobbles and boulders) was encountered between 1.4 to 1.5 mbgs at boreholes 22-01 and 22-02B. Fill materials were encountered at each borehole assessed as part of this investigation. Bedrock was encountered between 1.5 mbgs (22-03) to 1.9 mbgs (22-02B).

Given that the average thickness of overburden at the Phase Two Property is less than 2 m, the Phase Two Property is considered to be a shallow soil property as defined by O.Reg. 153/04 (as amended).

6.2 Groundwater Elevations and Flow Direction

A summary of the monitoring well construction details are presented in **Table 1**. The elevations of the potentiometric surface at each monitoring well are summarized in **Table 4** and **Figure 2**.

All monitoring wells screened in bedrock were used in the interpretation of groundwater contours and groundwater flow direction.

Groundwater elevations ranged from 56.25 to 57.77 masl (3.83 to 5.43 mbgs) on October 3, 2022. The inferred direction of shallow groundwater flow in bedrock was shown to be to the towards the building based on the groundwater levels collected as part of this investigation, however, the presence of infrastructure including a basement sump is expected to influence the water level interpretation. However, the actual local groundwater flow is inferred to be to the northward based on the location of the Ottawa River and transit way cut into bedrock to the north of the Site.

A summary of the well screen and water table elevations in 2022 of monitoring wells located in APECs 1 and 2, where PHC in groundwater are a contaminant of potential concern is presented below.

Monitoring Well	Bottom of Well Screen (masl)	Top of Well Screen (masl)	Water Level – October 3, 2022 (masl)	Comment
22-01	55.30	58.55	57.77	Screen straddles the water table
22-02B	52.72	55.77	56.84	Screen is submerged
22-03	52.68	55.73	56.25	Screen is submerged

Created by: RM
Checked by: DG

The lateral flow of groundwater at the Site is potentially impacted by preferential pathways for groundwater flow that were introduced during building construction, including utility trenches, building foundations and foundation drains. Building foundations and utility foundations are inferred to represent a preferential (i.e., higher permeability) flow pathway for contaminated groundwater.

Seasonal fluctuation in water levels should be expected. Shallow groundwater water levels are typically highest following the spring recharge and decline throughout the summer and fall months into the winter.

6.3 Hydraulic Gradients

The average horizontal hydraulic gradient was estimated for shallow groundwater conditions based on water levels collected on October 3, 2022, presented in **Figure 2**. The average horizontal hydraulic gradient for shallow groundwater conditions was 0.04 m/m.

The vertical hydraulic gradient was not calculated as nested wells were not installed as part of this investigation.

6.4 Hydraulic Conductivity

Single well response testing (i.e., falling head tests) was carried out at boreholes 22-01, 22-02B and 22-03 on September 30, 2022. Estimates of hydraulic conductivity (K) obtained from the falling head tests are summarized in the table below. Results of the hydraulic conductivity analysis are provided in Appendix E.

Summary of Estimated Hydraulic Conductivity

Borehole	Unit Screened	Top of Test Interval Depth (mbgs)	Bottom of Test Interval Depth (mbgs)	Method	K (cm/s)
22-01	Shaley LIMESTONE	2.93	6.15	Bouwer and Rice (1976)	$2x10^{-6}$
20-02B	Shaley LIMESTONE	5.89	8.94	Hvorslev (1951)	$3x10^{-4}$
22-03	Shaley LIMESTONE	5.86	8.91	Bouwer and Rice (1976)	$5x10^{-3}$

Notes:
mbgs – metres below ground surface
cm/s – centimetres per second

Created by: RM
Checked by: DG

The hydraulic conductivity estimates for limestone ranged from $2x10^{-6}$ cm/s to $5x10^{-3}$ cm/s, with a geometric mean of $1x10^{-4}$ cm/s (n=3).

6.5 Coarse Soil Texture

As the fill layer is generally characterized by sands and gravels, it is presumed that the coarse-textured standard is applicable.

6.6 Soil: Field Screening

Headspace vapour measurements were not collected conducted on the soil samples collected from the boreholes due to low sample recovery.

6.7 Soil: Quality

Table 2A provides a summary of the soil samples submitted for analysis and the associated test parameters. The analytical results of soil samples are presented in **Tables 5A to 5D**. Laboratory certificates of analysis for the soil samples are included in **Appendix C**.

A summary of the number of soil samples analyzed and the number of soil samples exceeding the Table 7 site condition standards (excluding duplicate samples) is provided in the following table.

Parameter	Number of soil samples analyzed	Number of soil samples exceeding the Table 7 Standards
PHC	3	0
BTEX	3	0
PAH	3	0
Hydride-forming metals	3	0
Metals	3	0
ORP	3	0
Surface soil pH	3	1
Road Salt Parameters	3	1
VOC	3	1

Created by: RM
Checked by: DG

A summary of exceedances in soil of the MECP Table 7 Site Standards is provided below:

Exceedances in Soil

22-01: The concentration of n-hexane was detected in soil between 0.8 to 1.4 mbgs from the borehole 22-01 collected on August 30, 2022, in exceedance of MECP Table 7 Site Standards.

22-02B: The electrical conductivity and sodium adsorption ratio was detected in soil between 0.8 to 1.4 mbgs from the borehole 22-02B collected on August 30, 2022, in exceedance of MECP Table 7 Site Standards. It is noted that these parameters are related to the application of salt for safety purposes and therefore are considered as meeting the standards.

22-03: The surface soil pH was detected in soil between 0.8 to 1.4 mbgs from the borehole 22-03 collected on August 30, 2022, in exceedance of MECP Table 7 Site Standards.

6.8 Groundwater: Quality

Monitoring well construction details are summarized in **Table 1** and a list of groundwater samples submitted for laboratory analysis is provided in **Table 2B**. The analytical results for groundwater samples are summarized in **Tables 6A through 6D**, along with the applicable MECP Table 7 Site Standards. Laboratory certificates of analysis for groundwater are provided in **Appendix C**.

Golder completed sampling of monitoring wells at the Site on September 30, 2022. A summary of the number of groundwater samples analyzed and number of samples exceeding the MECP Table 7 Site Standards is provided in the following table.

Parameter	Number of groundwater samples analyzed	Number of groundwater samples exceeding the Table 7 Standards
PHC	3	0
BTEX	3	0
PAH	3	0
Hydride-forming metals	3	0
Metals	3	0
ORP	3	0
VOC	3	2

Created by: RM
Checked by: DG

A summary of exceedances in groundwater of the MECP Table 7 Site Standards in samples collected as part of this investigation and previous investigations is provided below:

Exceedances in Groundwater

22-02: The concentration of cis-1,2-dichloroethylene was detected in groundwater in the sample collected on September 28, 2022, from monitoring well 22-02 in exceedance of MECP Table 7 Site Standards.

22-03: The concentrations of cis-1,2-dichloroethylene, trichloroethylene, tetrachloroethylene and vinyl chloride were detected in groundwater in the sample collected on September 28, 2022, from monitoring well 22-02 in exceedance of MECP Table 7 Site Standards.

In addition to the numerical standards, the MECP sets out aesthetic standards relating to the presence of petroleum hydrocarbon product. Specifically, a property does not meet the site condition standards if there is evidence of free product, including but not limited to, visible petroleum hydrocarbon film or sheen present on groundwater. Monitoring for free phase product was conducted during groundwater sample collection. No evidence of free product or sheen in groundwater was observed.

6.9 Sediment: Quality

No sediment samples were collected as part of this investigation.

6.10 Data Quality Review

The quality assurance assessment of the field duplicate sample results was conducted according to the MECP document "*Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act*", March 9, 2004 (amended in July 2009 and effective as of July 1, 2011) (Analytical Protocol).

To determine the precision of the analytical methods and field sampling procedures, blind duplicate samples were collected during groundwater sampling. Due to limited recovery as a result of shallow soil conditions, duplicate soil samples were not collected. Precision is determined by the relative percent difference (RPD) between the duplicate and original samples and was calculated as follows:

$$RPD = \frac{|x_1 - x_2|}{x_m}$$

where:

x_1 initial sample results
x_2 duplicate sample results
x_m mean of x_1, x_2

The analytical results of the primary and duplicate groundwater samples generally indicated a satisfactory correlation between the primary and duplicate samples and were generally within the recommended control limit for field duplicates, which is twice the laboratory acceptance criteria due to the heterogeneity of field duplicates. The RPD was only calculated where the average of the parent and duplicate concentrations was greater than 5 times the detection level. The RPD between the duplicate and the parent sample satisfied the acceptability criteria for the groundwater samples MW22-02 and MW22-DUP collected as part of this program.

The quality of the analytical results is further supported by analytical laboratory's internal quality assurance program that includes laboratory blanks, spikes, surrogates, and duplicate samples.

All certificates of analysis or analytical reports received pursuant to clause 47 (2) (b) of the regulation comply with subsection 47(3). A certificate of analysis or analytical report has been received for each sample submitted for analysis and is provided in **Appendix C**. The qualifiers provided by the laboratory as part of the laboratory Quality Control procedure were as follows:

- 22Z951206:
  - The presence of sediment was noted based on visual observation in samples MW22-01, MW22-02, MW22-03 and MW22-DUP in the sample bottles collected for the analysis of PHC F1-F4 and in samples MW22-02, MW22-03 and MW22-DUP in the sample bottles collected for the analysis of PAH.
  - The samples MW22-01, MW22-02 and MW22-DUP were diluted based on visual observation of foam in the sample bottles collected for the analysis of VOC and the reporting detection limit has been corrected for the dilution factor used.

The elevated detections levels for analysis in groundwater are not expected to impact the findings of the investigations as the elevated detections levels are below the applicable standards.

Accordingly, the analytical data generated during the investigation are considered to be generally valid and representative and may be used in this Phase Two ESA without further qualification.

7.0 PHASE TWO CONCEPTUAL SITE MODEL

Golder Associates Ltd. (Golder) was retained by Stantec Inc. (Stantec or the Client) on behalf of Lasalle Investment Management Inc. (the Owner) to conduct a Phase Two Environmental Site Assessment (ESA) for the property located at 1560 Scott Street in Ottawa, Ontario, Ontario (the Site, Phase Two Property or RSC Property).

The Phase Two Property consists of an irregularly shaped 0.25-hectare (ha) parcel of land consisting of a commercial building with a two below-grade levels parking garage.

The Site was developed for industrial purposes with at least one building since at least 1920 and developed to its present conditions consisting of two commercial buildings and a two below-grade levels used for parking since at least 1991.

It is understood that the Phase Two Property is to be redeveloped with a 25-storey residential building with two basement levels following the demolition of the Site building which is the southeast corner of the Holland Cross office complex. The proposed future use of the Phase Two Property is residential.

Potential Sources of Contamination

Potentially Contaminating Activities

Based on the information obtained as part of the Phase One ESA, the following potentially contaminating activities (PCAs) were identified. The location of each PCA is provided in **Figure 1B**:

Location	Potentially Contaminating Activity	Information Source	Rationale for Potential Contribution of the PCA to an APEC
Phase One Property	PCA A: (#32) Iron and Steel Manufacturing and Processing – A foundry owned by Beech Foundry Ltd. historically operated on Site and in the Phase One Study Area.	Aerial photographs, FIP and HLUI	The PCA is located on the Phase One Property and must be identified as an APEC.
Phase One Study Area (excluding the Phase One Property)	PCA B: (#34) Metal Fabrication and #28) Gasoline and Associated products in Fixed Tanks – J. Robinson and Son operated an aluminum rolling, casting and extruding industry with two USTs between 1948 and 1970 at 2 Hinton Avenue.	HLUI, ERIS, FIPs, and Previous report.	This PCA is 150 metres upgradient of the Site and when considered with other PCAs in this location has the potential to result in an APEC.
	PCA C: (#28) Gasoline and Associated products in Fixed Tanks and (#10) Commercial Autobody Shops – Several gasoline service stations with two gasoline USTs operated at 65 Holland Avenue since 1948 and a motor vehicle repair shop operated at this location since 2005.	HLUI, ERIS, FIPs, and Previous report.	This PCA is 150 metres upgradient of the Site and when considered with other PCAs in this location has the potential to result in an APEC.

Location	Potentially Contaminating Activity	Information Source	Rationale for Potential Contribution of the PCA to an APEC
	PCA D: (#10) Commercial Autobody Shops and (#28) Gasoline and Associated products in Fixed Tanks – Various garages with two USTs (since 1948) and gas bars have operated at 1480 Scott Street since 2001.	HLUI, ERIS, FIPs, and Previous report.	This PCA is 230 metres downgradient of the Site and therefore not considered to have resulted in an APEC.
	PCA E: (#28) Gasoline and Associated products in Fixed Tanks – A gasoline service station with two USTs operated at 7 Holland Avenue since 1956.	HLUI, FIPs, and Previous report.	This PCA is 85 metres downgradient and is therefore not considered to have resulted in an APEC.
	PCA F: (#10) Commercial Autobody Shops and (#34) Metal Fabrication – Various motor vehicle repair shops and metal fabricating industries operated at 1536 Scott Street between 1910 and 2005.	HLUI, site reconnaissance	This PCA is 60 metres downgradient and is therefore not considered to have resulted in an APEC.
	PCA G: (#28) Gasoline and Associated products in Fixed Tanks – MacLennan's Texaco Service Station operated at 1570 Scott Street between 1960 and 1980.	HLUI, FIP, Previous report.	This PCA is 100 m downgradient and is therefore not considered to have resulted in an APEC.
	PCA H: (#8) Chemical Manufacturing, Processing and Bulk Storage, (NA) Commercial Printing, (31) Ink Manufacturing, Processing and Bulk Storage and (59) Wood Treating and Preserve Facility and Bulk Storage of Treated and Preserved Wood Products – Various chemical (c.1950), publishing and printing (c.1958-1999) and sawmill operations (c.1929-1948) have operated at 124 Parkdale Avenue between 1929 and 1999.	HLUI	This PCA is 150 m downgradient, across the light rail bedrock cut and is therefore not considered to have resulted in an APEC.
	PCA I: (#10) Commercial Autobody Shops – Fourier Clair operated a motor vehicle repair shop at 1484 Scott Street since 2005.	HLUI	This PCA is 200 metres downgradient and is therefore not considered to have resulted in an APEC.
	PCA J: (#37) Operation of Dry-cleaning Equipment – Comet Cleaners operated a laundries and cleaners at 275 Parkdale between 1960 and 1980.	HLUI	This PCA is 90 metres cross gradient to the Site and not considered to have resulted in an APEC.
	PCA K: (#34) Metal Fabrication – Canada Brass and Machine Works operated a copper and copper alloy rolling, casting and extruding industry at 20 Hamilton Avenue since 1940.	HLUI	This PCA is 250 metres upgradient of the site, however, based on the distance from the site it is not considered to have resulted in an APEC.

Location	Potentially Contaminating Activity	Information Source	Rationale for Potential Contribution of the PCA to an APEC
	PCA L: (NA) Commercial Printing and (31) Ink Manufacturing, Processing and Bulk Storage – MOM Printing and Instruments operated a commercial printing industry at 300 Parkdale Avenue between 1970 to at least 2003.	This PCA is 50 metres east of the Site in a cross-gradient location. Due to the proximity when considered with other PCAs in this location has the potential to result in an APEC.	This PCA is 50 metres east of the Site in a cross-gradient location. Due to the proximity when considered with other PCAs in this location has the potential to result in an APEC.
	PCA M: (#34) Metal Fabrication - Capital Wire Cloth Manufacturing operated a wire and wire products industries at 4 Hamilton since 1920.	HLUI, ERIS, FIPs, and Previous report.	This PCA is 120 metres upgradient of the Site and when considered with other PCAs in this location has the potential to result in an APEC.
	PCA N: (#19) Electronics and Computer Equipment Manufacturing, (#34) Metal Fabrication, and (59) Wood Treating and Preserve Facility and Bulk Storage of Treated and Preserved Wood Products – A lumber wholesaler, and several companies operated industries related to machine shops and aircraft and aircraft parts between 1912 to at least 2003.	ERIS, HLUI	This PCA is 150 metres upgradient of the Site and when considered with other PCAs and the documented known chlorinated solvent contamination at this location, has the potential to result in an APEC.
	PCA O: (#28) Gasoline and Associated products in Fixed Tanks and (#37) Operation of Dry-cleaning Equipment – Bill Brown Service Station operated a gasoline service station since 1950 and Comet Cleaners operated a laundries and cleaners at 380 Parkdale Avenue since 1960.	HLUI	The PCA is greater than 250 metres from the site and based on the distance is not considered to have resulted in an APEC.
	PCA P: (#10) Commercial Autobody Shops – Scott Street Garage operated a service garage at 1446 Scott Street from 1960 to 1980.	HLUI	This PCA is 150 metres downgradient and is therefore not considered to have resulted in an APEC.
	PCA Q: (#46) Railway Yards, Tracks and Spurs – A former rail line was present to the northwest of the Site servicing the onsite foundry.	Air photos	This PCA was 25 metres northwest of the site, however, due to the nature of the issue (affecting shallow soils locally) it is not considered to have resulted in an APEC.

Areas of Potential Environmental Concern

A summary of the APECs identified at the Phase Two Property is provided in the following table. The location of each APEC is presented in **Figure 1C**. It is noted that the extent of the APEC was selected as an area representing the location of the highest potential for impacts to be present associated with the APEC. The actual extent of impacts, if present, may extent outside the APECs, as shown.

Area of Potential Environmental Concern	Location of Area of Potential Environmental Concern on Phase Two 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)
APEC 1 – Former Beech foundry.	West portion of the Site where the foundry was located	(#32) Iron and Steel Manufacturing and Processing (PCA A)	On-Site	PHC, BTEX, PAH, metals, hydride-forming metals, ORP, VOC	Soil and groundwater
APEC 2 – Manufacturing, gas stations, service garages and commercial printing to the south of the Phase One Property within 150 metres, including a documented VOC-contaminated site.	South portion of the Site.	(#34) Metal Fabrication (PCA B, M, N), (#28) Gasoline and Associated products in Fixed Tanks (PCA B, C), (#10) Commercial Autobody Shops (PCA C), (#19) Electronics and Computer Equipment Manufacturing (PCA N), (NA) Commercial Printing (PCA L), (31) Ink Manufacturing, Processing and Bulk Storage (PCA L), and (59) Wood Treating and Preserve Facility and Bulk Storage of Treated and Preserved Wood Products (PCA N).	Off-Site	PHC, BTEX, PAH, metals, hydride-forming metals, ORP, VOC	Soil and Groundwater

APEC 1 (Former Beech foundry) – As part of this Phase Two ESA, the shallow fill quality and groundwater quality was characterized for evidence of chemical or physical impact from metals including hydride-forming metals, petroleum hydrocarbons (PHC), benzene, toluene, ethylbenzene and total xylenes (BTEX), polycyclic aromatic hydrocarbons (PAH), and other regulated parameters (ORP) including hot water-soluble boron, hexavalent chromium, cyanide and mercury and volatile organic compounds (VOC). The investigation of APEC 1 included the collection and laboratory submission of one surficial soil sample (depth <1.5 mbgs) and one groundwater sample from borehole 22-02B for the analysis of the contaminants of potential concern. Although outside the APEC, 22-01 and 22-03 included the same chemicals of potential concern and were reviewed as part of the APEC-1.

The reported concentrations of PHC, BTEX, PAH, hydride-forming metals, metals, ORP and VOC met the applicable site condition standards in the soil sample collected between 0.8 to 1.4 mbgs at 22-02B (within the APEC). The concentrations of n-hexane at 22-01 (outside the APEC) was the only parameter that exceeded the applicable site condition standards in soil. The plan views of the soil analytical results are shown on **Figures 3A** (PHC and BTEX), **4A** (PAH), **5A** (Metals, hydride-forming metals and ORP) and the lateral extent of the VOC (n-hexane) at 22-01contamination in soil is shown on **Figure 6A** and is considered to be horizontally delineated to the nearest boreholes and vertically delineated to bedrock.

The reported concentrations of PHC, BTEX, PAH, hydride-forming metals, metals, ORP and VOC met the applicable site condition standards in the groundwater except for VOCs in the sample collected from 22-02B (inside the APEC) and at 22-03 (outside the APEC). The plan views of the groundwater analytical results are shown on **Figures 3B**, **4B**, **5B** and **6B**.

APEC 2 (Manufacturing, gas stations, service garages and commercial printing to the south of the Phase One Property within 150 metres, including a documented VOC contaminated site) – The investigation of APEC 2 included the collection and analysis of one surficial soil sample and groundwater sample from boreholes 22-03 for the analysis of metals, hydride-forming metals, PHC, BTEX, PAH, ORP and VOC. Boreholes 22-02B and 22-01, although, outside the APEC, included the same chemicals of potential concern and were reviewed as part of the APEC-2.

The reported concentrations of PHC, BTEX, PAH, metals, hydride-forming metals, ORP and VOC met the applicable site condition standards in the soil sample collected between 0.8 to 1.4 mbgs at 22-03 (within the APEC) and 22-03 (outside the APEC). The concentration of n-hexane at 22-01(outside the APEC) exceeded the applicable site condition standard. The plan views of the soil analytical results are shown on **Figures 3A**, **4A** , **5A** and **Figure 6A**. It is noted that the exceedance of EC and SAR at 22-02B is related to the application of salt for safety purposes and is therefore considered as meeting the site condition standards.

The reported concentrations of PHC, PAH, metals, hydride-forming metals, ORP and VOC met the applicable site condition standards in the groundwater samples collected from 22-01(outside the APEC)whereas the concentrations of select VOCs exceeded site condition standards at 22-03 (inside the APEC) and 22-02B (outside the APEC). The VOC exceedances included cis-1,2,-dichloroethylene at 22-02B and cis-1,2,-dichloroethylene, trichloroethylene, tetrachloroethylene and vinyl chloride at 22-03. The plan views for the groundwater analytical results are shown on **Figures 3B, 4B, 5B** and the lateral extent of the VOC contamination in groundwater is shown in **Figure 6B** and is not considered to be horizontally or vertically delineated**.**

Subsurface Structures and Utilities

Potable water is provided by the City of Ottawa. The Phase Two Property and surrounding area are serviced by a storm sewer, water, natural gas connection, hydro and telecommunication. The depth of the private and public services is inferred to range between frost depth (1.2 mbgs) and the water table. The depth to water ranges between 3.83 to 5.43 mbgs and therefore, some buried utilities and subsurface structures may be above the water table.

Two commercial buildings were present at the Phase Two Property. The depth and location of the existing building foundations and footings are unknown. The presence of subsurface utilities and structures at the Site are expected to act as preferential pathways promoting the migration of contaminants of concern in groundwater.

7.1 Physical Setting

Stratigraphy

The soil conditions encountered during the present investigation are shown in the Record of Boreholes provided in **Appendix B**.

The subsurface soil conditions encountered in the boreholes consisted generally of asphaltic concrete overlaying fill of variable depths (between maximum depths of 0.8 mbgs at boreholes 22-01 and 22-02B and 1.4 mbgs at 22-03). The fill materials encountered at the Phase Two Property predominantly consisted of silty sands at 22-01 and 22-02B and gravel with trace sand at 22-03. The fill layer overlay a till layer of sandy gravel to gravel between depths of 0.8 (22-01) to 1.52 mbgs (22-03). A till layer of silty sand was observed between 0.8 to 1.5 mbgs at 22-02B. The ground surface at 22-03 consisted of a concrete block extending up to 0.8 mbgs. Weathered bedrock (potentially cobbles and boulders) was encountered between 1.4 to 1.5 mbgs at boreholes 22-01 and 22-02B. Fill materials were encountered at any boreholes assessed as part of this investigation. Bedrock was encountered between 1.5 mbgs (22-03) to 1.9 mbgs (22-02B).

Given that the average thickness of overburden at the Phase Two Property is less than 2 m, the Phase Two Property is considered to be a shallow soil property as defined by O.Reg. 153/04 (as amended).

Depth to Bedrock

Bedrock was encountered between 1.6 mbgs (22-01) to 2.0 mbgs (22-03).

Hydrogeological Characteristics

Groundwater elevations ranged from 56.25 to 57.77 masl (3.83 to 5.43 mbgs) on October 3, 2022. The inferred direction of shallow groundwater flow in bedrock was shown to be towards the building based on the groundwater levels collected as part of this investigation, however, the presence of infrastructure including a basement sump is expected to influence the water level interpretation. However, the actual local groundwater flow is inferred to be to the north based on the location of the Ottawa River and transit way cut into bedrock to the north of the Site.

The average horizontal hydraulic gradient was estimated for shallow groundwater conditions based on water levels collected on October 3, 2022, and the inferred groundwater contours are presented in **Figure 2**. The average horizontal hydraulic gradient for shallow groundwater conditions was 0.04 m/m.

The vertical hydraulic gradient was not calculated as nested wells were not installed as part of this investigation.

The hydraulic conductivity estimates for limestone ranged from 2x10-6 cm/s to 5x10-3 cm/s, with a geometric mean of 1x10-4 cm/s (n=3).

7.2 Site Condition Standards

Environmentally Sensitive Areas

Elevated pH was noted in one surface soil sample (pH of 10.3 in a soil sample collected between 0.8 to 1.4 mbgs at 22-03). The reported pH of two surface soil samples met the requirements that the pH of surface soil is 5<pH< 9. The average pH of the subsurface soil on Site was 8.32, based on three samples spatially distributed across the Site. As the average pH of the surface soil was within the required range, the Site is not classified as environmental sensitive. Due to the shallow soils conditions on Site, sufficient subsurface soil was not recovered for submission to the laboratory for analysis, and therefore the subsurface soil pH was not assessed.

Accordingly, Section 41 of the Regulation does not apply to the Phase Two Property and the Site is not classified as an environmentally sensitive area based on soil pH.

Shallow Soil Property or Water Body

Given that the average thickness of overburden at the Phase Two Property is less than 2 m, the Phase Two Property is considered to be a shallow soil property as defined by O.Reg. 153/04 (as amended).

Imported Soil

No other soil has been brought from another property and placed on, in or under the Phase Two Property as part of the Phase Two ESA. Fill was observed throughout the Phase Two Property to a maximum depth of 1.4 mbgs.

Proposed Buildings and Other Structures

Based on the development plan provided by the Client (See **Figure 7**), Golder understands that the Phase Two Property is to be redeveloped with a 25-storey residential building with two subsurface levels for underground parking following the demolition of the current site building.

7.3 Delineation of Contaminant Impacts

APEC Where Contaminants are Present at a Concentration Above the Applicable Site Condition Standard

The reported concentrations of soil samples submitted for analysis indicate the soil quality at all APECs exceeded the applicable site condition standards at APEC 1.

The reported concentrations of all groundwater samples submitted for analysis indicate that groundwater quality exceeded the applicable site condition standards at APEC 2.

7.3.1 Soil Impacts

The quality of on-site soil was assessed from chemical analysis and/or field observations (i.e., odour or headspace vapour screening) of representative discrete soil samples collected at borehole locations across the Site. The following sections summarize the soil impacts identified on the Site. The location of soil samples and their corresponding analytical results are shown in Figures 3A, 4A, 5A and 6A (plan view.

Soil Quality

As part of this Phase Two ESA, the shallow fill quality was characterized for evidence of chemical or physical impact from metals including hydride-forming metals, PHC, BTEX, PAH, and ORP.

The subsurface soil conditions encountered in the boreholes consisted generally of asphaltic concrete overlaying fill of variable depths (between maximum depths of 0.8 mbgs at boreholes 22-01 and 22-02B and 1.4 mbgs at

22-03). The fill materials encountered at the Phase Two Property predominantly consisted of silty sands at 22-01 and 22-02B and gravel with trace sand at 22-03.

PHC and BTEX

No analyzed PHC or BTEX parameters were present in soil at a concentration greater than the applicable site condition standards (**Figure 5A**).

PAH

No analyzed PAH parameters were present in soil at a concentration greater than the applicable site condition standards (**Figure 6A**).

Metals, Hydride-forming Metals and ORP

No analyzed metals, hydride-forming metals or ORP were present in soil at a concentration greater than the applicable site condition standards (**Figure 5A**).

The elevated pH in surficial fill at borehole 22-03 (0.8-1.4 mbgs) is inferred to be laterally delineated by the analytical results of samples collected between 0.8 to 1.4 mbgs at 22-01 and 22-02B to the north. The pH in subsurface soil was not analyzed due to on-Site shallow bedrock conditions.

VOC

The reported concentrations of n-hexane were above the applicable site condition standards in soil collected between depths of 0.8 to 1.4 mbgs at borehole 22-01 (**Figure 6A**). The lateral extent of the VOC contamination is inferred to be delineated by the results of the soil samples at 22-02B and 22-03 as well as the site boundary.

It is noted that due to the presence of the existing building, boreholes were situated outside the building and existing parking structure and as such the soil impacts at 22-01 within APEC-1 may eventually fall outside the site boundaries.

7.3.2 Groundwater Impacts

Groundwater quality was assessed from chemical analysis of groundwater samples collected from monitoring wells. The following section summarizes the on-site groundwater impacts. The groundwater analytical results are shown on **Figures 3B, 4B, 5B and 6B** (plan views). Building foundations and utility foundations are inferred to represent a potential preferential (i.e., higher permeability) flow pathway for contaminated groundwater.

PHC and BTEX

No PHC or BTEX parameters were present in groundwater at a concentration greater than the applicable site condition standards (**Figure 5B**).

PAH

No PAH parameters were present in groundwater at a concentration greater than the applicable site condition standards (**Figure 4B**).

Metals, Hydride-forming Metals and ORP

No analyzed metals, hydride-forming metals or ORP were present in groundwater at a concentration greater than the applicable site condition standards (**Figure 5B**).

VOC

The reported concentrations of cis-1,2,-dichloroethylene were above the applicable site standards at 22-02B and in addition to cis-1,2,-dichloroethylene, concentrations of trichloroethylene, tetrachloroethylene and vinyl chloride exceeded the applicable site condition standards at 22-03. The lateral distribution of groundwater impacts is shown on **Figure 6B.**

It is noted that due to the presence of the existing building, boreholes were situated outside the building and existing parking structure, however, groundwater quality is considered to reflect the groundwater quality below the Site building.

7.3.3 Contaminant Distribution

Based on the analytical results of the soil and groundwater samples submitted as part of this Phase Two ESA, the reported concentrations of the contaminants of potential concern were above the applicable site condition standards in soil for VOC (n-hexane) located in the northeast corner of the Site. The reported concentrations of contaminants of potential concern were above the applicable site condition standards in groundwater for VOC in groundwater in the southeast and northwest of the Site. The lateral contaminant distribution of soil and groundwater impacts is shown in **Figures 6A to 6B.**

It is noted that due to the presence of the existing building, boreholes were situated outside the building and existing parking structure and as such the soil impacts at 22-01 within APEC-1 may eventually fall outside the site boundaries. Groundwater quality is considered to reflect the groundwater quality below the Site building.

Potential Reason for Discharge into the Environment at the Site

The impacts at the Phase Two Property are less likely to be associated with the presence of the former foundry on Site due to the absence of impacts from other parameter groups other than VOC in both soil and groundwater. The VOC impacts are more likely to be associated with the various former and present off-Site activities upgradient of the Site, including the presence of documented VOC-contaminated site. However, due to the observed concentrations of n-hexane in the till layer below fill at borehole 22-01 and give the absence of documented information regarding the control of hazardous substances by the former onsite operations, the contribution of the former onsite foundry to the observed impacts cannot be eliminated as a potential source as several processing lines of foundry operations have the potential to generate VOCs.

7.3.4 Contaminant Migration

The concentrations of select VOC parameters were above the applicable site condition standards in groundwater samples collected from two monitoring wells. The lateral extent of the VOC impacts in groundwater is delineated by the groundwater analytical results of 22-01 and the site boundary. The vertical extent of the VOC impacts have not been assessed, and will be delineated as part of a subsequent investigation.

7.3.5 Meteorological and Climatic Considerations

Seasonal fluctuation in water levels should be expected. Shallow groundwater water levels are typically highest following the spring recharge and decline throughout the summer and fall months into the winter.

7.3.6 Soil Vapour Intrusion Pathways

The exact depths of the proposed residential building foundations and footings are unknown; however, basements and underground parking structures will be constructed at an elevation close to the existing basement level as part of the future on-Site development as shown in Figure 7. Based on the concentrations of volatile COCs above the Table 7 Standards measured in various soil and groundwater samples, potential soil vapour intrusion may occur. Potential soil vapour intrusion would be managed through the O.Reg 153/04 Risk Assessment process or by generic based soil and groundwater remediation (and subsequent verification sampling in accordance with O.Reg 153/04); and submission for filing of an RSC.

8.0 CONCLUSIONS

The Phase Two ESA investigated the two APECs identified in the 2022 Phase One ESA. Based on the results of the soil and groundwater samples submitted as part of this Phase Two ESA, the reported concentrations of the contaminants of potential concern in soil and groundwater were above the applicable site condition standards as of the certification date (September 30, 2022). Additional intrusive subsurface investigation is required to delineate the vertical extent of the contaminant distribution. A MECP acknowledged O.Reg 153/04 risk assessment or complete generic based remediation is potentially required to support the submission of an RSC. The data presented in this report follows the O. Reg. 153/04 Phase Two ESA report format.

9.0 REFERENCES

The following documents and/or data were cited in this report:

Source	Date
Hvorslev, M.J., 1951. Time Lag and Soil Permeability in Ground-Water Observations, Bull. No. 36, Waterways Exper. Sta. Corps of Engrs, U.S. Army, Vicksburg, Mississippi, pp. 1-50.	1951
Bouwer, H. and R. C. Rice. (1976). A slug test method for determining hydraulic conductivity of unconfined aquifers with completely or partially penetrating wells. Water Resources Research, 12 (3): 423-428.	1976
Ministry of Ontario Environment Guidelines for use at Contaminated Sites in Ontario (February 1997) - Table A potable groundwater criteria for all other land uses (coarse textured soil).	February 1997
Ministry of Ontario Environment Guidelines for use at Contaminated Sites in Ontario (February 1997) - Table B non-potable groundwater criteria for commercial/industrial land use (coarse textured soil)	February 1997
Ministry of Ontario Environment Guidelines for use at Contaminated Sites in Ontario (February 1997) - Table F background soil concentrations for all other land uses.	February 1997
Ontario Geological Survey. 2010. Surficial Geology of Southern Ontario. Ontario Geological Survey Map Miscellaneous Release – Data 128-REV. Scale 1:50,000.	2010
Ontario Geological Survey. 2011. Bedrock Geology of Ontario. Ontario Geological Survey Map Miscellaneous Release – Data 126 – Revision 1. Scale 1: 250,000.	2011
Geotechnical Engineering Design Input Holland Cross Expansion, 1560 Scott Street, Ottawa, Ontario.” Prepared by Golder, dated December 2013 (2013 Geotechnical Report).	December 2013
Ontario Regulation 153/04: Records of Site Condition – Part XV.1 of the Act	January 2014
Phase One ESA, Portion of 1560 Scott Street, Ottawa, Ontario.” Prepared by Stantec Inc., dated July 2020. (2020 Stantec Phase One ESA).	July 2020
Draft Phase One Environmental Site Assessment, Holland Cross Expansion Building, Part of 1560 Scott Street, Ottawa, Ontario”. Prepared by Golder for Stantec Inc., dated November 2022. 22532737. (2022 Phase One ESA)	November 2022

10.0 LIMITATIONS

This report was prepared for the exclusive use of Stantec Inc. (the Client) on behalf of Lasalle Investment Management Inc. (the Owner). The report, which specifically includes all tables, figures and appendices, is based on data and information, collected during conducting the Phase Two ESA, and is based solely on the conditions of the property at the time of conducting investigations, supplemented by historical information and data obtained by Golder Associates Ltd. as described in this report.

The assessment of environmental conditions at this Site has been made using the results of field screening techniques and chemical analysis of soil and groundwater samples at a limited number of locations. The Site conditions between sampling locations have been inferred based on conditions observed at the sampling locations. Conditions may vary from these sample locations. Additional study, including further investigation, can reduce the inherent uncertainties associated with this type of study. However, it is never possible, even with exhaustive sampling and testing, to dismiss the possibility that part of a Site may be contaminated and remain undetected.

The services performed as described in this report were conducted in a manner consistent with that level of care and skill normally exercised by other members of the engineering and science professions currently practicing under similar conditions, subject to the time limits and financial and physical constraints applicable to the services.

Any use which a third party makes of this report, or any reliance on, or decisions to be made based on it, are the responsibilities of such third parties. Golder Associates Ltd. accepts no responsibility for damages, if any, suffered by any third party (other than as noted above) as a result of decisions made or actions based on this report.

The content of this report is based on information collected during the drilling, soil and groundwater sampling activities, our present understanding of the Site conditions, and our professional judgement in light of such information at the time of this report. This report provides a professional opinion and therefore no warranty is expressed, implied, or made as to the conclusions, advice and recommendations offered in this report. This report does not provide a legal opinion regarding compliance with applicable laws. With respect to regulatory compliance issues, it should be noted that regulatory statutes and the interpretation of regulatory statutes are subject to change.

The findings and conclusions of this report are valid only as of the date of this report. If new information is discovered in future work, including excavations, borings or other studies, Golder Associates Ltd. should be requested to re-evaluate the conclusions of this report, and to provide amendments as required.

The monitoring wells installed as part of this project have been constructed using licensed drilling/well contractors employing licensed well technicians. It is owner's responsibility to have a licensed well technician properly abandon all monitoring wells, if required.

11.0 SIGNATURES

The undersigned Qualified Person confirms that he/she was responsible for conducting and/or supervising this Phase Two ESA and the associated findings and conclusions.

We trust that you will find the contents of this report satisfactory for your current needs. Should you require clarification of the information provided, please do not hesitate to contact the undersigned.

Signature Page

Golder Associates Ltd.

Rochelle Mathew, MASc.
Environmental Scientist II

Keith Holmes, MSc., P.Geo., QP(ESA)
Principal Geoscientist

RM/KPH/sg
https://golderassociates.sharepoint.com/sites/164073/project files/6 deliverables/phase two esa/22530229-r-reva-holland cross- phase two esa rsc-9nov2022.docx

Tables

TABLE 1
Monitoring Well Characteristics
1560 Scott Street, Ottawa, Ontario

Monitoring Well	Installation Date	Well Diameter (mm)	Ground Surface Elevation (masl)	Top of Pipe Elevation	Well Depth (mbgs)	Well Depth (masl)	Screened Interval (mbgs)	Screened Interval (masl)	Screen Lithology
22-01	29-Aug-2022	44	61.60	61.48	6.3	55.30	3.05-6.3	55.3-58.6	Shaley limestone
22-02B	29-Aug-2022	44	61.72	61.66	9	52.72	5.95-9.0	52.7-55.8	Shaley limestone
22-03	30-Aug-2022	44	61.68	61.59	9	52.68	5.95-9.0	52.7-55.7	Shaley limestone

Notes:

masl	metres above sea level
mbgs	metres below ground surface

Created by: RM
Checked by: DG

TABLE 2A
Summary of Soil Samples for Submitted for Analysis
1560 Scott Street, Ottawa, Ontario

Borehole	Sample ID	Sample Depth (mbgs)	Sampling Date	Soil Type	Sample Analysis										
					PHC F1-F4	PHC F4 Gravimetric	BTEX	PAH	Hydride-Forming Metals	Metals	ORP	pH	EC	SAR	VOC
22-01	22-01 SA2	0.8-1.4	30-Aug-2022	GRAVEL; some sand, grey (TILL); non-cohesive, dry, compact to very dense	X	NA	X	X	X	X	X	X	X	X	X
22-02B	22-02B SA2	0.8-1.4	30-Aug-2022	SILTY SAND; some gravel; brown to grey (TILL); dry, very dense	X	NA	X	X	X	X	X	X	X	X	X
22-03	22-03 SA3	0.8-1.4	30-Aug-2022	FILL - GRAVEL; poorly graded, trace sand; dry	X	NA	X	X	X	X	X	X	X	X	X

Notes:

PHC	Petroleum Hydrocarbons
BTEX	Benzene, Toluene, Ethylbenzene and Xylenes
PHC F1	PHC F1 (C6-C10) minus BTEX
PHC F2	PHC F2 (C10 to C16) minus Naphthalene
PHC F3	PHC F3 (C16 to C34) minus PAHs
PHC F4	PHC F4 (C34 to C50)
NA	Not applicable
PAH	Polycyclic Aromatic Hydrocarbon
Hydride-forming metals	Antimony, Arsenic and Selenium
ORP	Other Regulated Parameters: Hot-water soluble boron, hexavalent chromium, cyanide and mercury.
VOC	Volatile Organic Compounds

Created by: RM
Checked by: DG

TABLE 2B
Summary of Groundwater Samples for Submitted for Analysis
1560 Scott Street, Ottawa, Ontario

Monitoring Well	Well Depth (mbgs)	Screen Interval (mbgs)	Screened Lithology	Sample ID	Sampling Date	Sample Analysis							
						PHC F1-F4	PHC F4 Gravimetric	BTEX	PAH	Hydride-Forming Metals	Metals	ORP	VOC
22-01	6.3	3.05-6.3	Shaley limestone	MW22-01	28-Sep-2022	X	NA	X	X	X	X	X	X
22-02B	9.0	5.95-9.0	Shaley limestone	MW22-02	28-Sep-2022	X	NA	X	X	X	X	X	X
				MW22-DUP	28-Sep-2022	X	NA	X	X	X	X	-	X
22-03	9.0	5.95-9.0	Shaley limestone	MW22-03	28-Sep-2022	X	NA	X	X	X	X	X	X

Notes:

PHC	Petroleum Hydrocarbons
BTEX	Benzene, Toluene, Ethylbenzene and Xylenes
PHC F1	PHC F1 (C6-C10) minus BTEX
PHC F2	PHC F2 (C10 to C16) minus Naphthalene
PHC F3	PHC F3 (C16 to C34) minus PAHs
PHC F4	PHC F4 (C34 to C50)
NA	Not applicable
PAH	Polycyclic Aromatic Hydrocarbon
Hydride-forming metals	Antimony, Arsenic and Selenium
ORP	Other Regulated Parameters: Hexavalent chromium and mercury
-	Not analyzed
VOC	Volatile Organic Compounds

TABLE 3
Groundwater Monitoring
1560 Scott Street, Ottawa, Ontario

Monitoring Well	28-Sep-22			
	Water Level (mbtop)	Temperature (°C)	pH	Conductivity (µS/m)
22-01	3.36	16.8	7.15	3999
22-02B	4.86	16.1	6.91	above range
22-03	5.20	15.1	7.55	above range

Notes:

m btop	metres below top of pipe
°C	degrees Celsius
µS/cm	microSiemens per centimetre

TABLE 4
Groundwater Levels and Elevations
1560 Scott Street, Ottawa, Ontario

Monitoring Well	Screen Interval (masl)	Ground Surface Elevation (masl)	Top of Pipe Elevation (masl)	03-Oct-22		
				Depth to water (mbtop)	Depth to water (mbgs)	Groundwater Elevation (masl)
22-01	55.3-58.6	61.60	61.48	3.71	3.83	57.77
22-02B	52.7-55.8	61.72	61.66	4.82	4.88	56.84
22-03	52.7-55.7	61.68	61.59	5.34	5.43	56.25

Notes:

masl metres above sea level

mbtop metres below top of pipe

mbgs metres below ground surface

Created by: RM
Checked by: DG

TABLE 5A
Soil Analytical Results - PHC and BTEX
1560 Scott Street, Ottawa, Ontario

	Location	22-01	22-02B	22-03
	Sample Name	22-01 SA2	22-02B SA2	22-03 SA3
	Sample Depth (mbgs)	0.8-1.4	0.8-1.4	0.8-1.4
	Sample Date	30-Aug-2022	30-Aug-2022	30-Aug-2022
	Lab Sample ID	4266511	4266512	4266513
	Lab Job No.	22Z939775	22Z939775	22Z939775
Parameter (µg/g)	**MECP Table 7 SCS**			
PHC				
PHC F1	55	47	<5	<5
PHC F2	98	12	<10	<10
PHC F3	300	73	<50	<50
PHC F4	2800	160	<50	<50
Gravimetric Heavy Hydrocarbon	2800	NA	NA	NA
BTEX				
Benzene	0.21	<0.02	<0.02	<0.02
Toluene	2.3	0.71	<0.05	0.33
Ethylbenzene	2	0.13	<0.05	<0.05
Xylenes	3.1	1.99	<0.05	<0.05

Notes

PHC	Petroleum Hydrocarbons
BTEX	Benzene, Toluene, Ethylbenzene and Xylenes
µg/g	microgram per gram
mbgs	metres below ground surface
PHC F1	PHC F1 (C6-C10) minus BTEX
PHC F2	PHC F2 (C10 to C16) minus Naphthalene
PHC F3	PHC F3 (C16 to C34) minus PAHs
PHC F4	PHC F4 (C34 to C50)
MECP Table 7 SCS	Potable Groundwater Condition for Residential/Parkland/Institutional Property Use.
	All units are in µg/g unless otherwise specified.

Created by: RM
Checked by: DG

TABLE 5B
Soil Analytical Results - PAH
1560 Scott Street, Ottawa, Ontario

	Location	22-01	22-02B	22-03
	Sample Name	22-01 SA2	22-02B SA2	22-03 SA3
	Sample Depth (mbgs)	0.8-1.4	0.8-1.4	0.8-1.4
	Sample Date	30-Aug-2022	30-Aug-2022	30-Aug-2022
	Lab Sample ID	4266511	4266512	4266513
	Lab Job No.	22Z939775	22Z939775	22Z939775
Parameter (µg/g)	**MECP Table 7 SCS**			
PAH				
Acenaphthene	7.9	<0.05	<0.05	<0.05
Acenaphthylene	0.15	<0.05	<0.05	<0.05
Anthracene	0.67	<0.05	<0.05	<0.05
Benz(a)anthracene	0.5	<0.05	<0.05	<0.05
Dibenz(a,h)anthracene	0.1	<0.05	<0.05	<0.05
Benzo(g,h,i)perylene	6.6	<0.05	<0.05	<0.05
Chrysene	7	<0.05	<0.05	<0.05
Fluoranthene	0.69	<0.05	<0.05	<0.05
Benzo(b)fluoranthene	0.78	<0.05	<0.05	<0.05
Benzo(k)fluoranthene	0.78	<0.05	<0.05	<0.05
Fluorene	62	<0.05	<0.05	<0.05
1 and 2 Methlynaphthalene	0.99	<0.05	<0.05	<0.05
Naphthalene	0.6	<0.05	<0.05	<0.05
Phenanthrene	6.2	<0.05	<0.05	<0.05
Pyrene	78	<0.05	<0.05	<0.05
Benzo(a)pyrene	0.3	<0.05	<0.05	<0.05
Indeno(1,2,3-cd)pyrene	0.38	<0.05	<0.05	<0.05

Notes

PAH	Polycyclic Aromatic Hydrocarbon
RDL	Reportable Detection Limit
MECP Table 7 SCS	Table 7: Generic Site Condition Standards for Shallow Soils in Non-Potable Groundwater Condition for Residential/Parkland/Institutional Property Use.
	All units are in µg/g unless otherwise specified.

TABLE 5C
Soil Analytical Results - Hydride-Forming Metals, Metals and ORP
1560 Scott Street, Ottawa, Ontario

	Location	22-01	22-02B	22-03
	Sample Name	22-01 SA2	22-02B SA2	22-03 SA3
	Sample Depth (mbgs)	0.8-1.4	0.8-1.4	0.8-1.4
	Sample Date	30-Aug-2022	30-Aug-2022	30-Aug-2022
	Lab Sample ID	4266511	4266512	4266513
	Lab Job No.	22Z939775	22Z939775	22Z939775
Parameter (µg/g)	**MECP Table 7 SCS**			
Hydride-Forming Metals				
Antimony	7.5	<0.8	<0.8	1.2
Arsenic	18	3	2	6
Selenium	2.4	<0.8	<0.8	<0.8
Metals				
Barium	390	72.5	65.5	133
Beryllium	4	<0.4	<0.4	<0.4
Boron	120	10	8	16
Cadmium	1.2	<0.5	<0.5	<0.5
Chromium	160	9	16	36
Cobalt	22	4.1	5.1	5.6
Copper	140	6.2	12.9	27.4
Lead	120	5	8	37
Molybdenum	6.9	1	1.3	2.8
Nickel	100	8	10	18
Silver	20	<0.5	<0.5	<0.5
Thallium	1	<0.5	<0.5	0.5
Uranium	23	1.11	0.53	0.51
Vanadium	86	15.7	27.8	15.7
Zinc	340	11	19	51
ORP				
Boron (Hot Water Soluble)	1.5	0.36	0.25	0.44
Chromium (Hexavalent)	8	<0.2	<0.2	<0.2
Cyanide (Weak acid-dissociable)	0.051	<0.040	<0.040	<0.040
Mercury	0.27	<0.10	<0.10	<0.10
pH				
Surface soil pH[1] (unitless)	5-9	8.31	8.03	**10.3**
Road Salt Parameters				
Electrical Conductivity[2] (mS/cm)	0.7	0.457	**1.44**	0.297
Sodium Adsorption Ratio[3] (unitless)	5	2.32	**7.14**	4.8

Notes

Hydride-forming metals	Antimony, Arsenic and Selenium
ORP	Other Regulated Parameters
µg/g	microgram per gram
mbgs	metres below ground surface
1	pH was determined on the 0.01M CaCl2 extract prepared at 2:1 ratio.
2	EC was determined on the DI water extract obtained from the 2:1 leaching procedure (2 parts DI water:1 part soil).
3	SAR is a calculated parameter.
MECP Table 7 SCS	Table 7: Generic Site Condition Standards for Shallow Soils in Non-Potable Groundwater Condition for Residential/Parkland/Institutional Property Use. Surface soil samples defined as samples shallower than 1.5 mbgs.
	All units are in µg/g unless otherwise specified.

TABLE 5D
Soil Analytical Results - VOC
1560 Scott Street, Ottawa, Ontario

	Location	22-01	22-02B	22-03
	Sample Name	22-01 SA2	22-02B SA2	22-03 SA3
	Sample Depth (mbgs)	0.8-1.4	0.8-1.4	0.8-1.4
	Sample Date	30-Aug-2022	30-Aug-2022	30-Aug-2022
	Lab Sample ID	4266511	4266512	4266513
	Lab Job No.	22Z939775	22Z939775	22Z939775
Parameter (µg/g)	**MECP Table 7 SCS**			
VOC				
Acetone	16	<0.50	<0.50	<0.50
Bromodichloromethane	13	<0.05	<0.05	<0.05
Bromoform	0.27	<0.05	<0.05	<0.05
Bromomethane	0.05	<0.05	<0.05	<0.05
Carbon Tetrachloride	0.05	<0.05	<0.05	<0.05
Chlorobenzene	2.4	<0.05	<0.05	<0.05
1,2-Dichlorobenzene	3.4	<0.05	<0.05	<0.05
1,3-Dichlorobenzene	4.8	<0.05	<0.05	<0.05
1,4-Dichlorobenzene	0.083	<0.05	<0.05	<0.05
1,1-Dichloroethane	3.5	<0.02	<0.02	<0.02
1,2-Dichloroethane	0.05	<0.03	<0.03	<0.03
Cis- 1,2-Dichloroethylene	3.4	<0.02	<0.02	<0.02
1,1,1-Trichloroethane	0.38	<0.05	<0.05	<0.05
1,1,2-Trichloroethane	0.05	<0.04	<0.04	<0.04
1,1,1,2-Tetrachloroethane	0.058	<0.04	<0.04	<0.04
1,1,2,2-Tetrachloroethane	0.05	<0.05	<0.05	<0.05
1,2-Dichloropropane	0.05	<0.03	<0.03	<0.03
1,3-Dichloropropene (Cis + Trans)	0.05	<0.05	<0.05	<0.05
1,1-Dichloroethylene	0.05	<0.05	<0.05	<0.05
Chloroform	0.05	<0.04	<0.04	<0.04
Dibromochloromethane	9.4	<0.05	<0.05	<0.05
Dichlorodifluoromethane	16	<0.05	<0.05	<0.05
Ethylene Dibromide	0.05	<0.04	<0.04	<0.04
Methyl Ethyl Ketone	16	<0.50	<0.50	<0.50
Methyl Isobutyl Ketone	1.7	<0.50	<0.50	<0.50
Methyl tert-butyl Ether	0.75	<0.05	<0.05	<0.05
Methylene Chloride	0.1	<0.05	<0.05	<0.05
n-Hexane	2.8	**3.23**	<0.05	<0.05
Styrene	0.7	<0.05	<0.05	<0.05
Tetrachloroethylene	0.28	<0.05	<0.05	<0.05
Trans- 1,2-Dichloroethylene	0.084	<0.05	<0.05	<0.05
Trichloroethylene	0.061	<0.03	<0.03	<0.03
Trichlorofluoromethane	4	<0.05	<0.05	<0.05
Vinyl Chloride	0.02	<0.02	<0.02	<0.02

Notes

Value	Parameter concentration exceeds applicable standard.
VOC	Volatile Organic Compounds
MECP Table 7 SCS	Table 7: Generic Site Condition Standards for Shallow Soils in Non-Potable Groundwater Condition for Residential/Parkland/Institutional Property Use.
	All units are in µg/g unless otherwise specified.

TABLE 6A
Groundwater Analytical Results - PHC and BTEX
1560 Scott Street, Ottawa, Ontario

	Location	22-01	22-02B		22-03
	Sample Name	MW22-01	MW22-02	MW22-DUP (Field duplicate of MW22-02)	MW22-03
	Sample Date	28-Sep-2022	28-Sep-2022	28-Sep-2022	28-Sep-2022
	Lab Sample ID	4365513	4365514	4365516	4365515
	Lab Job No.	22Z951206	22Z951206	22Z951206	22Z951206
Parameter (µg/L)	**MECP Table 7 SCS**				
PHC					
PHC F1	420	<25	<25	<25	<25
PHC F2	150	<100	<100	<100	<100
PHC F3	500	<100	<100	<100	<100
PHC F4	500	<100	<100	<100	<100
Gravimetric Heavy Hydrocarbon	NA	NA	NA	NA	NA
BTEX					
Benzene	0.5	<0.40	<0.40	<0.40	0.47
Toluene	320	8.24	<0.40	<0.40	0.56
Ethylbenzene	54	<0.20	<0.20	<0.20	<0.10
Xylenes	72	<0.20	<0.20	<0.20	<0.20

Notes

PHC	Petroleum Hydrocarbons
BTEX	Benzene, Toluene, Ethylbenzene and Xylenes
µg/L	microgram per Litre
PHC F1	PHC F1 (C6-C10) minus BTEX
PHC F2	PHC F2 (C10 to C16) minus Naphthalene
PHC F3	PHC F3 (C16 to C34) minus PAHs
PHC F4	PHC F4 (C34 to C50)
MECP Table 7 SCS	Table 7: Generic Site Condition Standards for Shallow Soils in Non-Potable Groundwater Condition for Residential/Parkland/Institutional Property Use.
	Samples MW22-01, MW22-02 and MW22-DUP were diluted by a factor of 2 because they were foamy.
	Sediment was present in samples MW22-02, MW22-DUP and MW22-03.
	All units are in µg/L unless otherwise specified.

TABLE 6B
Groundwater Analytical Results - PAH
1560 Scott Street, Ottawa, Ontario

	Location	22-01	22-02B		22-03
	Sample Name	MW22-01	MW22-02	MW22-DUP (Field duplicate of MW22-02)	MW22-03
	Sample Date	28-Sep-2022	28-Sep-2022	28-Sep-2022	28-Sep-2022
	Lab Sample ID	4365513	4365514	4365516	4365515
	Lab Job No.	22Z951206	22Z951206	22Z951206	22Z951206
Parameter (µg/L)	**MECP Table 7 SCS**				
PAH					
Naphthalene	7	<0.20	<0.20	<0.20	<0.20
Acenaphthylene	1	<0.20	<0.20	<0.20	<0.20
Acenaphthene	17	<0.20	<0.20	<0.20	<0.20
Fluorene	290	<0.20	<0.20	<0.20	<0.20
Phenanthrene	380	<0.10	<0.10	<0.10	<0.10
Anthracene	1	<0.10	<0.10	<0.10	<0.10
Fluoranthene	44	<0.20	<0.20	<0.20	<0.20
Pyrene	5.7	<0.20	<0.20	<0.20	<0.20
Benzo(a)anthracene	1.8	<0.20	<0.20	<0.20	<0.20
Chrysene	0.7	<0.10	<0.10	<0.10	<0.10
Benzo(b)fluoranthene	0.75	<0.10	<0.10	<0.10	<0.10
Benzo(k)fluoranthene	0.4	<0.10	<0.10	<0.10	<0.10
Benzo(a)pyrene	0.81	<0.01	<0.01	<0.01	<0.01
Indeno(1,2,3-cd)pyrene	0.2	<0.20	<0.20	<0.20	<0.20
Dibenz(a,h)anthracene	0.4	<0.20	<0.20	<0.20	<0.20
Benzo(g,h,i)perylene	0.2	<0.20	<0.20	<0.20	<0.20
2-and 1-methyl Naphthalene	1500	<0.20	<0.20	<0.20	<0.20

Notes

PAH	Polycyclic Aromatic Hydrocarbon
µg/L	microgram per Litre
MECP Table 7 SCS	Table 7: Generic Site Condition Standards for Shallow Soils in Non-Potable Groundwater Condition for Residential/Parkland/Institutional Property Use.

Sediment was present in samples MW22-02, MW22-DUP and MW22-03.

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.

All units are in µg/L unless otherwise specified.

Groundwater Analytical Results - Hydride-Forming Metals, Metals and ORP
1560 Scott Street, Ottawa, Ontario

	Location	22-01	22-02B		22-03
	Sample Name	MW22-01	MW22-02	MW22-DUP (Field duplicate of MW22-02)	MW22-03
	Sample Date	28-Sep-2022	28-Sep-2022	28-Sep-2022	28-Sep-2022
	Lab Sample ID	4365513	4365514	4365516	4365515
	Lab Job No.	22Z951206	22Z951206	22Z951206	22Z951206
Parameter (µg/L)	**MECP Table 7 SCS**				
Hydride-Forming Metals					
Antimony	16000	1.1	<1.0	<1.0	1.7
Arsenic	1500	2.1	1.1	<1.0	1
Selenium	50	<1.0	<1.0	<1.0	2.4
Metals					
Barium	23000	310	112	120	85.2
Beryllium	53	<0.5	<0.5	<0.50	<0.5
Boron	36000	911	1000	1020	471
Cadmium	2.1	<0.20	0.27	0.4	<0.20
Chromium	640	2.8	<2.0	<2.0	<2.0
Cobalt	52	4.18	1.21	2	<0.50
Copper	69	8.1	9.3	12.7	3.9
Lead	20	<0.50	<0.50	<0.50	0.69
Molybdenum	7300	17.4	8.05	11	13.8
Nickel	390	16.7	17.8	23.4	2.4
Silver	1.2	0.27	0.75	0.86	<0.20
Thallium	400	<0.30	1.46	1.48	<0.30
Uranium	330	20.7	23.4	25.6	3.87
Vanadium	200	0.41	1.15	1.11	0.88
Zinc	890	6.3	5.2	<5.0	<5.0
ORP					
Chromium VI	110	<2.000	<2.000	-	<2.000
Mercury	0.1	<0.02	<0.02	-	<0.02

Notes

Hydride-forming metals	Antimony, Arsenic and Selenium
ORP	Other Regulated Parameters
µg/L	microgram per Litre
MECP Table 7 SCS	Table 7: Generic Site Condition Standards for Shallow Soils in Non-Potable Groundwater Condition for Residential/Parkland/Institutional Property Use. Surface soil samples defined as samples shallower than 1.5 mbgs.
	All units are in µg/L unless otherwise specified.

TABLE 6D
Groundwater Analytical Results - VOC
1560 Scott Street, Ottawa, Ontario

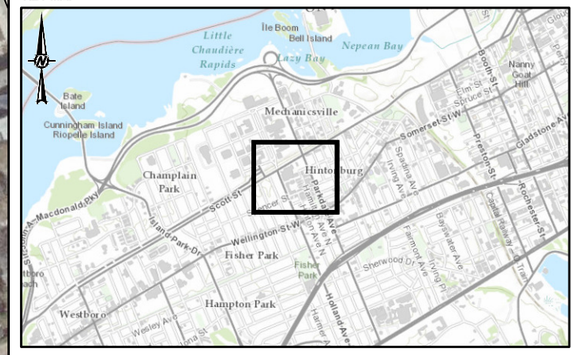
	Location	22-01	22-02B		22-03
	Sample Name	MW22-01	MW22-02	MW22-DUP (Field duplicate of MW22-02)	MW22-03
	Sample Date	28-Sep-2022	28-Sep-2022	28-Sep-2022	28-Sep-2022
	Lab Sample ID	4365513	4365514	4365516	4365515
	Lab Job No.	22Z951206	22Z951206	22Z951206	22Z951206
Parameter (µg/L)	**MECP Table 7 SCS**				
VOC					
Acetone	100,000	<2.0	<2.0	<2.0	<1.0
Bromodichloromethane	67,000	<0.40	<0.40	<0.40	<0.20
Bromoform	5	<0.20	<0.20	<0.20	<0.10
Bromomethane	1	<0.40	<0.40	<0.40	<0.20
Carbon Tetrachloride	0	<0.20	<0.20	<0.20	<0.20
Chlorobenzene	140	<0.20	<0.20	<0.20	<0.10
1,2-Dichlorobenzene	150	<0.20	<0.20	<0.20	<0.10
1,3-Dichlorobenzene	7,600	<0.20	<0.20	<0.20	<0.10
1,4-Dichlorobenzene	1	<0.20	<0.20	<0.20	<0.10
Chloroform	2	<0.40	<0.40	<0.40	<0.20
1,2-Dichloropropane	1	<0.40	<0.40	<0.40	<0.20
1,3-Dichloropropene	1	<0.30	<0.30	<0.30	<0.30
1,1-Dichloroethane	11	<0.60	<0.60	<0.60	<0.30
1,2-Dichloroethane	1	<0.40	<0.40	<0.40	<0.20
1,1,1-Trichloroethane	23	<0.60	<0.60	<0.60	<0.30
1,1,2-Trichloroethane	1	<0.40	<0.40	<0.40	<0.20
1,1,1,2-Tetrachloroethane	1	<0.20	<0.20	<0.20	<0.10
1,1,2,2-Tetrachloroethane	1	<0.20	<0.20	<0.20	<0.10
1,1-Dichloroethylene	1	<0.50	<0.50	<0.50	<0.30
cis- 1,2-Dichloroethylene	2	<0.40	**3.35**	**4.97**	**60.7**
trans- 1,2-Dichloroethylen	2	<0.40	<0.40	<0.40	0.75
Trichloroethylene	1	<0.40	<0.40	<0.40	**5.38**
Tetrachloroethylene	1	<0.40	<0.40	<0.40	**0.8**
Dibromochloromethane	65,000	<0.20	<0.20	<0.20	<0.10
Dichlorodifluoromethane	3,500	<0.80	<0.80	<0.80	<0.40
Ethylene Dibromide	0	<0.20	<0.20	<0.20	<0.10
Methyl Ethyl Ketone	21,000	<2.0	<2.0	<2.0	<1.0
Methyl Isobutyl Ketone	5,200	<2.0	<2.0	<2.0	<1.0
Methyl tert-butyl ether	15	<0.40	<0.40	<0.40	<0.20
Methylene Chloride	26	<0.60	<0.60	<0.60	<0.30
n-Hexane	5	<0.40	<0.40	<0.40	<0.20
Styrene	43	<0.20	<0.20	<0.20	<0.10
Trichlorofluoromethane	2,000	<0.80	<0.80	<0.80	<0.40
Vinyl Chloride	1	<0.34	<0.34	<0.34	**2.93**

Notes

Value	Parameter concentration exceeds applicable standard.
VOC	Volatile Organic Compounds
µg/L	microgram per Litre
MECP Table 7 SCS	Table 7: Generic Site Condition Standards for Shallow Soils in Non-Potable Groundwater Condition for Residential/Parkland/Institutional Property Use.
	Surface soil samples defined as samples shallower than 1.5 mbgs.
	Samples MW22-01, MW22-02 and MW22-DUP were diluted by a factor of 2 because they were foamy.
	All units are in µg/L unless otherwise specified.

Figures

KEY MAP



SCALE 1:50,000

LEGEND

- ROADWAY
- PHASE ONE SITE, PHASE TWO SITE AND RSC PROPERTY BOUNDARY
- PHASE ONE STUDY AREA (250 m)

0 40 80

1:2,250 METRES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. 2021 AERIAL IMAGERY FROM THE CITY OF OTTAWA
3. SERVICE LAYER CREDITS: SOURCES: ESRI, HERE, GARMIN, INTERMAP, INCREMENT P CORP., GEBCO, USGS, FAO, NPS, NRCAN, GEOBASE, IGN, KADASTER NL, ORDNANCE SURVEY, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), (C) OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY
4. COORDINATE SYSTEM: NAD 1983 UTM ZONE 18N, PROJECTION: TRANSVERSE MERCATOR, DATUM: NORTH AMERICAN 1983

CLIENT
STANTEC INC.

PROJECT
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
HOLLAND CROSS EXPANSION BUILDING
1560 SCOTT STREET, OTTAWA, ONTARIO

TITLE
SITE PLAN

CONSULTANT
wsp GOLDER

YYYY-MM-DD	2022-11-08
DESIGNED	----
PREPARED	JEM/MG
REVIEWED	RM
APPROVED	KPH

PROJECT NO.	CONTROL	REV.	FIGURE
22530229	0003	0	1A

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

25mm

0

PATH: S:\Clients\Stantec_Consulting\Holland_Cross_Expansion\9|_PROJ\22530229\90\003_Phase#_ESA\22530229-0003-HS-0001A.mxd PRINTED ON: 2022-11-08 AT: 5:57:59 PM

LEGEND

ROADWAY

PHASE ONE SITE, PHASE TWO SITE AND RSC PROPERTY BOUNDARY

PHASE ONE STUDY AREA (250 m)

Map ID	On-Site PCA	
A	A foundry owned by Beech Foundry Ltd. historically operated on Site and in the Phase One Study Area	(#32) Iron and Steel Manufacturing and Processing
	Off-Site PCA	
B	J. Robinson and Son operated an aluminum rolling, casting and extruding industry with two USTs between 1948 and 1970 at 2 Hinton Avenue.	(#34) Metal Fabrication #28) Gasoline and Associated products in Fixed Tanks
C	Several gasoline service stations with two gasoline USTs operated at 65 Holland Avenue since 1948 and a motor vehicle repair shop operated at this location since 2005.	(#28) Gasoline and Associated products in Fixed Tanks (#10) Commercial Autobody Shops
D	Various garages with two USTs (since 1948) and gas bars have operated at 1480 Scott Street since 2001.	(#10) Commercial Autobody Shops (#28) Gasoline and Associated products in Fixed Tanks
E	A gasoline service station with two USTs operated at 7 Holland Avenue since 1956.	(#28) Gasoline and Associated products in Fixed Tanks
F	Various motor vehicle repair shops and metal fabricating industries operated at 1536 Scott Street between 1910 and 2005.	(#10) Commercial Autobody Shops (#34) Metal Fabrication
G	MacLennan's Texaco Service Station operated at 1570 Scott Street between 1960 and 1980.	(#28) Gasoline and Associated products in Fixed Tanks
H	Various chemical, publishing and printing and sawmill operations have operated at 124 Parkdale Avenue between 1929 and 1999.	(#8) Chemical Manufacturing, Processing and Bulk Storage (NA) Commercial Printing (31) Ink Manufacturing, Processing and Bulk Storage (59) Wood Treating and Preserve Facility and Bulk Storage of Treated and Preserved Wood Products
I	Fourier Clair operated a motor vehicle repair shop at 1484 Scott Street since 2005.	(#10) Commercial Autobody Shops
J	Comet Cleaners operated a laundries and cleaners at 275 Parkdale between 1960 and 1980.	(#37) Operation of Dry-cleaning Equipment
K	Canada Brass and Machine Works operated a copper and copper alloy rolling, casting and extruding industry at 20 Hamilton Avenue since 1940.	(#34) Metal Fabrication
L	MOM Printing and Instruments operated a commercial printing industry at 300 Parkdale Avenue between 1970 to at least 2003.	(NA) Commercial Printing (31) Ink Manufacturing, Processing and Bulk Storage
M	Capital Wire Cloth Manufacturing operated a wire and wire products industries at 4 Hamilton since 1920.	(#34) Metal Fabrication
N	A lumber wholesaler, and several companies operated industries related to machine shops and aircraft and aircraft parts between 1912 to at least 2003.	(#19) Electronics and Computer Equipment Manufacturing, (#34) Metal Fabrication, (59) Wood Treating and Preserve Facility and Bulk Storage of Treated and Preserved Wood Products
O	Bill Brown Service Station operated a gasoline service station since 1950 and Comet Cleaners operated a laundries and cleaners at 380 Parkdale Avenue since	(#28) Gasoline and Associated products in Fixed Tanks (#37) Operation of Dry-cleaning Equipment
P	Scott Street Garage operated a service garage at 1446 Scott Street from 1960 to 1980.	(#10) Commercial Autobody Shops
Q	A former rail line was present to the northwest of the Site servicing the onsite foundry.	(#46) Railway Yards, Tracks and Spurs

0 40 80

1:2,250 METRES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. COORDINATE SYSTEM: NAD 1983 UTM ZONE 18N, PROJECTION: TRANSVERSE MERCATOR, DATUM: NORTH AMERICAN 1983

CLIENT
STANTEC

PROJECT
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
HOLLAND CROSS EXPANSIONBUILDING
1560 SCOTT STREET, OTTAWA, ONTARIO

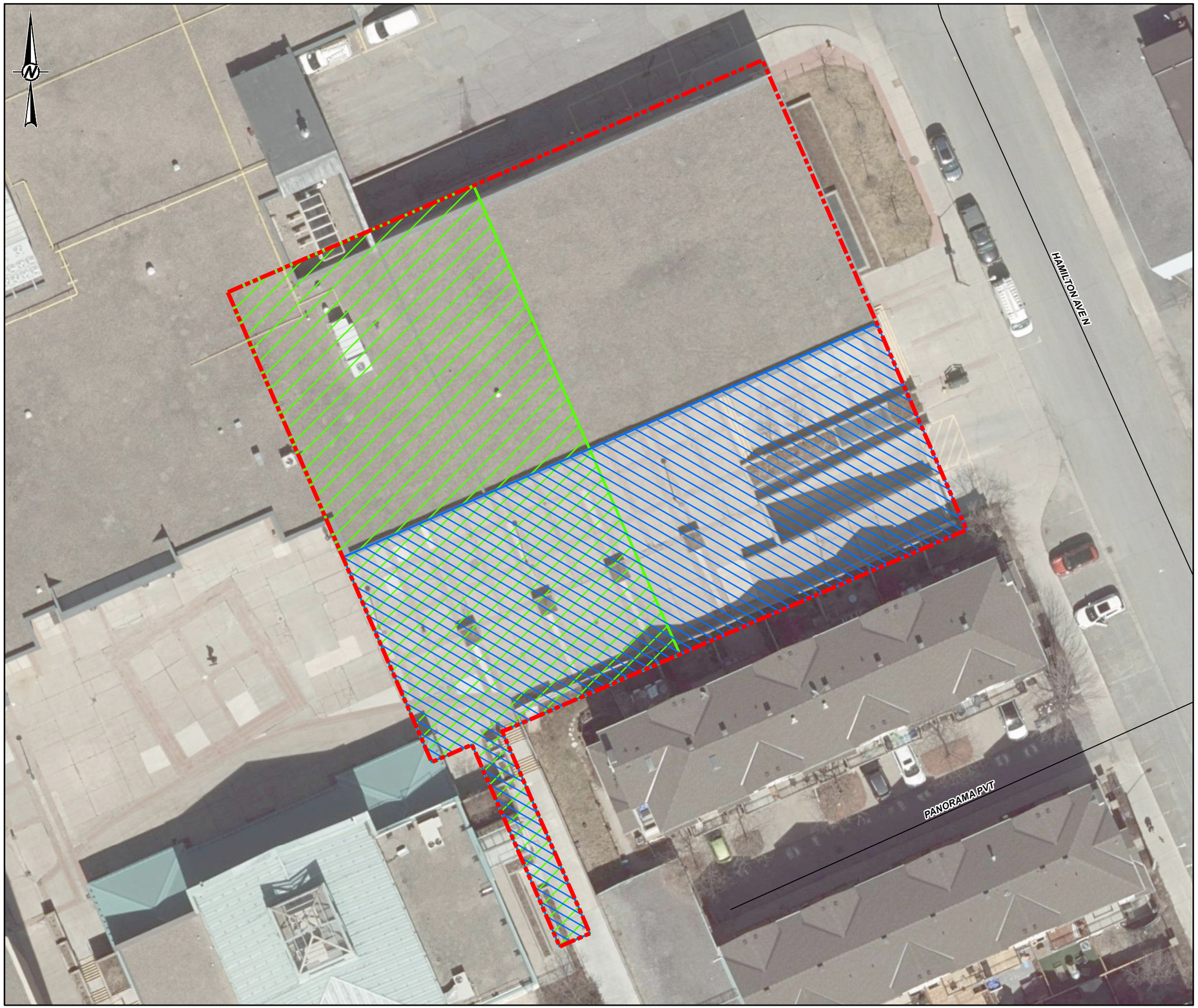
TITLE
STUDY AREA AND POTENTIALLY CONTAMINATING ACTIVITIES (PCAs)

CONSULTANT

WSP GOLDER

YYYY-MM-DD	2022-11-08
DESIGNED	----
PREPARED	JEM/MG
REVIEWED	RM
APPROVED	KPH

PROJECT NO.	CONTROL	REV.	FIGURE
22530229	0003	0	1B



LEGEND

- ROADWAY
- PHASE ONE SITE, PHASE TWO SITE AND RSC PROPERTY BOUNDARY
- APEC 1
- APEC 2

APEC	DESCRIPTION	PCA	COCs
APEC 1	Former Beech foundry - Building Located on west half of the Phase One Property	(#32) Iron and Steel Manufacturing and Processing (PCA A)	PHC, BTEX, PAH, metals, hydride-forming metals, ORP, VOC
APEC 2	Manufacturing, gas stations, service garages and commercial printing to the south of the Phase One Property within 150 metres, including a documented VOC contaminated site.	(#34) Metal Fabrication (PCA B, M, N), (#28) Gasoline and Associated products in Fixed Tanks (PCA B, C), (#10) Commercial Autobody Shops (PCA C), (#19) Electronics and Computer Equipment Manufacturing (PCA N), (NA) Commercial Printing (PCA L), (31) Ink Manufacturing, Processing and Bulk Storage (PCA L), and (59) Wood Treating and Preserve Facility and Bulk Storage of Treated and Preserved Wood Products (PCA N).	PHC, BTEX, PAH, metals, hydride-forming metals, ORP, VOC

0 10 20

1:350 METRES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. 2021 AERIAL IMAGERY FROM THE CITY OF OTTAWA
3. COORDINATE SYSTEM: NAD 1983 MTM 9, PROJECTION: TRANSVERSE MERCATOR, DATUM: NORTH AMERICAN 1983

CLIENT

STANTEC INC.

PROJECT

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
HOLLAND CROSS EXPANSION BUILDING
1560 SCOTT STREET, OTTAWA, ONTARIO

TITLE

AREAS OF POTENTIAL ENVIRONMENTAL CONCERN

CONSULTANT

WSP GOLDER

YYYY-MM-DD	2022-11-08
DESIGNED	----
PREPARED	JEM/MG
REVIEWED	RM
APPROVED	KPH

PROJECT NO.	CONTROL	REV.	FIGURE
22530229	0003	0	1C

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

0 25mm

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LEGEND

- MONITORING WELL LOCATION
- ROADWAY
- PHASE TWO SITE AND RSC PROPERTY BOUNDARY

0 20 40

1:800 METRES

NOTE(S)
1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)
1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. 2021 AERIAL IMAGERY FROM THE CITY OF OTTAWA
3. COORDINATE SYSTEM: NAD 1983 UTM ZONE 18N, PROJECTION: TRANSVERSE MERCATOR, DATUM: NORTH AMERICAN 1983

CLIENT
STANTEC INC.

PROJECT
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
HOLLAND CROSS EXPANSION BUILDING
1560 SCOTT STREET, OTTAWA, ONTARIO

TITLE
INVESTIGATION LOCATIONS

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2022-11-14
DESIGNED	----
PREPARED	JEM/MG
REVIEWED	RM
APPROVED	KPH

PROJECT NO.	CONTROL	REV.	FIGURE
22530229	0003	0	1D

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

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LEGEND

- MONITORING WELL LOCATION
- 9999 GROUNDWATER ELEVATION, mASL (OCT 3, 2022)
- ROADWAY
- PHASE TWO SITE AND RSC PROPERTY BOUNDARY

0 20 40

1:800 METRES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE
2. THE GROUNDWATER ELEVATIONS APPEAR TO BE HIGHER THAN THE BUILDING FOUNDATION SUMP AND LOCAL FLOW IS INFERRED TO FLOW INWARDS TOWARD THE BUILDING. INFERRED REGIONAL FLOW FURTHER FORM THE SITE BUILDING INFLUENCE IS EXPECTED TO BE NORTHWARD.

REFERENCE(S)

1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. 2021 AERIAL IMAGERY FROM THE CITY OF OTTAWA
3. COORDINATE SYSTEM: NAD 1983 UTM ZONE 18N, PROJECTION: TRANSVERSE MERCATOR, DATUM: NORTH AMERICAN 1983

CLIENT
STANTEC INC.

PROJECT
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
HOLLAND CROSS EXPANSION BUILDING
1560 SCOTT STREET, OTTAWA, ONTARIO

TITLE
GROUNDWATER ELEVATIONS AND INTERPRETED FLOW DIRECTION IN BEDROCK

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2022-11-14
DESIGNED	----
PREPARED	JEM/MG
REVIEWED	RM
APPROVED	KPH

PROJECT NO.	CONTROL	REV.	FIGURE
22530229	0003	0	2

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

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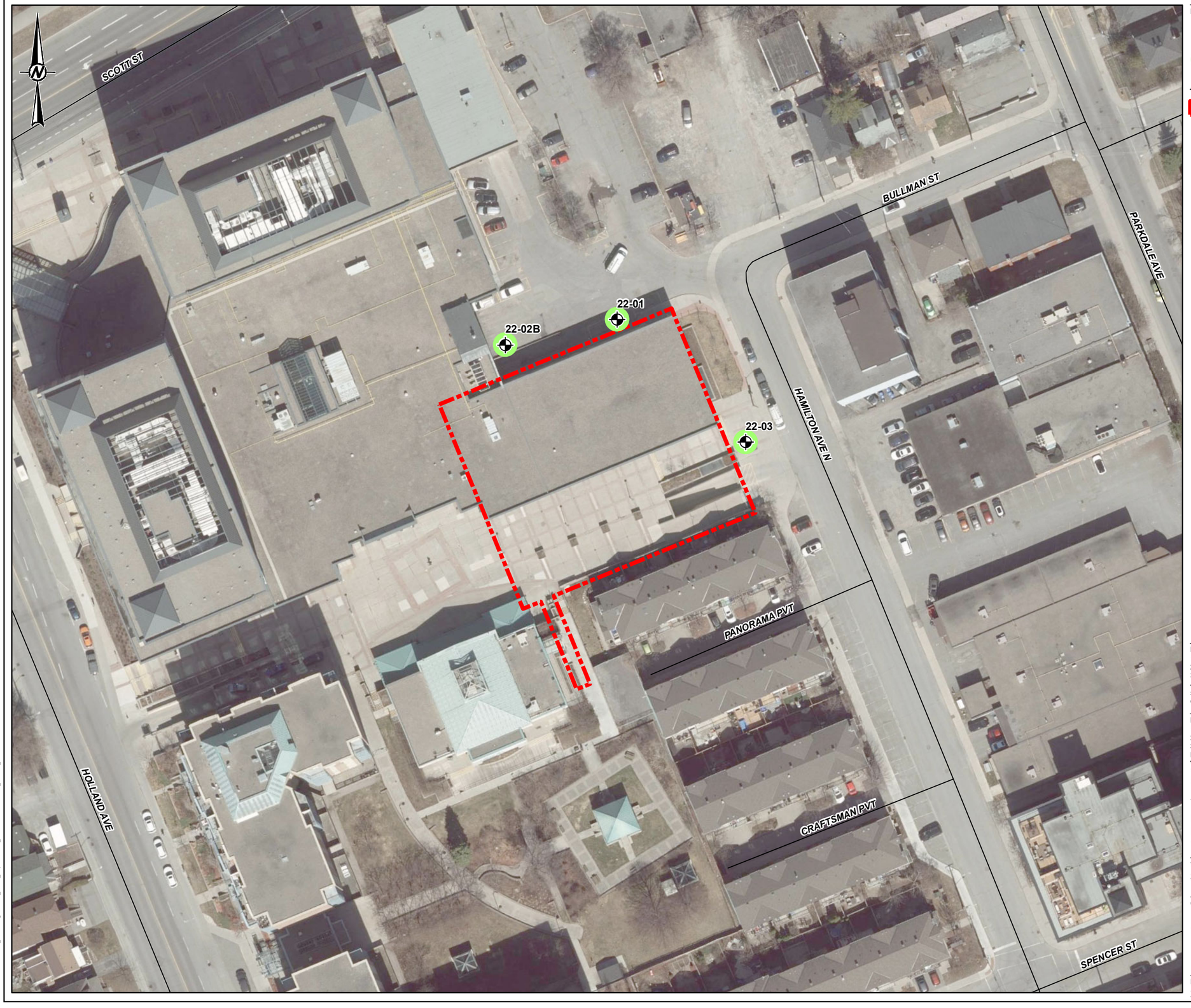


LEGEND

- MONITORING WELL LOCATION
- LOCATION WHERE ALL SAMPLES ANALYZED SATISFY APPLICABLE SITE STANDARDS
- ROADWAY
- PHASE TWO SITE AND RSC PROPERTY BOUNDARY

Borehole	Sample ID	Sample Date	Sample Depth (mbgs)
22-01	22-01 SA2	30-Aug-2022	0.8-1.4
22-02B	22-02B SA2	30-Aug-2022	0.8-1.4
22-03	22-03 SA3	30-Aug-2022	0.8-1.4

0 20 40

1:800 METRES

NOTE(S)
1. ALL LOCATIONS ARE APPROXIMATE
2. MBGS: METRES BELOW GROUND SURFACE
3. PHC: PETROLEUM HYDROCARBONS
4. BTEX: BENZENE, TOLUENE, ETHYLBENZENE AND XYLENES
5. APPLICABLE SITE STANDARDS: MECP TABLE 7 SCS FOR SHALLOW SOILS IN NON-POTABLE GROUNDWATER CONDITION FOR RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE.

REFERENCE(S)
1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. 2021 AERIAL IMAGERY FROM THE CITY OF OTTAWA
3. COORDINATE SYSTEM: NAD 1983 UTM ZONE 18N, PROJECTION: TRANSVERSE MERCATOR, DATUM: NORTH AMERICAN 1983

CLIENT
STANTEC INC.

PROJECT
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
HOLLAND CROSS EXPANSION BUILDING
1560 SCOTT STREET, OTTAWA, ONTARIO

TITLE
SOIL ANALYTICAL RESULTS – PHC AND BTEX

CONSULTANT
WSP GOLDER

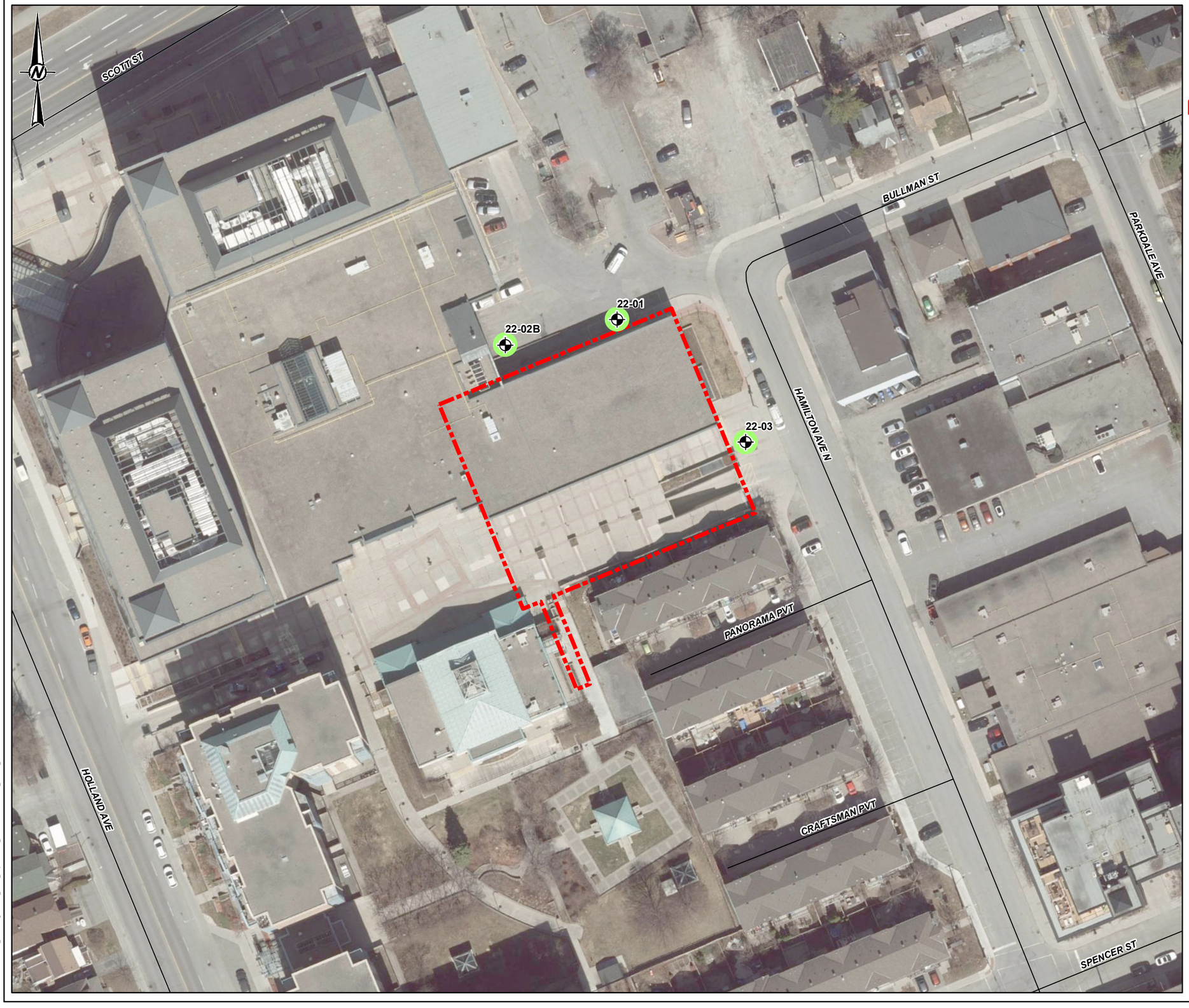
YYYY-MM-DD	2022-11-14
DESIGNED	----
PREPARED	JEM/MG
REVIEWED	RM
APPROVED	KPH

PROJECT NO.	CONTROL	REV.	FIGURE
22530229	0003	0	3A

PATH: S:\Clients\Stantec - Consulting\Holland_Cross_Expansion\99_PROJ\22530229\0003_PhaseII_ESA\22530229-0003-HS-0003A.mxd PRINTED ON: 2022-11-14 AT: 4:48:32 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

0 25mm



LEGEND

- MONITORING WELL LOCATION
- LOCATION WHERE ALL SAMPLES ANALYZED SATISFY APPLICABLE SITE STANDARDS
- ROADWAY
- PHASE TWO SITE AND RSC PROPERTY BOUNDARY

Borehole	Sample ID	Sample Date
22-01	MW22-01	28-Sep-2022
22-02B	MW22-02	28-Sep-2022
	MW22-DUP (Field duplicate of MW22-02)	28-Sep-2022
22-03	MW22-03	28-Sep-2022

0 20 40
1:800 METRES

NOTE(S)
1. ALL LOCATIONS ARE APPROXIMATE
2. MBGS: METRES BELOW GROUND SURFACE
3. PHC: PETROLEUM HYDROCARBONS
4. BTEX: BENZENE, TOLUENE, ETHYLBENZENE AND XYLENES
5. APPLICABLE SITE STANDARDS: MECP TABLE 7 SCS FOR SHALLOW SOILS IN NON-POTABLE GROUNDWATER CONDITION FOR RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE.

REFERENCE(S)
1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. 2021 AERIAL IMAGERY FROM THE CITY OF OTTAWA
3. COORDINATE SYSTEM: NAD 1983 UTM ZONE 18N, PROJECTION: TRANSVERSE MERCATOR, DATUM: NORTH AMERICAN 1983

CLIENT
STANTEC INC.

PROJECT
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
HOLLAND CROSS EXPANSION BUILDING
1560 SCOTT STREET, OTTAWA, ONTARIO

TITLE
GROUNDWATER ANALYTICAL RESULTS – PHC AND BTEX

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2022-11-14
DESIGNED	----
PREPARED	JEM/MG
REVIEWED	RM
APPROVED	KPH

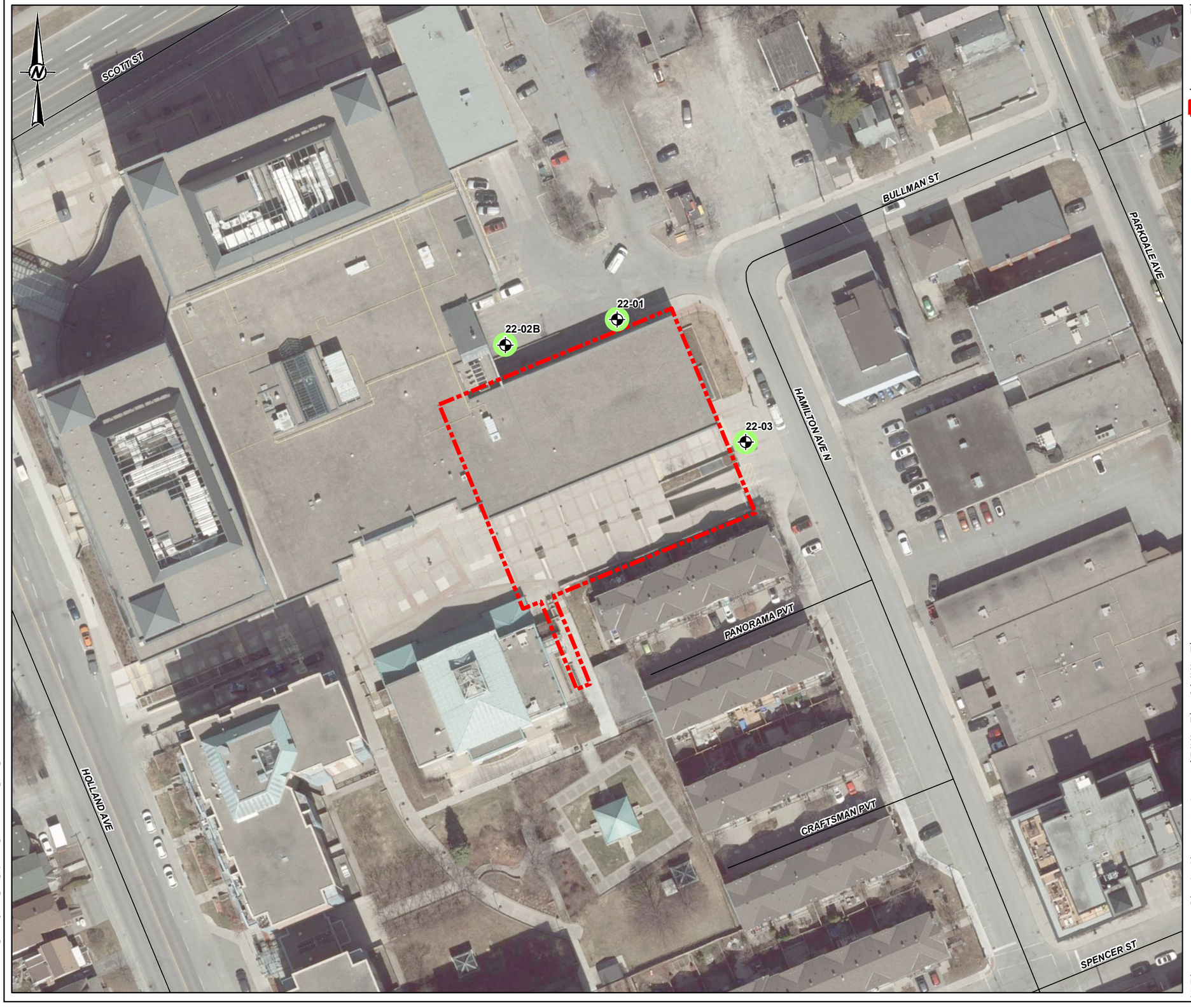
PROJECT NO.	CONTROL	REV.	FIGURE
22530229	0003	0	3B

PATH: S:\Clients\Stantec - Consulting\Holland_Cross_Expansion\99_PROJ\22530229\0003_PhaseII_ESA\22530229-0003-HS-0003B.mxd PRINTED ON: 2022-11-14 AT: 4:49:24 PM

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

25mm

0



LEGEND

- MONITORING WELL LOCATION
- LOCATION WHERE ALL SAMPLES ANALYZED SATISFY APPLICABLE SITE STANDARDS
- ROADWAY
- PHASE TWO SITE AND RSC PROPERTY BOUNDARY

Borehole	Sample ID	Sample Date	Sample Depth (mbgs)
22-01	22-01 SA2	30-Aug-2022	0.8-1.4
22-02B	22-02B SA2	30-Aug-2022	0.8-1.4
22-03	22-03 SA3	30-Aug-2022	0.8-1.4

0 20 40
1:800 METRES

NOTE(S)
1. ALL LOCATIONS ARE APPROXIMATE
2. MBGS: METRES BELOW GROUND SURFACE
3. PAH: POLYCYCLIC AROMATIC HYDROCARBONS
4. APPLICABLE SITE STANDARDS: MECP TABLE 7 SCS FOR SHALLOW SOILS IN NON-POTABLE GROUNDWATER CONDITION FOR RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE.

REFERENCE(S)
1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. 2021 AERIAL IMAGERY FROM THE CITY OF OTTAWA
3. COORDINATE SYSTEM: NAD 1983 UTM ZONE 18N, PROJECTION: TRANSVERSE MERCATOR, DATUM: NORTH AMERICAN 1983

CLIENT
STANTEC INC.

PROJECT
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
HOLLAND CROSS EXPANSION BUILDING
1560 SCOTT STREET, OTTAWA, ONTARIO

TITLE
SOIL ANALYTICAL RESULTS – PAH

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2022-11-14
DESIGNED	----
PREPARED	JEM/MG
REVIEWED	RM
APPROVED	KPH

PROJECT NO.	CONTROL	REV.	FIGURE
22530229	0003	0	4A

PATH: S:\Clients\Stantec - Consulting\Holland_Cross_Expansion\99_PROJ\22530229\0003_Phase II_ESA\22530229-0003-HS-0004A.mxd PRINTED ON: 2022-11-14 AT: 4:49:55 PM

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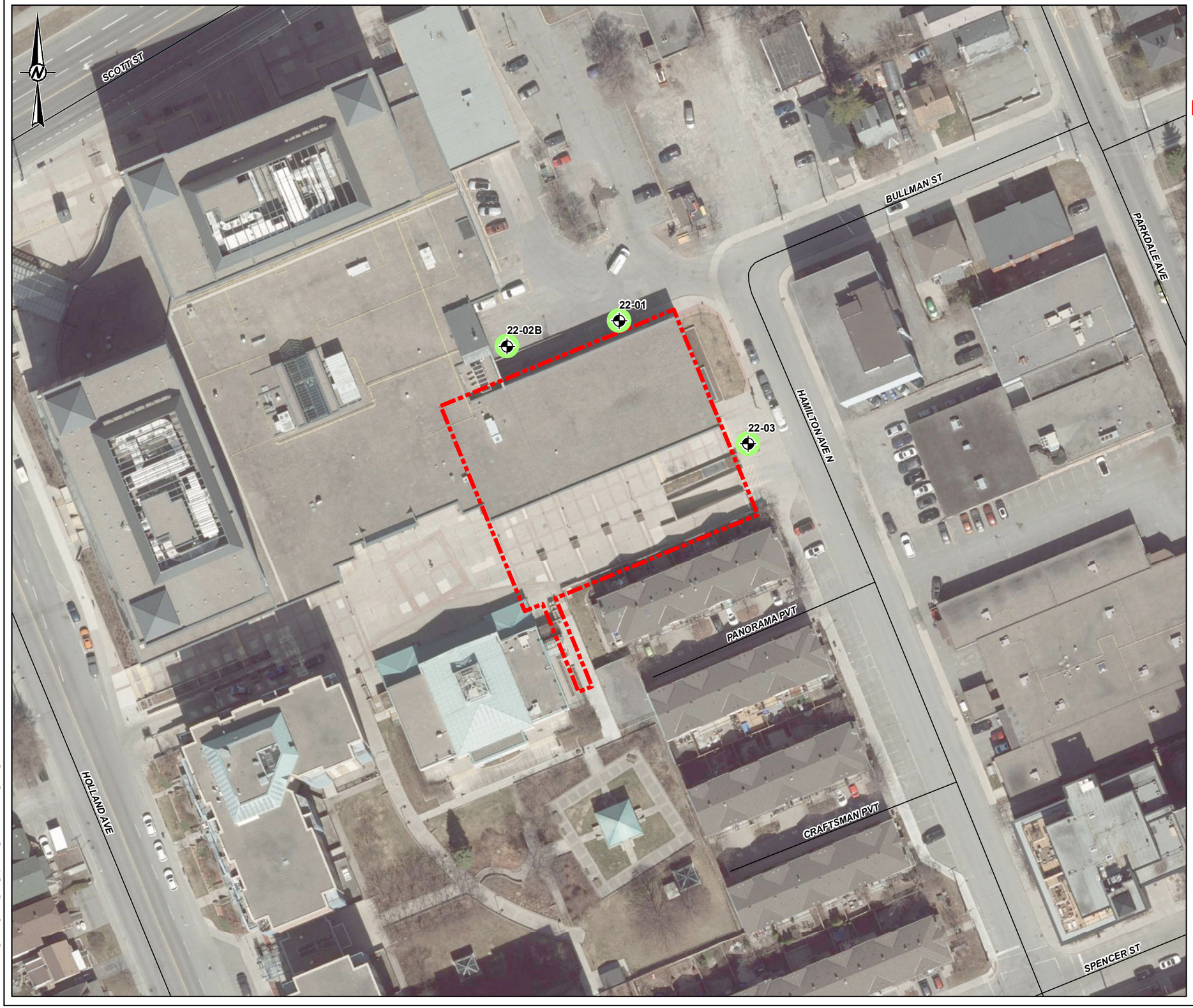
0 25mm



LEGEND

- MONITORING WELL LOCATION
- LOCATION WHERE ALL SAMPLES ANALYZED SATISFY APPLICABLE SITE STANDARDS
- ROADWAY
- PHASE TWO SITE AND RSC PROPERTY BOUNDARY

Borehole	Sample ID	Sample Date
22-01	MW22-01	28-Sep-2022
22-02B	MW22-02	28-Sep-2022
	MW22-DUP (Field duplicate of MW22-02)	28-Sep-2022
22-03	MW22-03	28-Sep-2022

0 20 40
1:800 METRES

NOTE(S)
1. ALL LOCATIONS ARE APPROXIMATE
2. MBGS: METRES BELOW GROUND SURFACE
3. PAH: POLYCYCLIC AROMATIC HYDROCARBONS
4. APPLICABLE SITE STANDARDS: MECP TABLE 7 SCS FOR SHALLOW SOILS IN NON-POTABLE GROUNDWATER CONDITION FOR RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE.

REFERENCE(S)
1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. 2021 AERIAL IMAGERY FROM THE CITY OF OTTAWA
3. COORDINATE SYSTEM: NAD 1983 UTM ZONE 18N, PROJECTION: TRANSVERSE MERCATOR, DATUM: NORTH AMERICAN 1983

CLIENT
STANTEC INC.

PROJECT
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
HOLLAND CROSS EXPANSION BUILDING
1560 SCOTT STREET, OTTAWA, ONTARIO

TITLE
GROUNDWATER ANALYTICAL RESULTS – PAH

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2022-11-14
DESIGNED	----
PREPARED	JEM/MG
REVIEWED	RM
APPROVED	KPH

PROJECT NO.	CONTROL	REV.	FIGURE
22530229	0003	0	4B

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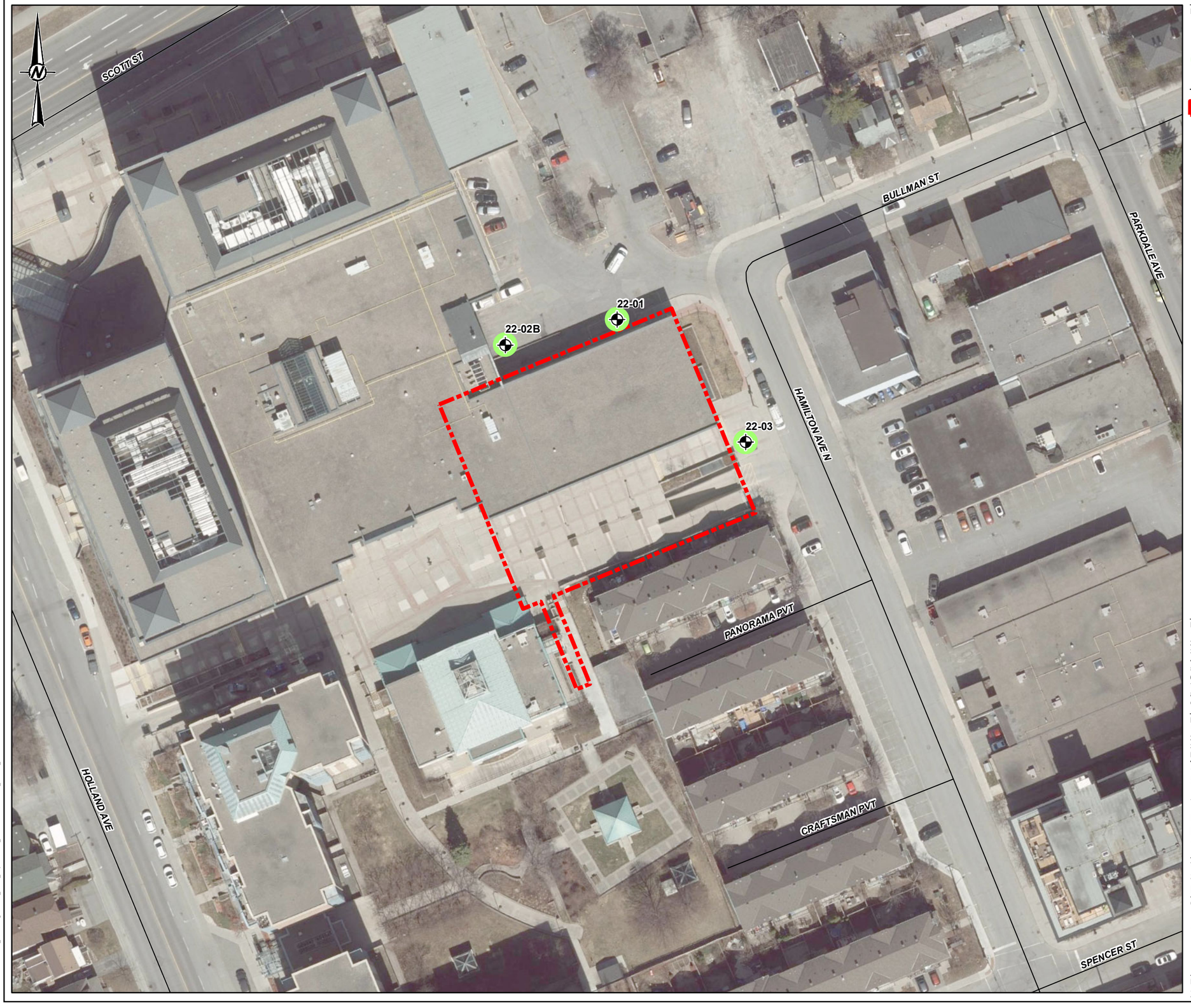


LEGEND

- MONITORING WELL LOCATION
- LOCATION WHERE ALL SAMPLES ANALYZED SATISFY APPLICABLE SITE STANDARDS
- ROADWAY
- PHASE TWO SITE AND RSC PROPERTY BOUNDARY

Borehole	Sample ID	Sample Date	Sample Depth (mbgs)
22-01	22-01 SA2	30-Aug-2022	0.8-1.4
22-02B	22-02B SA2	30-Aug-2022	0.8-1.4
22-03	22-03 SA3	30-Aug-2022	0.8-1.4

0 20 40

1:800 METRES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE
2. MBGS: METRES BELOW GROUND SURFACE
3. ORP: OTHER REGULATED PARAMETERS
4. B-HWS: HOT-WATER SOLUBLE BORON
5. CrVI: HEXAVALENT CHROMIUM
6. CN: CYANIDE
7. Hg: MERCURY
8. APPLICABLE SITE STANDARDS: MECP TABLE 7 SCS FOR SHALLOW SOILS IN NON-POTABLE GROUNDWATER CONDITION FOR RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE.

REFERENCE(S)

1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. 2021 AERIAL IMAGERY FROM THE CITY OF OTTAWA
3. COORDINATE SYSTEM: NAD 1983 UTM ZONE 18N, PROJECTION: TRANSVERSE MERCATOR, DATUM: NORTH AMERICAN 1983

CLIENT
STANTEC INC.

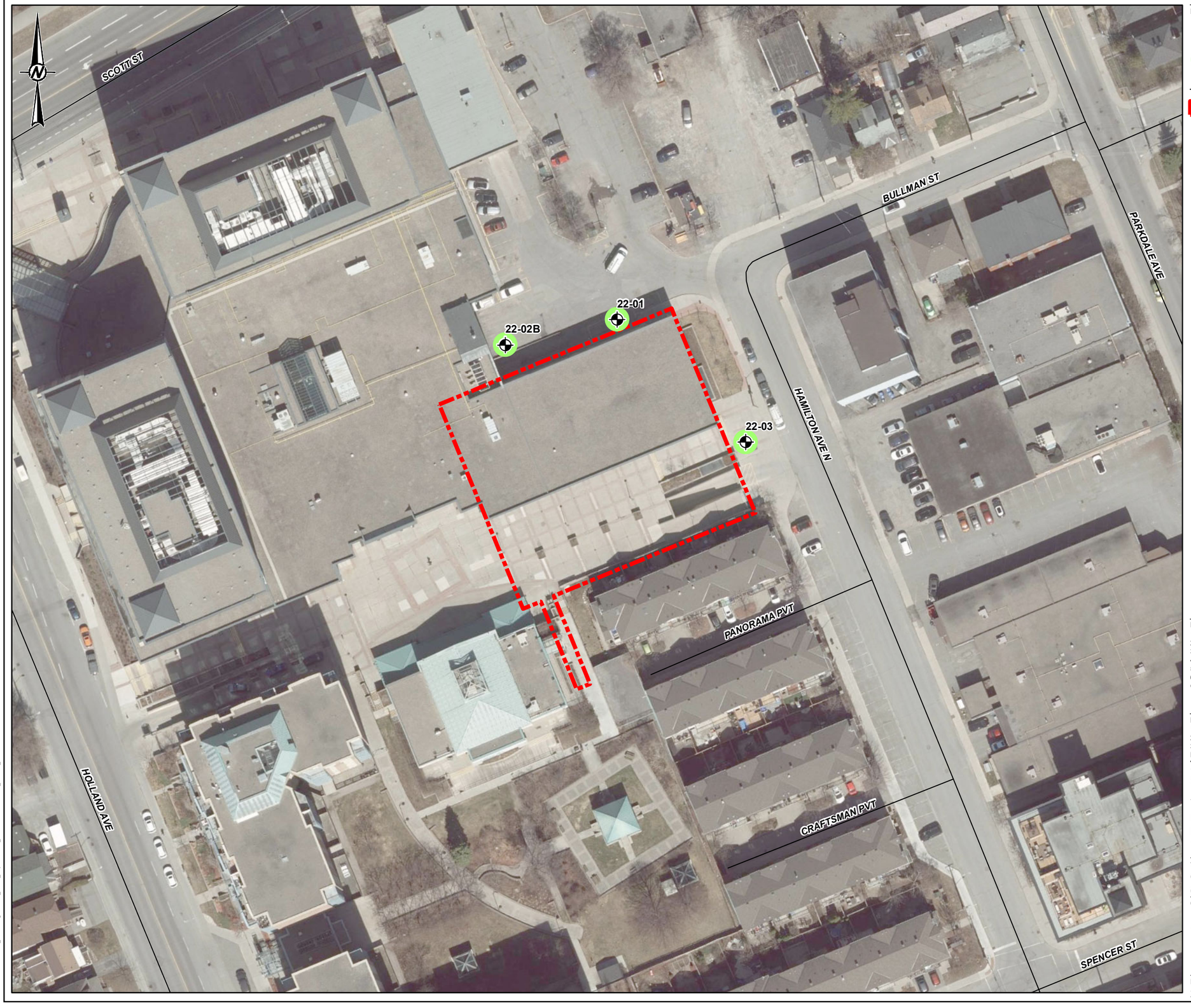
PROJECT
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
HOLLAND CROSS EXPANSION BUILDING
1560 SCOTT STREET, OTTAWA, ONTARIO

TITLE
SOIL ANALYTICAL RESULTS – METALS, HYDRIDE-FORMING METALS AND ORP (B-HWS, Cr(VI), CN, Hg)

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2022-11-14
DESIGNED	----
PREPARED	JEM/MG
REVIEWED	RM
APPROVED	KPH

PROJECT NO.	CONTROL	REV.	FIGURE
22530229	0003	0	5A



LEGEND

- MONITORING WELL LOCATION
- LOCATION WHERE ALL SAMPLES ANALYZED SATISFY APPLICABLE SITE STANDARDS
- ROADWAY
- PHASE TWO SITE AND RSC PROPERTY BOUNDARY

Borehole	Sample ID	Sample Date	Analysis
22-01	MW22-01	28-Sep-2022	Metals, Hydride-forming metals and ORP
22-02B	MW22-02	28-Sep-2022	Metals, Hydride-forming metals and ORP
	MW22-DUP (Field duplicate of MW22-02)	28-Sep-2022	Metals and Hydride-forming metals
22-03	MW22-03	28-Sep-2022	Metals, Hydride-forming metals and ORP

0 20 40

1:800 METRES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE
2. MBGS: METRES BELOW GROUND SURFACE
3. ORP: OTHER REGULATED PARAMETERS
4. CrVI: HEXAVALENT CHROMIUM
5. Hg: MERCURY
6. APPLICABLE SITE STANDARDS: MECP TABLE 7 SCS FOR SHALLOW SOILS IN NON-POTABLE GROUNDWATER CONDITION FOR RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE.

REFERENCE(S)

1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. 2021 AERIAL IMAGERY FROM THE CITY OF OTTAWA
3. COORDINATE SYSTEM: NAD 1983 UTM ZONE 18N, PROJECTION: TRANSVERSE MERCATOR, DATUM: NORTH AMERICAN 1983

CLIENT

STANTEC INC.

PROJECT

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
HOLLAND CROSS EXPANSION BUILDING
1560 SCOTT STREET, OTTAWA, ONTARIO

TITLE

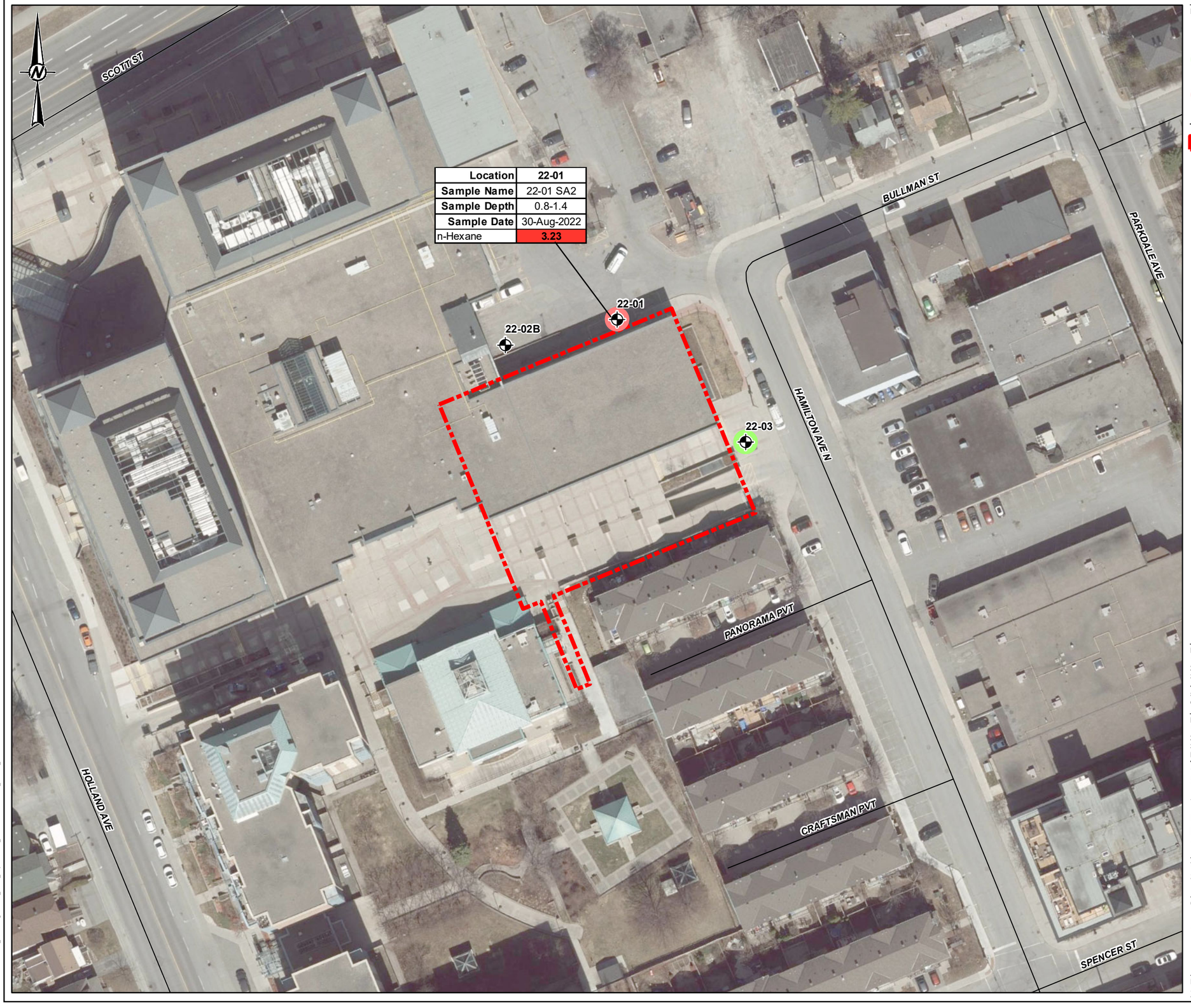
GROUNDWATER ANALYTICAL RESULTS – METALS AND ORP (Cr(VI), Hg)

CONSULTANT

WSP GOLDER

YYYY-MM-DD	2022-11-14
DESIGNED	----
PREPARED	JEM/MG
REVIEWED	RM
APPROVED	KPH

PROJECT NO.	CONTROL	REV.	FIGURE
22530229	0003	0	5B



LEGEND

- MONITORING WELL LOCATION
- LOCATION WHERE ALL SAMPLES ANALYZED SATISFY APPLICABLE SITE STANDARDS
- LOCATION WHERE ONE OR MORE SAMPLES ANALYZED EXCEED APPLICABLE SITE STANDARDS
- ROADWAY
- PHASE TWO SITE AND RSC PROPERTY BOUNDARY

Borehole	Sample ID	Sample Date	Sample Depth (mbgs)
22-01	22-01 SA2	30-Aug-2022	0.8-1.4
22-02B	22-02B SA2	30-Aug-2022	0.8-1.4
22-03	22-03 SA3	30-Aug-2022	0.8-1.4

Parameter (µg/g)	Applicable Site Standards
n-Hexane	2.8

0 20 40

1:800 METRES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE
2. ALL CONCENTRATIONS ARE IN MICROGRAM PER GRAM (µG/G) UNLESS OTHERWISE NOTED.
3. MBGS: METRES BELOW GROUND SURFACE
4. VOC: VOLATILE ORGANIC COMPOUNDS
5. APPLICABLE SITE STANDARDS: MECP TABLE 7 SCS FOR SHALLOW SOILS IN NON-POTABLE GROUNDWATER CONDITION FOR RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE.

REFERENCE(S)

1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. 2021 AERIAL IMAGERY FROM THE CITY OF OTTAWA
3. COORDINATE SYSTEM: NAD 1983 UTM ZONE 18N, PROJECTION: TRANSVERSE MERCATOR, DATUM: NORTH AMERICAN 1983

CLIENT
STANTEC INC.

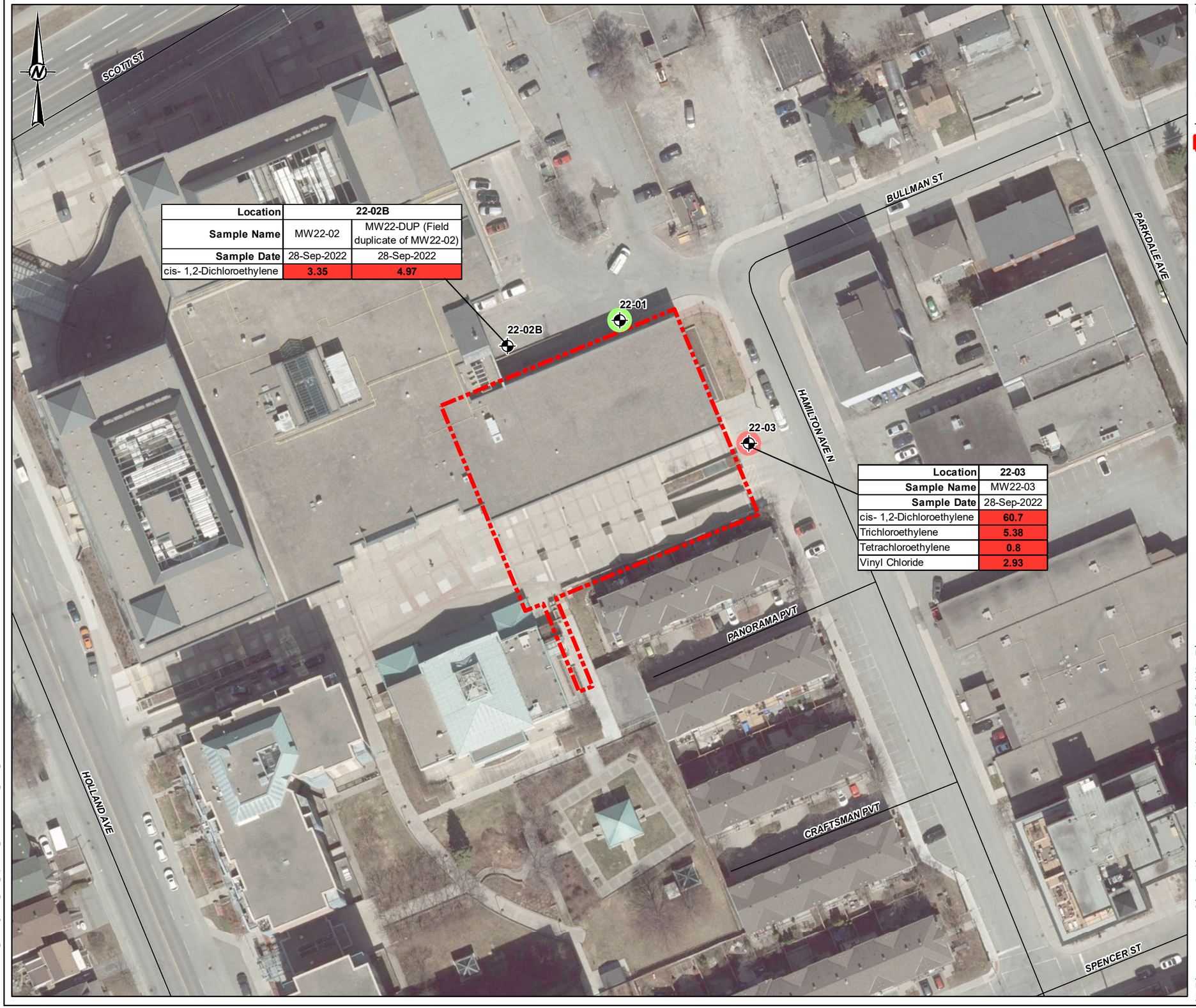
PROJECT
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
HOLLAND CROSS EXPANSION BUILDING
1560 SCOTT STREET, OTTAWA, ONTARIO

TITLE
SOIL ANALYTICAL RESULTS - VOC

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2022-11-14
DESIGNED	----
PREPARED	JEM/MG
REVIEWED	RM
APPROVED	KPH

PROJECT NO.	CONTROL	REV.	FIGURE
22530229	0003	0	6A



LEGEND

- MONITORING WELL LOCATION
- LOCATION WHERE ALL SAMPLES ANALYZED SATISFY APPLICABLE SITE STANDARDS
- LOCATION WHERE ONE OR MORE SAMPLES ANALYZED EXCEED APPLICABLE SITE STANDARDS
- ROADWAY
- PHASE TWO SITE AND RSC PROPERTY BOUNDARY

Borehole	Sample ID	Sample Date
22-01	MW22-01	28-Sep-2022
22-02B	MW22-02	28-Sep-2022
	MW22-DUP (Field duplicate of MW22-02)	28-Sep-2022
22-03	MW22-03	28-Sep-2022

Parameter (µg/L)	Applicable Site Standards
cis- 1,2-Dichloroethylene	1.6
Trichloroethylene	0.5
Tetrachloroethylene	0.5
Vinyl Chloride	0.5

0 20 40
1:800 METRES

NOTE(S)
1. ALL LOCATIONS ARE APPROXIMATE
2. ALL CONCENTRATIONS ARE IN MICROGRAM PER GRAM (µG/G) UNLESS OTHERWISE NOTED.
3. MBGS: METRES BELOW GROUND SURFACE
4. VOC: VOLATILE ORGANIC COMPOUNDS
5. APPLICABLE SITE STANDARDS: MECP TABLE 7 SCS FOR SHALLOW SOILS IN NON-POTABLE GROUNDWATER CONDITION FOR RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE.

REFERENCE(S)
1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. 2021 AERIAL IMAGERY FROM THE CITY OF OTTAWA
3. COORDINATE SYSTEM: NAD 1983 UTM ZONE 18N, PROJECTION: TRANSVERSE MERCATOR, DATUM: NORTH AMERICAN 1983

CLIENT
STANTEC INC.

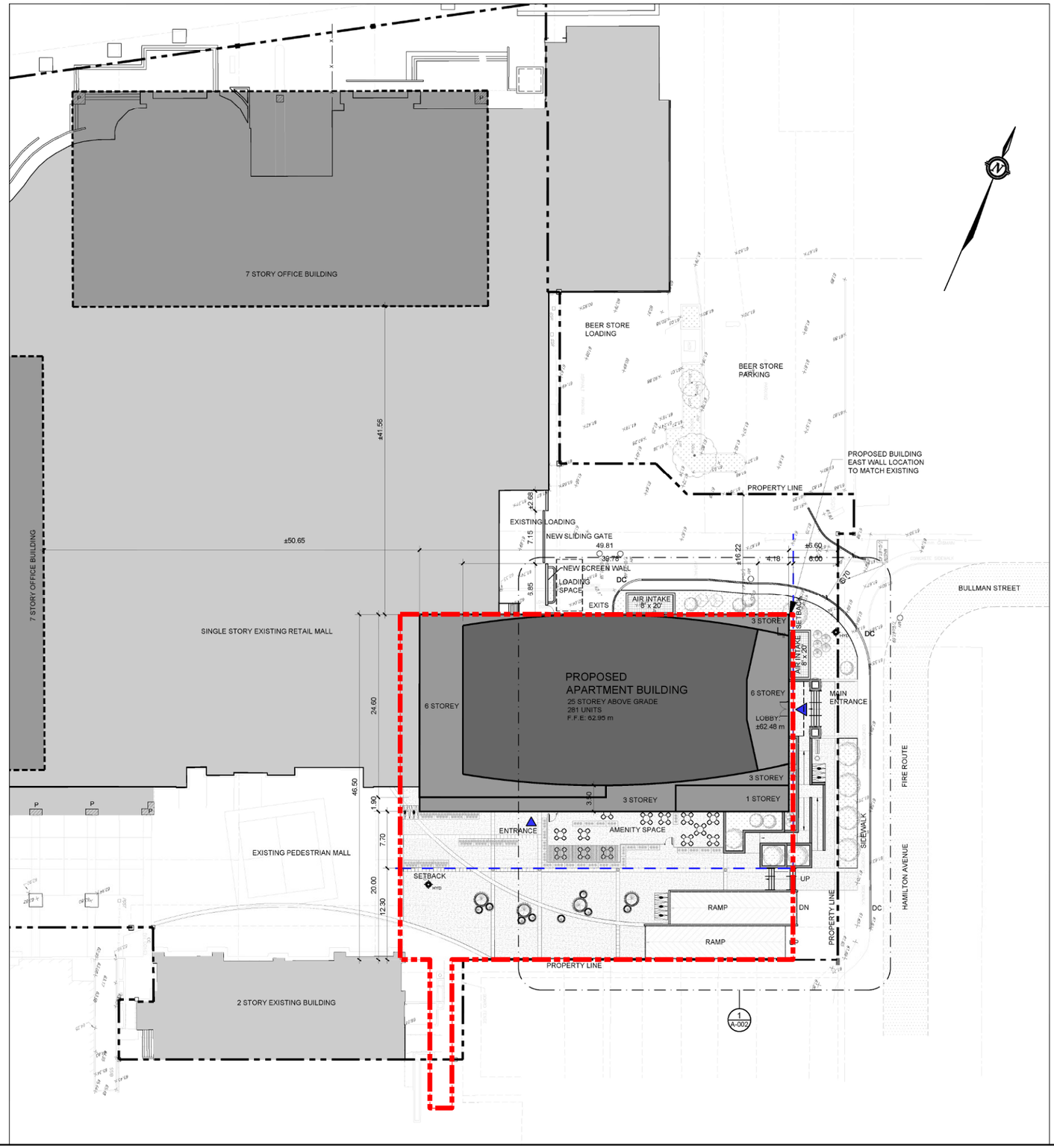
PROJECT
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
HOLLAND CROSS EXPANSION BUILDING
1560 SCOTT STREET, OTTAWA, ONTARIO

TITLE
GROUNDWATER ANALYTICAL RESULTS – VOC

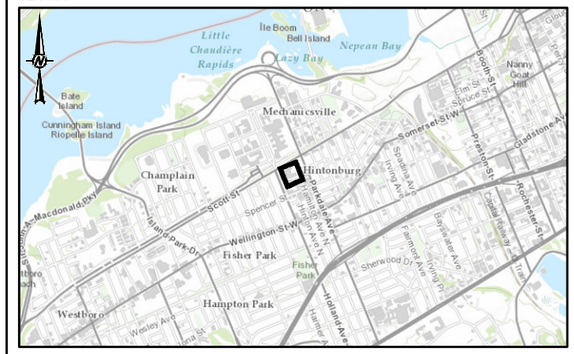
CONSULTANT
WSP GOLDER

YYYY-MM-DD	2022-11-14
DESIGNED	----
PREPARED	JEM/MG
REVIEWED	RM
APPROVED	KPH

PROJECT NO.	CONTROL	REV.	FIGURE
22530229	0003	0	6B



KEY MAP



SCALE 1:50,000

LEGEND

PHASE TWO SITE AND RSC PROPERTY BOUNDARY

0 10 20

1:600 METRES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. DEVELOPMENT PLAN PROVIDED BY CLIENT
2. SERVICE LAYER CREDITS: SOURCES: ESRI, HERE, GARMIN, INTERMAP, INCREMENT P CORP., GEBCO, USGS, FAO, NPS, NRCAN, GEOBASE, IGN, KADASTER NL, ORDNANCE SURVEY, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), (C) OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY
3. COORDINATE SYSTEM: NAD 1983 UTM ZONE 18N, PROJECTION: TRANSVERSE MERCATOR, DATUM: NORTH AMERICAN 1983

CLIENT
STANTEC INC.

PROJECT
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT
HOLLAND CROSS EXPANSION BUILDING
1560 SCOTT STREET, OTTAWA, ONTARIO

TITLE
DEVELOPMENT PLAN

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2022-11-08
DESIGNED	----
PREPARED	JEM/MG
REVIEWED	RM
APPROVED	KPH

PROJECT NO.	CONTROL	REV.	FIGURE
22530229	0003	0	7

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

25mm

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APPENDIX A

Sampling and Analysis Plan

TECHNICAL MEMORANDUM

DATE November 14, 2022 **Project No.** 22530229

TO Field Staff
WSP Golder

FROM Keith Holmes **EMAIL** Keith.P.Holmes@wsp.com

SAMPLING AND ANALYSIS PLAN – PART OF 1560 SCOTT STREET, OTTAWA, ONTARIO

Objective

As required by the Ontario Regulation (O. Reg.) 153/04, this Site-specific sampling and analysis plan (SAP), which includes WSP Golder's Quality Assurance Program (QAP) and standard operating procedures (SOP) is to be developed for each environmental field investigation activity. The SAP is a required component of the Phase Two ESA report that outlines the proposed field work, identifies the number and location of samples to be collected, specifies which SOPs will be used, and the quality assurance measures to be implemented during the field work. All field work will be completed in accordance with the requirements of the SAP, QAP, and SOPs. The intent of the current investigation is to characterize the lateral extent of soil and groundwater impacts identified at the Site to support filing a Record of Site Condition.

Site Background

A Phase One ESA was completed in 2022 which identified the following Areas of Potential Environmental Concern (APECs) on Site:

APEC 1: Former Beech foundry located on the west portion of the Site.

APEC 2: Manufacturing, gas stations, service garages and commercial printing to the south of the Phase One Property within 150 metres, including a documented VOC contaminated site.

General Requirements

- Follow standard operating procedures.
- Complete tailgate meeting before commencing any field work.
- Complete a Daily Log for every day of field work. Use standard field forms (forms attached).
- Initial calibration of field equipment should be performed at the start of each field day, with a daily check of calibration using a standard of known concentration (record on field form).
- Clean disposable Nitrile™ gloves will be used at each sampling location to prevent cross-contamination.
- All non-dedicated sampling equipment (e.g., split spoons) will be decontaminated between sampling locations. Sampling equipment in contact with soil will be cleaned with a brush; washed with a laboratory-grade detergent solution (e.g., phosphate-free LiquiNox or AlcoNox) and thoroughly rinsed with analyte-free water.

Borehole Drilling

- Confirm that every drilling location has been cleared by the private locator.
- At each BH location, screen continuous soil samples at regular intervals (minimum every 0.6 to 0.75 metres).
- Keith to review samples and COC prior to submission.

QA/QC Samples

- Collect duplicate samples for full borehole profile for one out of every 10 boreholes.

Table 1: Borehole and Soil Sampling Plan

Borehole/ Test Pit ID	APEC Investigated	Borehole Depth (mbgs)	Well Installed (Y/N)	Soil Samples
22-01	1	6.3	Y	Sample all depth intervals for hydride-forming metals, metals, ORP, PHC, BTEX, PAH and VOC.
22-02	2	9	Y	Sample all depth intervals for hydride-forming metals, metals, ORP, PHC, BTEX, PAH and VOC.
22-03	2	9	Y	Sample all depth intervals for hydride-forming metals, metals, ORP, PHC, BTEX, PAH and VOC.

Created by: RM
Checked by: KPH

Notes:
PHC: petroleum hydrocarbons
BTEX: benzene, toluene, ethylbenzene and xylenes
PAH: polycyclic aromatic hydrocarbons
PCB: polychlorinated biphenyls
ORP: Other Regulated Parameters including one or more of the following parameters: hot-water soluble boron, hexavalent chromium, weak acid dissociable cyanide, mercury, electrical conductivity, sodium adsorption ratio and pH.
VOC: volatile organic compounds

Monitoring Well Installation

- For well installation, see detailed instructions in driller work order: 2-inch inner diameter (ID) Schedule 40 polyvinyl chloride (PVC) casing and 2 inch ID Schedule 40 PVC well screens (1.5 metres in length, #10 slot size); sand pack surrounding each screen will be #00N; each monitoring well will be completed at ground surface with a flush-mount protective casing set in concrete and sealed with a PVC j-plug.
- Mark the reference point at the top of well pipe with a small notch. Install Waterra tubing and foot valve in each new monitoring well.
- Monitoring well construction details are provided in Table 2.

Table 2: Monitoring Well Construction

Borehole ID	Depth of Screen Base (m)	Screen Length (m)	Well Diameter (cm)	Protective Casing Type
22-01	6.3	3	4.4	Flushmount
22-02	9	3	4.4	Flushmount
22-03	9	3	4.4	Flushmount

Monitoring Well Development

- Develop each MW in accordance with our SOP.

Groundwater Monitoring

- Before measuring the water levels, open the J-plugs to allow air in the casing to vent and the water level to stabilize.
- Collect groundwater samples from monitoring wells following SOP9 (Conventional Sample Collection) for the parameters in Table 3.
- Samples are to be collected from all the locations listed in Table 3. Samples for metals, As, Se, Sb, CrVI and Hg filtered in the field with inline filter.
- Samples do not need to be submitted day of sampling provided you keep them on ice during the day and/or refrigerate them overnight (i.e., keep them cold from collection to submission).
- Collect quality assurance samples as indicated in Table 3. The duplicate groundwater samples should be labelled in a manner in which the laboratory cannot readily identify the sample as a duplicate.
- Please call Keith if you see or suspect that there is product in any monitoring well.
- Use the “Groundwater Sample Collection” form to collect all data during groundwater sampling.

Table 2: Groundwater sampling plan

Location	Field Parameter Measurements	Groundwater Analyses to be Requested	QA/QC samples
22-01, 22-02, 22-03	pH; EC; temp; DO; ORP	PHC, BTEX, Hydride-Forming Metals, Metals, ORP	Collect duplicate samples from 22-02B

Notes:
ORP: Other Regulated Parameters (CrVI, Hg)

Chain-Of-Custody

Chain-of-Custody Item	Information
Analytical Laboratory	AGAT
Generic Site Condition Standards	Table 7 residential, coarse
Use Record of Site Condition analytical procedure	Yes
Turn-around Time	Soil samples: Regular TAT
WSP Golder Reporting Contact	Keith Holmes
Project-specific quote number (if applicable)	NA
Billing Contact	Keith Holmes
Is an EQuiS EDD Required	No

Surveying

- Surveyor to survey horizontal and vertical locations at new monitoring wells (ground surface and top of pipe elevations). Top of pipe elevation to be measured at the reference point (notch cut into well pipe).

Management Of Investigation Derived Waste

- If anything needs to be drummed, label drums for waste management purposes, include WSP Golder, project number, date and drum contents (soil, purge water)
- Discuss best location to store drums with site supervisor/manager (should be secure as possible from public access).
- Record inventory of waste containers on Daily Log.

Special Instructions

- Submit field notes (including field logs, calibration records, field forms and chain-of-custody forms).
- The use of ink for recording field notes is recommended to ensure the legibility of scanned field forms. Scan field notes at resolution and contrast settings that ensure the scanned documents are easily legible.
- Use standard field forms (not field books).
- Include a daily log for every day of field work.
- Save field notes (including daily logs, field forms, field logs, calibration records, and chain of custody documents) as a single .pdf document with the following file name “PROJECT_NUMBER Field Notes COMPLETION_DATE” (for example, “1712345 Field Notes April 27, 2017.pdf”, where COMPLETION_DATE represents the last date of field work associated with the sampling event).
- Sort pages in the .pdf document by form type and in chronological order with daily logs at the front to simplify review.
- Save field notes under the same folder as the sampling and analysis plan.

Golder Associates Ltd.

Keith Holmes
Principal Geoscientist, M.Sc., P.Geo.

KPH/sg
https://golderassociates.sharepoint.com/sites/164073/project files/6 deliverables/phase two esa/rev0/appendix a - sap/22530229-sap-holland cross - 02.docx

APPENDIX B

Record of Boreholes

PROJECT: 22530229 (3000)

LOCATION: N 442688.50; E 5028045.00

RECORD OF BOREHOLE: 22-01

BORING DATE: August 29, 2022

SHEET 1 OF 2

DATUM: Geodetic

SPT/DCPT HAMMER: MASS, 64kg; DROP, 760mm

HAMMER TYPE: AUTOMATIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ● / rem V. ⊕ U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp W Wl; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		61.60							
0		ASPHALTIC CONCRETE (100 mm)		0.00							Concrete
		FILL - (SM) SILTY SAND, some gravel, contain rock fragments; dark brown; non-cohesive, moist		0.10	1	GS					
				60.84							
1		(GP) GRAVEL, some sand; grey (TILL); non-cohesive, dry, compact to very dense		0.76	2	SS	27				Bentonite
				60.23							
		Weathered bedrock, possible cobbles and boulders		1.37							
				60.00	3	SS	55				
		END OF BOREHOLE/DRILLHOLE		1.60							
2		Notes:									
		1. Auger refusal.									
3											
4											
5											
6											
7											
8											
9											
10											

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DEPTH SCALE

1 : 50

GOLDER

LOGGED: PK

CHECKED: AKP

PROJECT: 22530229 (3000)

RECORD OF DRILLHOLE: 22-01

SHEET 2 OF 2

LOCATION: N 442688.5 ;E 5028045.0

DRILLING DATE:

DATUM: Geodetic

INCLINATION: -90° AZIMUTH: ---

DRILL RIG:

DRILLING CONTRACTOR: Marathon Drilling

JN - Joint; FLT - Fault; SHR- Shear; VN - Vein; CJ - Conjugate; BD- Bedding; FO- Foliation; CO- Contact; OR- Orthogonal; CL - Cleavage; PL - Planar; CU- Curved; UN - Undulating; ST - Stepped; IR - Irregular; PO- Polished; K - Slickensided; SM- Smooth; Ro - Rough; MB- Mechanical Break; BR - Broken Rock

NOTE: For additional abbreviations refer to list of abbreviations & symbols.

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. / DEPTH (m)	RUN No.	COLOUR / % RETURN / FLUSH	RECOVERY: TOTAL CORE %	RECOVERY: SOLID CORE %	R.Q.D. %	FRACT. INDEX PER 0.25 m	DISCONTINUITY DATA: B Angle	DISCONTINUITY DATA: DIP w.r.t. CORE AXIS	DISCONTINUITY DATA: TYPE AND SURFACE DESCRIPTION	Jr	Ja	Jn	HYDRAULIC CONDUCTIVITY K, cm/sec	Diametral Point Load Index (MPa)	RMC -Q' AVG.	
		Continued from Record of Borehole 22-01		60.00																
2	HQ-Coring	Fresh fine-medium grained, slightly porous to non-porous, grey LIMESTONE bedrock with thin Shale interbeds		1.60	1															Sand
3					2															WL=3.38 Oct 3, 2022
4																				
5					3															Screen
6				55.33																
				6.27																
7																				
8																				
9																				
10																				
11																				

DEPTH SCALE

1 : 50

LOGGED: PK

CHECKED: AKP

GTA-RCK 004 S:\CLIENTS\LASALLE_INVESTMENT_MANAGEMENT\1560_SCOTT_ST_OTTAWA\02_DATA\GINT\1560_SCOTT_ST_OTTAWA.GPJ GAL-MISS.GDT 11/14/22

PROJECT: 22530229 (3000)

LOCATION: N 442665.40; E 5028039.00

RECORD OF BOREHOLE: 22-02B

BORING DATE: August 29, 2022

SHEET 1 OF 2

DATUM: Geodetic

SPT/DCPT HAMMER: MASS, 64kg; DROP, 760mm

HAMMER TYPE: AUTOMATIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ● / rem V. ⊕ U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp W Wl) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		61.72							
0		ASPHALTIC CONCRETE (150 mm)		0.00							Concrete
		FILL - (SM) SILTY SAND, (Granular B); dark brown; non-cohesive, very dense, moist		0.15	1	GS			○		
				60.96							
1		(SM) SILTY SAND, some gravel; brown to grey (TILL); dry, very dense		0.76	2	SS	55		○		Bentonite
				60.20							
		Weathered bedrock, possible cobbles and boulders		1.52							
				59.87	3	SS	50		○		
2		END OF BOREHOLE/DRILLHOLE		1.85							
		Notes:									
		1. Auger refusal.									
3											
4											
5											
6											
7											
8											
9											
10											

DEPTH SCALE

1 : 50

GOLDER

LOGGED: PK

CHECKED: AKP

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PROJECT: 22530229 (3000)

RECORD OF DRILLHOLE: 22-02B

SHEET 2 OF 2

LOCATION: N 442665.4 ;E 5028039.0

DRILLING DATE:

DATUM: Geodetic

INCLINATION: -90° AZIMUTH: ---

DRILL RIG:

DRILLING CONTRACTOR: Marathon Drilling

JN - Joint; FLT - Fault; SHR- Shear; VN - Vein; CJ - Conjugate; BD- Bedding; FO- Foliation; CO- Contact; OR- Orthogonal; CL - Cleavage; PL - Planar; CU- Curved; UN - Undulating; ST - Stepped; IR - Irregular; PO- Polished; K - Slickensided; SM- Smooth; Ro - Rough; MB- Mechanical Break; BR - Broken Rock

NOTE: For additional abbreviations refer to list of abbreviations & symbols.

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. / DEPTH (m)	RUN No.	COLOUR / % RETURN / FLUSH	RECOVERY: TOTAL CORE %	RECOVERY: SOLID CORE %	R.Q.D. %	FRACT. INDEX PER 0.25 m	DISCONTINUITY DATA: B Angle	DISCONTINUITY DATA: DIP w.r.t. CORE AXIS	DISCONTINUITY DATA: TYPE AND SURFACE DESCRIPTION	Jr	Ja	Jn	HYDRAULIC CONDUCTIVITY K, cm/sec	Diametral Point Load Index (MPa)	RMC -Q' AVG.
		Continued from Record of Borehole 22-02B		59.87															
2	HQ-Coring	Fresh fine-medium grained, slightly porous to non-porous, grey LIMESTONE bedrock with thin Shale interbeds		1.85	1														
3					2														
4					3														
5					4														
6					5														
7					6														
8																			
9				52.72															
				9.00															
10																			
11																			

WL=4.84 Oct 3, 2022

Sand

Screen

DEPTH SCALE

1 : 50

GOLDER

LOGGED: PK

CHECKED: AKP

GTA-RCK 004 S:\CLIENTS\LASALLE_INVESTMENT_MANAGEMENT\1560_SCOTT_ST_OTTAWA\02_DATA\GINT\1560_SCOTT_ST_OTTAWA.GPJ GAL-MISS.GDT 11/14/22

PROJECT: 22530229 (3000)

LOCATION: N 442716.10; E 5028019.00

RECORD OF BOREHOLE: 22-03

BORING DATE: August 30, 2022

SHEET 1 OF 2

DATUM: Geodetic

SPT/DCPT HAMMER: MASS, 64kg; DROP, 760mm

HAMMER TYPE: AUTOMATIC

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ● / rem V. ⊕ U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp W WI) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		61.68							
0		CONCRETE BLOCK		0.00	1	GS			○		Concrete
				60.92							
1		FILL - (GP) GRAVEL, poorly graded, trace sand; dry		0.76	2	SS	16				Bentonite
				60.31							
		(GP) sandy GRAVEL, trace silt; grey (TILL); dry, compact to very dense		1.37							
				1.52							
		END OF BOREHOLE/DRILLHOLE									
2		Notes:									
		1. Auger refusal.									
3											
4											
5											
6											
7											
8											
9											
10											

DEPTH SCALE

1 : 50

LOGGED: PK

CHECKED: AKP

GOLDER

GTA-BHS 001 S:\CLIENTS\LASALLE_INVESTMENT_MANAGEMENT\1560_SCOTT_ST_OTTAWA\02_DATA\GINT\1560_SCOTT_ST_OTTAWA.GPJ GAL-MIS.GDT 11/14/22

PROJECT: 22530229 (3000)

RECORD OF DRILLHOLE: 22-03

SHEET 2 OF 2

LOCATION: N 442716.1 ;E 5028019.0

DRILLING DATE:

DATUM: Geodetic

INCLINATION: -90° AZIMUTH: ---

DRILL RIG:

DRILLING CONTRACTOR: Marathon Drilling

JN - Joint, FLT - Fault, SHR- Shear, VN - Vein, CJ - Conjugate
BD- Bedding, FO- Foliation, CO- Contact, OR- Orthogonal, CL - Cleavage
PL - Planar, CU - Curved, UN - Undulating, ST - Stepped, IR - Irregular
PO- Polished, K - Slickensided, SM- Smooth, Ro - Rough, MB- Mechanical Break
BR - Broken Rock
NOTE: For additional abbreviations refer to list of abbreviations & symbols.

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. / DEPTH (m)	RUN No.	COLOUR / % RETURN / FLUSH	RECOVERY: TOTAL CORE %	RECOVERY: SOLID CORE %	R.Q.D. %	FRACT. INDEX PER 0.25 m	DISCONTINUITY DATA: B Angle	DISCONTINUITY DATA: DIP w.r.t. CORE AXIS	DISCONTINUITY DATA: TYPE AND SURFACE DESCRIPTION	Jr	Ja	Jn	HYDRAULIC CONDUCTIVITY K, cm/sec	Diametral Point Load Index (MPa)	RMC -Q' AVG.
		Continued from Record of Borehole 22-03		60.16															
	HQ-Coring	Fresh fine-medium grained, slightly porous to non-porous, grey LIMESTONE bedrock with thin Shale interbeds		1.52															
					1														
					2														
					3														
					4														
					5														
				52.68															
				9.00															

WL=5.20 Oct 3, 2022

Sand

Screen

DEPTH SCALE

1 : 50

LOGGED: PK

CHECKED: AKP

GOLDER

GTA-RCK 004 S:\CLIENTS\LASALLE_INVESTMENT_MANAGEMENT\1560_SCOTT_ST_OTTAWA\02_DATA\GINT\1560_SCOTT_ST_OTTAWA.GPJ GAL-MISS.GDT 11/14/22

APPENDIX C

Certificates of Analysis

AGAT Laboratories

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

CLIENT NAME: GOLDER ASSOCIATES LTD
1931 ROBERTSON ROAD
OTTAWA, ON K2H5B7
(613) 592-9600
ATTENTION TO: Keith Holmes
PROJECT: 22530229
AGAT WORK ORDER: 22Z939775
SOIL ANALYSIS REVIEWED BY: Amanjot Bhela, Inorganic Lab Manager
TRACE ORGANICS REVIEWED BY: Neli Popnikolova, Senior Chemist
DATE REPORTED: Sep 07, 2022
PAGES (INCLUDING COVER): 16
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.*

AGAT Laboratories

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FAX (905)712-5122
http://www.agatlabs.com

Certificate of Analysis

AGAT WORK ORDER: 22Z939775

PROJECT: 22530229

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:PK

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

DATE RECEIVED: 2022-08-31

DATE REPORTED: 2022-09-07

SAMPLE DESCRIPTION:				22-01 SA2	22-02B SA2	22-03 SA3
SAMPLE TYPE:				Soil	Soil	Soil
DATE SAMPLED:				2022-08-30 12:00	2022-08-30 12:00	2022-08-30 12:00
Parameter	Unit	G / S	RDL	4266511	4266512	4266513
Antimony	µg/g	7.5	0.8	<0.8	<0.8	1.2
Arsenic	µg/g	18	1	3	2	6
Barium	µg/g	390	2.0	72.5	65.5	133
Beryllium	µg/g	4	0.4	<0.4	<0.4	<0.4
Boron	µg/g	120	5	10	8	16
Boron (Hot Water Soluble)	µg/g	1.5	0.10	0.36	0.25	0.44
Cadmium	µg/g	1.2	0.5	<0.5	<0.5	<0.5
Chromium	µg/g	160	5	9	16	36
Cobalt	µg/g	22	0.5	4.1	5.1	5.6
Copper	µg/g	140	1.0	6.2	12.9	27.4
Lead	µg/g	120	1	5	8	37
Molybdenum	µg/g	6.9	0.5	1.0	1.3	2.8
Nickel	µg/g	100	1	8	10	18
Selenium	µg/g	2.4	0.8	<0.8	<0.8	<0.8
Silver	µg/g	20	0.5	<0.5	<0.5	<0.5
Thallium	µg/g	1	0.5	<0.5	<0.5	0.5
Uranium	µg/g	23	0.50	1.11	0.53	0.51
Vanadium	µg/g	86	0.4	15.7	27.8	15.7
Zinc	µg/g	340	5	11	19	51
Chromium, Hexavalent	µg/g	8	0.2	<0.2	<0.2	<0.2
Cyanide, WAD	µg/g	0.051	0.040	<0.040	<0.040	<0.040
Mercury	µg/g	0.27	0.10	<0.10	<0.10	<0.10
Electrical Conductivity (2:1)	mS/cm	0.7	0.005	0.457	**1.44**	0.297
Sodium Adsorption Ratio (2:1) (Calc.)	N/A	5	N/A	2.32	**7.14**	4.80
pH, 2:1 CaCl2 Extraction	pH Units		NA	8.31	8.03	10.3

Certified By:

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 22Z939775

PROJECT: 22530229

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:PK

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

DATE RECEIVED: 2022-08-31 **DATE REPORTED: 2022-09-07**

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 7: Generic Site Condition Standards for Shallow Soils in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Coarse Textured Soils
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

4266511-4266513 EC was determined on the DI water extract obtained from the 2:1 leaching procedure (2 parts DI water:1 part soil). pH was determined on the 0.01M CaCl2 extract prepared at 2:1 ratio. SAR is a calculated parameter.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:

Amanjot Bhela

ASSOCIATION OF THE CHEMICAL PROFESSION OF ONTARIO
CHARTERED
AMANJOT BHELA
CHEMIST

AGAT Laboratories

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http://www.agatlabs.com

Certificate of Analysis

AGAT WORK ORDER: 22Z939775

PROJECT: 22530229

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:PK

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

DATE RECEIVED: 2022-08-31

DATE REPORTED: 2022-09-07

				SAMPLE DESCRIPTION:	22-01 SA2	22-02B SA2	22-03 SA3
				SAMPLE TYPE:	Soil	Soil	Soil
				DATE SAMPLED:	2022-08-30 12:00	2022-08-30 12:00	2022-08-30 12:00
Parameter	**Unit**	**G / S**	**RDL**		**4266511**	**4266512**	**4266513**
Naphthalene	µg/g	0.6	0.05		<0.05	<0.05	<0.05
Acenaphthylene	µg/g	0.15	0.05		<0.05	<0.05	<0.05
Acenaphthene	µg/g	7.9	0.05		<0.05	<0.05	<0.05
Fluorene	µg/g	62	0.05		<0.05	<0.05	<0.05
Phenanthrene	µg/g	6.2	0.05		<0.05	<0.05	<0.05
Anthracene	µg/g	0.67	0.05		<0.05	<0.05	<0.05
Fluoranthene	µg/g	0.69	0.05		<0.05	<0.05	<0.05
Pyrene	µg/g	78	0.05		<0.05	<0.05	<0.05
Benz(a)anthracene	µg/g	0.5	0.05		<0.05	<0.05	<0.05
Chrysene	µg/g	7	0.05		<0.05	<0.05	<0.05
Benzo(b)fluoranthene	µg/g	0.78	0.05		<0.05	<0.05	<0.05
Benzo(k)fluoranthene	µg/g	0.78	0.05		<0.05	<0.05	<0.05
Benzo(a)pyrene	µg/g	0.3	0.05		<0.05	<0.05	<0.05
Indeno(1,2,3-cd)pyrene	µg/g	0.38	0.05		<0.05	<0.05	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	0.05		<0.05	<0.05	<0.05
Benzo(g,h,i)perylene	µg/g	6.6	0.05		<0.05	<0.05	<0.05
1 and 2 Methlynaphthalene	µg/g	0.99	0.05		<0.05	<0.05	<0.05
Moisture Content	%		0.1		6.7	5.7	6.9
Surrogate	**Unit**	**Acceptable Limits**					
Naphthalene-d8	%	50-140			60	70	75
Acridine-d9	%	50-140			80	80	65
Terphenyl-d14	%	50-140			75	75	85

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 7: Generic Site Condition Standards for Shallow Soils in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Coarse Textured Soils
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

4266511-4266513 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: 22Z939775

PROJECT: 22530229

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:PK

O. Reg. 153(511) - PHCs F1 - F4 (with PAHs and VOC) (Soil)

DATE RECEIVED: 2022-08-31

DATE REPORTED: 2022-09-07

				SAMPLE DESCRIPTION:	22-01 SA2	22-02B SA2	22-03 SA3
				SAMPLE TYPE:	Soil	Soil	Soil
				DATE SAMPLED:	2022-08-30 12:00	2022-08-30 12:00	2022-08-30 12:00
Parameter	**Unit**	**G / S**	**RDL**		**4266511**	**4266512**	**4266513**
F1 (C6 - C10)	µg/g		5		50	<5	<5
F1 (C6 to C10) minus BTEX	µg/g	55	5		47	<5	<5
F2 (C10 to C16)	µg/g	98	10		12	<10	<10
F2 (C10 to C16) minus Naphthalene	µg/g		10		12	<10	<10
F3 (C16 to C34)	µg/g	300	50		73	<50	<50
F3 (C16 to C34) minus PAHs	µg/g		50		73	<50	<50
F4 (C34 to C50)	µg/g	2800	50		160	<50	<50
Gravimetric Heavy Hydrocarbons	µg/g	2800	50		NA	NA	NA
Moisture Content	%		0.1		6.7	5.7	6.9
Surrogate	**Unit**	**Acceptable Limits**					
Toluene-d8	%	50-140			90	97	97
Terphenyl	%	60-140			74	63	83

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 7: Generic Site Condition Standards for Shallow Soils in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Coarse Textured Soils
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

4266511-4266513 Results are based on sample dry weight.
The C6-C10 fraction is calculated using toluene response factor.
C6–C10 (F1 minus BTEX) is a calculated parameter. The calculated value is F1 minus BTEX. The calculated parameter is 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 and PAH contributions.
C>10 – C16 (F2- Naphthalene) is a calculated parameter. The calculated value is F2 - Naphthalene.
C>16 - C34 (F3-PAH) is a calculated parameter. The calculated value is F3-PAH (PAH: sum of Phenanthrene, Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Fluoranthene, Dibenzo(a,h)anthracene, Indeno(1,2,3-c,d)pyrene and Pyrene).
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
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.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By: NPopowich

AGAT Laboratories

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
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FAX (905)712-5122
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Certificate of Analysis

AGAT WORK ORDER: 22Z939775

PROJECT: 22530229

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:PK

O. Reg. 153(511) - VOCs (with PHC) (Soil)

DATE RECEIVED: 2022-08-31

DATE REPORTED: 2022-09-07

		SAMPLE DESCRIPTION:		22-01 SA2	22-02B SA2	22-03 SA3
		SAMPLE TYPE:		Soil	Soil	Soil
		DATE SAMPLED:		2022-08-30 12:00	2022-08-30 12:00	2022-08-30 12:00
Parameter	Unit	G / S	RDL	4266511	4266512	4266513
Dichlorodifluoromethane	µg/g	16	0.05	<0.05	<0.05	<0.05
Vinyl Chloride	ug/g	0.02	0.02	<0.02	<0.02	<0.02
Bromomethane	ug/g	0.05	0.05	<0.05	<0.05	<0.05
Trichlorofluoromethane	ug/g	4	0.05	<0.05	<0.05	<0.05
Acetone	ug/g	16	0.50	<0.50	<0.50	<0.50
1,1-Dichloroethylene	ug/g	0.05	0.05	<0.05	<0.05	<0.05
Methylene Chloride	ug/g	0.1	0.05	<0.05	<0.05	<0.05
Trans- 1,2-Dichloroethylene	ug/g	0.084	0.05	<0.05	<0.05	<0.05
Methyl tert-butyl Ether	ug/g	0.75	0.05	<0.05	<0.05	<0.05
1,1-Dichloroethane	ug/g	3.5	0.02	<0.02	<0.02	<0.02
Methyl Ethyl Ketone	ug/g	16	0.50	<0.50	<0.50	<0.50
Cis- 1,2-Dichloroethylene	ug/g	3.4	0.02	<0.02	<0.02	<0.02
Chloroform	ug/g	0.05	0.04	<0.04	<0.04	<0.04
1,2-Dichloroethane	ug/g	0.05	0.03	<0.03	<0.03	<0.03
1,1,1-Trichloroethane	ug/g	0.38	0.05	<0.05	<0.05	<0.05
Carbon Tetrachloride	ug/g	0.05	0.05	<0.05	<0.05	<0.05
Benzene	ug/g	0.21	0.02	<0.02	<0.02	<0.02
1,2-Dichloropropane	ug/g	0.05	0.03	<0.03	<0.03	<0.03
Trichloroethylene	ug/g	0.061	0.03	<0.03	<0.03	<0.03
Bromodichloromethane	ug/g	13	0.05	<0.05	<0.05	<0.05
Methyl Isobutyl Ketone	ug/g	1.7	0.50	<0.50	<0.50	<0.50
1,1,2-Trichloroethane	ug/g	0.05	0.04	<0.04	<0.04	<0.04
Toluene	ug/g	2.3	0.05	0.71	<0.05	0.33
Dibromochloromethane	ug/g	9.4	0.05	<0.05	<0.05	<0.05
Ethylene Dibromide	ug/g	0.05	0.04	<0.04	<0.04	<0.04
Tetrachloroethylene	ug/g	0.28	0.05	<0.05	<0.05	<0.05
1,1,1,2-Tetrachloroethane	ug/g	0.058	0.04	<0.04	<0.04	<0.04
Chlorobenzene	ug/g	2.4	0.05	<0.05	<0.05	<0.05
Ethylbenzene	ug/g	2	0.05	0.13	<0.05	<0.05

Certified By: N Popnikolof

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 22Z939775

PROJECT: 22530229

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:PK

O. Reg. 153(511) - VOCs (with PHC) (Soil)

DATE RECEIVED: 2022-08-31

DATE REPORTED: 2022-09-07

				SAMPLE DESCRIPTION:	22-01 SA2	22-02B SA2	22-03 SA3
				SAMPLE TYPE:	Soil	Soil	Soil
				DATE SAMPLED:	2022-08-30 12:00	2022-08-30 12:00	2022-08-30 12:00
Parameter	**Unit**	**G / S**	**RDL**		**4266511**	**4266512**	**4266513**
m & p-Xylene	ug/g		0.05		1.67	<0.05	<0.05
Bromoform	ug/g	0.27	0.05		<0.05	<0.05	<0.05
Styrene	ug/g	0.7	0.05		<0.05	<0.05	<0.05
1,1,2,2-Tetrachloroethane	ug/g	0.05	0.05		<0.05	<0.05	<0.05
o-Xylene	ug/g		0.05		0.32	<0.05	<0.05
1,3-Dichlorobenzene	ug/g	4.8	0.05		<0.05	<0.05	<0.05
1,4-Dichlorobenzene	ug/g	0.083	0.05		<0.05	<0.05	<0.05
1,2-Dichlorobenzene	ug/g	3.4	0.05		<0.05	<0.05	<0.05
Xylenes (Total)	ug/g	3.1	0.05		1.99	<0.05	<0.05
1,3-Dichloropropene (Cis + Trans)	µg/g	0.05	0.05		<0.05	<0.05	<0.05
n-Hexane	µg/g	2.8	0.05		**3.23**	<0.05	<0.05
Moisture Content	%		0.1		6.7	5.7	6.9
Surrogate	**Unit**	**Acceptable Limits**					
Toluene-d8	% Recovery	50-140			90	97	97
4-Bromofluorobenzene	% Recovery	50-140			104	99	97

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 7: Generic Site Condition Standards for Shallow Soils in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Coarse Textured Soils
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

4266511-4266513 The sample was analyzed using the high level technique. The sample was extracted using methanol, a small amount of the methanol extract was diluted in water and the purge & trap GC/MS analysis was performed. Results are based on the dry weight of the soil.
Xylenes total is a calculated parameter. The calculated value is the sum of m&p-Xylene + o-Xylene.
1,3-Dichloropropene total is a calculated parameter. The calculated value is the sum of Cis-1,3-Dichloropropene and Trans-1,3-Dichloropropene.
The calculated parameters are non-accredited. The parameters that are components of the calculation are accredited.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By: N Popowich

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Exceedance Summary

AGAT WORK ORDER: 22Z939775

PROJECT: 22530229

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
4266511	22-01 SA2	ON T7 S RPI CT	O. Reg. 153(511) - VOCs (with PHC) (Soil)	n-Hexane	µg/g	2.8	3.23
4266512	22-02B SA2	ON T7 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Electrical Conductivity (2:1)	mS/cm	0.7	1.44
4266512	22-02B SA2	ON T7 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Sodium Adsorption Ratio (2:1) (Calc.)	N/A	5	7.14

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Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 22Z939775

PROJECT: 22530229

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:PK

Soil Analysis

RPT Date: Sep 07, 2022			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 & Inorganics (Soil)															
Antimony	4266715		<0.8	<0.8	NA	< 0.8	117%	70%	130%	81%	80%	120%	95%	70%	130%
Arsenic	4266715		3	3	NA	< 1	127%	70%	130%	110%	80%	120%	113%	70%	130%
Barium	4266715		40.4	40.1	0.7%	< 2.0	104%	70%	130%	98%	80%	120%	102%	70%	130%
Beryllium	4266715		<0.4	0.4	NA	< 0.4	99%	70%	130%	103%	80%	120%	104%	70%	130%
Boron	4266715		6	7	NA	< 5	83%	70%	130%	104%	80%	120%	103%	70%	130%
Boron (Hot Water Soluble)	4266715		<0.10	<0.10	NA	< 0.10	100%	60%	140%	111%	70%	130%	105%	60%	140%
Cadmium	4266715		<0.5	<0.5	NA	< 0.5	97%	70%	130%	105%	80%	120%	107%	70%	130%
Chromium	4266715		16	16	NA	< 5	105%	70%	130%	116%	80%	120%	120%	70%	130%
Cobalt	4266715		7.2	7.2	0.0%	< 0.5	116%	70%	130%	111%	80%	120%	113%	70%	130%
Copper	4266715		16.7	17.3	3.5%	< 1.0	106%	70%	130%	116%	80%	120%	107%	70%	130%
Lead	4266715		6	7	15.4%	< 1	112%	70%	130%	113%	80%	120%	107%	70%	130%
Molybdenum	4266715		<0.5	<0.5	NA	< 0.5	118%	70%	130%	114%	80%	120%	120%	70%	130%
Nickel	4266715		14	14	0.0%	< 1	113%	70%	130%	109%	80%	120%	108%	70%	130%
Selenium	4266715		<0.8	<0.8	NA	< 0.8	97%	70%	130%	117%	80%	120%	112%	70%	130%
Silver	4266715		<0.5	<0.5	NA	< 0.5	117%	70%	130%	109%	80%	120%	101%	70%	130%
Thallium	4266715		<0.5	<0.5	NA	< 0.5	108%	70%	130%	106%	80%	120%	104%	70%	130%
Uranium	4266715		0.61	0.64	NA	< 0.50	116%	70%	130%	111%	80%	120%	112%	70%	130%
Vanadium	4266715		24.0	24.7	2.9%	< 0.4	118%	70%	130%	114%	80%	120%	120%	70%	130%
Zinc	4266715		34	34	0.0%	< 5	117%	70%	130%	114%	80%	120%	124%	70%	130%
Chromium, Hexavalent	4265668		<0.2	<0.2	NA	< 0.2	97%	70%	130%	90%	80%	120%	97%	70%	130%
Cyanide, WAD	4266724		<0.040	<0.040	NA	< 0.040	109%	70%	130%	108%	80%	120%	97%	70%	130%
Mercury	4266715		<0.10	<0.10	NA	< 0.10	123%	70%	130%	114%	80%	120%	110%	70%	130%
Electrical Conductivity (2:1)	4266715		0.827	0.810	2.1%	< 0.005	108%	80%	120%	NA			NA		
Sodium Adsorption Ratio (2:1) (Calc.)	4266715		4.58	4.51	1.5%	N/A	NA			NA			NA		
pH, 2:1 CaCl2 Extraction	4266914		7.24	7.27	0.4%	NA	101%	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.

Certified By:

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Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD
AGAT WORK ORDER: 22Z939775
PROJECT: 22530229
ATTENTION TO: Keith Holmes
SAMPLING SITE:
SAMPLED BY:PK

Trace Organics Analysis

RPT Date: Sep 07, 2022			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 (with PAHs and VOC) (Soil)															
F1 (C6 - C10)	4267488		<5	<5	NA	< 5	102%	60%	140%	98%	60%	140%	84%	60%	140%
F2 (C10 to C16)	4266712		< 10	< 10	NA	< 10	107%	60%	140%	93%	60%	140%	102%	60%	140%
F3 (C16 to C34)	4266712		< 50	< 50	NA	< 50	90%	60%	140%	62%	60%	140%	63%	60%	140%
F4 (C34 to C50)	4266712		< 50	< 50	NA	< 50	88%	60%	140%	98%	60%	140%	110%	60%	140%
O. Reg. 153(511) - VOCs (with PHC) (Soil)															
Dichlorodifluoromethane	4267488		<0.05	<0.05	NA	< 0.05	95%	50%	140%	111%	50%	140%	88%	50%	140%
Vinyl Chloride	4267488		<0.02	<0.02	NA	< 0.02	86%	50%	140%	96%	50%	140%	93%	50%	140%
Bromomethane	4267488		<0.05	<0.05	NA	< 0.05	85%	50%	140%	96%	50%	140%	88%	50%	140%
Trichlorofluoromethane	4267488		<0.05	<0.05	NA	< 0.05	92%	50%	140%	98%	50%	140%	98%	50%	140%
Acetone	4267488		<0.50	<0.50	NA	< 0.50	120%	50%	140%	98%	50%	140%	104%	50%	140%
1,1-Dichloroethylene	4267488		< 0.05	< 0.05	NA	< 0.05	80%	50%	140%	89%	60%	130%	97%	50%	140%
Methylene Chloride	4267488		<0.05	<0.05	NA	< 0.05	78%	50%	140%	80%	60%	130%	79%	50%	140%
Trans- 1,2-Dichloroethylene	4267488		<0.05	<0.05	NA	< 0.05	106%	50%	140%	102%	60%	130%	83%	50%	140%
Methyl tert-butyl Ether	4267488		<0.05	<0.05	NA	< 0.05	73%	50%	140%	84%	60%	130%	103%	50%	140%
1,1-Dichloroethane	4267488		<0.02	<0.02	NA	< 0.02	76%	50%	140%	117%	60%	130%	86%	50%	140%
Methyl Ethyl Ketone	4267488		<0.50	<0.50	NA	< 0.50	111%	50%	140%	95%	50%	140%	104%	50%	140%
Cis- 1,2-Dichloroethylene	4267488		<0.02	<0.02	NA	< 0.02	86%	50%	140%	91%	60%	130%	112%	50%	140%
Chloroform	4267488		<0.04	<0.04	NA	< 0.04	85%	50%	140%	97%	60%	130%	108%	50%	140%
1,2-Dichloroethane	4267488		<0.03	<0.03	NA	< 0.03	102%	50%	140%	98%	60%	130%	110%	50%	140%
1,1,1-Trichloroethane	4267488		<0.05	<0.05	NA	< 0.05	89%	50%	140%	98%	60%	130%	98%	50%	140%
Carbon Tetrachloride	4267488		<0.05	<0.05	NA	< 0.05	83%	50%	140%	93%	60%	130%	98%	50%	140%
Benzene	4267488		<0.02	<0.02	NA	< 0.02	89%	50%	140%	92%	60%	130%	93%	50%	140%
1,2-Dichloropropane	4267488		<0.03	<0.03	NA	< 0.03	96%	50%	140%	95%	60%	130%	115%	50%	140%
Trichloroethylene	4267488		<0.03	<0.03	NA	< 0.03	98%	50%	140%	103%	60%	130%	100%	50%	140%
Bromodichloromethane	4267488		<0.05	<0.05	NA	< 0.05	114%	50%	140%	111%	60%	130%	108%	50%	140%
Methyl Isobutyl Ketone	4267488		<0.50	<0.50	NA	< 0.50	99%	50%	140%	102%	50%	140%	92%	50%	140%
1,1,2-Trichloroethane	4267488		<0.04	<0.04	NA	< 0.04	114%	50%	140%	92%	60%	130%	104%	50%	140%
Toluene	4267488		<0.05	<0.05	NA	< 0.05	108%	50%	140%	114%	60%	130%	95%	50%	140%
Dibromochloromethane	4267488		<0.05	<0.05	NA	< 0.05	100%	50%	140%	103%	60%	130%	86%	50%	140%
Ethylene Dibromide	4267488		<0.04	<0.04	NA	< 0.04	103%	50%	140%	103%	60%	130%	108%	50%	140%
Tetrachloroethylene	4267488		< 0.05	< 0.05	NA	< 0.05	89%	50%	140%	80%	60%	130%	101%	50%	140%
1,1,1,2-Tetrachloroethane	4267488		<0.04	<0.04	NA	< 0.04	100%	50%	140%	112%	60%	130%	92%	50%	140%
Chlorobenzene	4267488		<0.05	<0.05	NA	< 0.05	89%	50%	140%	106%	60%	130%	103%	50%	140%
Ethylbenzene	4267488		<0.05	<0.05	NA	< 0.05	99%	50%	140%	106%	60%	130%	88%	50%	140%
m & p-Xylene	4267488		<0.05	<0.05	NA	< 0.05	104%	50%	140%	110%	60%	130%	91%	50%	140%
Bromoform	4267488		<0.05	<0.05	NA	< 0.05	107%	50%	140%	96%	60%	130%	89%	50%	140%
Styrene	4267488		<0.05	<0.05	NA	< 0.05	105%	50%	140%	107%	60%	130%	86%	50%	140%
1,1,2,2-Tetrachloroethane	4267488		<0.05	<0.05	NA	< 0.05	119%	50%	140%	110%	60%	130%	119%	50%	140%
o-Xylene	4267488		<0.05	<0.05	NA	< 0.05	110%	50%	140%	114%	60%	130%	95%	50%	140%

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Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD
AGAT WORK ORDER: 22Z939775
PROJECT: 22530229
ATTENTION TO: Keith Holmes
SAMPLING SITE:
SAMPLED BY:PK

Trace Organics Analysis (Continued)

RPT Date: Sep 07, 2022			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
1,3-Dichlorobenzene	4267488		<0.05	<0.05	NA	< 0.05	119%	50%	140%	94%	60%	130%	100%	50%	140%
1,4-Dichlorobenzene	4267488		<0.05	<0.05	NA	< 0.05	94%	50%	140%	95%	60%	130%	101%	50%	140%
1,2-Dichlorobenzene	4267488		<0.05	<0.05	NA	< 0.05	110%	50%	140%	107%	60%	130%	108%	50%	140%
n-Hexane	4267488		<0.05	<0.05	NA	< 0.05	85%	50%	140%	81%	60%	130%	91%	50%	140%
O. Reg. 153(511) - PAHs (Soil)															
Naphthalene	4259720		<0.05	<0.05	NA	< 0.05	96%	50%	140%	105%	50%	140%	98%	50%	140%
Acenaphthylene	4259720		<0.05	<0.05	NA	< 0.05	108%	50%	140%	90%	50%	140%	93%	50%	140%
Acenaphthene	4259720		<0.05	<0.05	NA	< 0.05	105%	50%	140%	108%	50%	140%	78%	50%	140%
Fluorene	4259720		<0.05	<0.05	NA	< 0.05	83%	50%	140%	103%	50%	140%	80%	50%	140%
Phenanthrene	4259720		<0.05	<0.05	NA	< 0.05	99%	50%	140%	88%	50%	140%	85%	50%	140%
Anthracene	4259720		<0.05	<0.05	NA	< 0.05	92%	50%	140%	103%	50%	140%	98%	50%	140%
Fluoranthene	4259720		<0.05	<0.05	NA	< 0.05	85%	50%	140%	98%	50%	140%	88%	50%	140%
Pyrene	4259720		<0.05	<0.05	NA	< 0.05	84%	50%	140%	90%	50%	140%	85%	50%	140%
Benz(a)anthracene	4259720		<0.05	<0.05	NA	< 0.05	71%	50%	140%	90%	50%	140%	80%	50%	140%
Chrysene	4259720		<0.05	<0.05	NA	< 0.05	87%	50%	140%	75%	50%	140%	68%	50%	140%
Benzo(b)fluoranthene	4259720		<0.05	<0.05	NA	< 0.05	116%	50%	140%	93%	50%	140%	85%	50%	140%
Benzo(k)fluoranthene	4259720		<0.05	<0.05	NA	< 0.05	102%	50%	140%	78%	50%	140%	75%	50%	140%
Benzo(a)pyrene	4259720		<0.05	<0.05	NA	< 0.05	96%	50%	140%	83%	50%	140%	98%	50%	140%
Indeno(1,2,3-cd)pyrene	4259720		<0.05	<0.05	NA	< 0.05	77%	50%	140%	80%	50%	140%	83%	50%	140%
Dibenz(a,h)anthracene	4259720		<0.05	<0.05	NA	< 0.05	91%	50%	140%	85%	50%	140%	105%	50%	140%
Benzo(g,h,i)perylene	4259720		<0.05	<0.05	NA	< 0.05	83%	50%	140%	85%	50%	140%	98%	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: N Popnikolof

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Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 22Z939775

PROJECT: 22530229

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:PK

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
Boron (Hot Water Soluble)	MET-93-6104	modified from EPA 6010D and MSA PART 3, CH 21	ICP/OES
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
Chromium, Hexavalent	INOR-93-6068	modified from EPA 3060 and EPA 7196	SPECTROPHOTOMETER
Cyanide, WAD	INOR-93-6052	modified from ON MOECC E3015, SM 4500-CN- I, G-387	TECHNICON AUTO ANALYZER
Mercury	MET-93-6103	modified from EPA 7471B and SM 3112 B	ICP-MS
Electrical Conductivity (2:1)	INOR-93-6075	modified from MSA PART 3, CH 14 and SM 2510 B	PC TITRATE
Sodium Adsorption Ratio (2:1) (Calc.)	INOR-93-6007	modified from EPA 6010D & Analytical Protocol	ICP/OES
pH, 2:1 CaCl2 Extraction	INOR-93-6075	modified from EPA 9045D, MCKEAGUE 3.11 E3137	PC TITRATE

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Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 22Z939775

PROJECT: 22530229

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:PK

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
1 and 2 Methlynaphthalene	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
F1 (C6 - 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- 5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
F2 (C10 to C16)	VOL-91-5009	modified from CCME Tier 1 Method	GC/FID
F2 (C10 to C16) minus Naphthalene	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
F3 (C16 to C34) minus PAHs	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
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
Dichlorodifluoromethane	VOL-91-5002	modified from EPA 5035A and EPA 8260D	(P&T)GC/MS

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Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 22Z939775

PROJECT: 22530229

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:PK

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Vinyl Chloride	VOL-91-5002	modified from EPA 5035A and EPA 8260D	(P&T)GC/MS
Bromomethane	VOL-91-5002	modified from EPA 5035A and EPA 8260D	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5002	modified from EPA 5035A and EPA 8260D	(P&T)GC/MS
Acetone	VOL-91-5002	modified from EPA 5035A and EPA 8260D	(P&T)GC/MS
1,1-Dichloroethylene	VOL-91-5002	modified from EPA 5035A and EPA 8260D	(P&T)GC/MS
Methylene Chloride	VOL-91-5002	modified from EPA 5035A and EPA 8260D	(P&T)GC/MS
Trans- 1,2-Dichloroethylene	VOL-91-5002	modified from EPA 5035A and EPA 8260D	(P&T)GC/MS
Methyl tert-butyl Ether	VOL-91-5002	modified from EPA 5035A and EPA 8260D	(P&T)GC/MS
1,1-Dichloroethane	VOL-91-5002	modified from EPA 5035A and EPA 8260D	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5002	modified from EPA 5035A and EPA 8260D	(P&T)GC/MS
Cis- 1,2-Dichloroethylene	VOL-91-5002	modified from EPA 5035A and EPA 8260D	(P&T)GC/MS
Chloroform	VOL-91-5002	modified from EPA 5035A and EPA 8260D	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5002	modified from EPA 5035A and EPA 8260D	(P&T)GC/MS
1,1,1-Trichloroethane	VOL-91-5002	modified from EPA 5035A and EPA 8260D	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5002	modified from EPA 5035A and EPA 8260D	(P&T)GC/MS
Benzene	VOL-91-5002	modified from EPA 5035A and EPA 8260D	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5002	modified from EPA 5035A and EPA 8260D	(P&T)GC/MS
Trichloroethylene	VOL-91-5002	modified from EPA 5035A and EPA 8260D	(P&T)GC/MS
Bromodichloromethane	VOL-91-5002	modified from EPA 5035A and EPA 8260D	(P&T)GC/MS
Methyl Isobutyl Ketone	VOL-91-5002	modified from EPA 5035A and EPA 8260D	(P&T)GC/MS
1,1,2-Trichloroethane	VOL-91-5002	modified from EPA 5035A and EPA 8260D	(P&T)GC/MS
Toluene	VOL-91-5002	modified from EPA 5035A and EPA 8260D	(P&T)GC/MS
Dibromochloromethane	VOL-91-5002	modified from EPA 5035A and EPA 8260D	(P&T)GC/MS
Ethylene Dibromide	VOL-91-5002	modified from EPA 5035A and EPA 8260D	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5002	modified from EPA 5035A and EPA 8260D	(P&T)GC/MS
1,1,1,2-Tetrachloroethane	VOL-91-5002	modified from EPA 5035A and EPA 8260D	(P&T)GC/MS
Chlorobenzene	VOL-91-5002	modified from EPA 5035A and EPA 8260D	(P&T)GC/MS
Ethylbenzene	VOL-91-5002	modified from EPA 5035A and EPA 8260D	(P&T)GC/MS

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Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 22Z939775

PROJECT: 22530229

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:PK

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
m & p-Xylene	VOL-91-5002	modified from EPA 5035A and EPA 8260D	(P&T)GC/MS
Bromoform	VOL-91-5002	modified from EPA 5035A and EPA 8260D	(P&T)GC/MS
Styrene	VOL-91-5002	modified from EPA 5035A and EPA 8260D	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5002	modified from EPA 5035A and EPA 8260D	(P&T)GC/MS
o-Xylene	VOL-91-5002	modified from EPA 5035A and EPA 8260D	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5002	modified from EPA 5035A and EPA 8260D	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5002	modified from EPA 5035A and EPA 8260D	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5002	modified from EPA 5035A and EPA 8260D	(P&T)GC/MS
Xylenes (Total)	VOL-91-5002	modified from EPA 5035A and EPA 8260D	(P&T)GC/MS
1,3-Dichloropropene (Cis + Trans)	VOL-91-5002	modified from EPA 5035A and EPA 8260D	(P&T)GC/MS
n-Hexane	VOL-91-5002	modified from EPA 5035A and EPA 8260D	(P&T)GC/MS
Toluene-d8	VOL-91-5002	modified from EPA 5035A & EPA 8260D	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91-5002	modified from EPA 5035A & EPA 8260D	(P&T)GC/MS

AGAT Laboratories
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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 #: 22939775
Cooler Quantity: 1 Layer One - Bagged Ice
Arrival Temperatures: 18.6 | 18.5 | 18.6
LT → 1.8 | 4.3 | 4.9
Custody Seal Intact: ☐ Yes ☐ No ☐ N/A
Notes: Bagged Ice

Report Information:

Company: Golder
Contact: Keith Holmes
Address:
Phone: Fax:
Reports to be sent to:
1. Email:
2. Email:

Regulatory Requirements:

(Please check all applicable boxes)

☒ Regulation 153/04 — Table T7 (Indicate One) — ☐ Ind/Com ☒ Res/Park ☐ Agriculture
Soil Texture (Check One): ☐ Coarse ☐ Fine
☐ Excess Soils R406 — 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 (Most Analysis) ☒ 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: 22530229
Site Location:
Sampled By: PK
AGAT ID #: 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

B	Biota
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	Metals - ☐ CrVI, ☐ Hg, ☐ HWSB	BTEX, F1-F4 PHCs Analyze F4G if required ☐ Yes ☐ No	PAHs	Total PCBs ☐ Aroclor	VOC	O. Reg 558: Landfill Disposal Characterization TCLP: ☐ M&I ☐ VOCs ☐ ABNs ☐ B(a)P ☐ PCBs	O. Reg 406: Excess Soils SPLP Rainwater Leach ☐ Metals ☐ VOCs ☐ SVOCs	Excess Soils Characterization Package pH, ICPMS Metals, BTEX, F1-F4	Salt - EC/SAR	Potentially Hazardous or High Concentration (Y/N)
22-01 SA2	31/08/22	12 AM/PM	3	S			X		X	X		X					
22-02B SA2	1	AM/PM	3	1			X		X	X		X					
22-03 SA3		AM/PM	2				X		X	X		X					
		AM/PM															
		AM/PM															
		AM/PM															
		AM/PM															
		AM/PM															
		AM/PM															
		AM/PM															
		AM/PM															

Samples Relinquished By (Print Name and Sign)	Date	Time	Samples Received By (Print Name and Sign)	Date	Time
Keith Holmes	31/08/22	4:00	C. Griffith AUG	31 2022	15h00
CC to Pino	AUG 31 2022	16h00	Anthony Daoura		

Page 1 of 1
No: T 114837

Document ID: DIV-78-1511-020

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

Date Issued: December 9, 2020

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CLIENT NAME: GOLDER ASSOCIATES LTD
1931 ROBERTSON ROAD
OTTAWA, ON K2H5B7
(613) 592-9600

ATTENTION TO: Keith Holmes

PROJECT: 22530229

AGAT WORK ORDER: 22Z951206

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

WATER ANALYSIS REVIEWED BY: Yris Verastegui, Report Reviewer

DATE REPORTED: Oct 07, 2022

PAGES (INCLUDING COVER): 19

VERSION*: 1

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

*Notes

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Certificate of Analysis

AGAT WORK ORDER: 22Z951206
PROJECT: 22530229

CLIENT NAME: GOLDER ASSOCIATES LTD
ATTENTION TO: Keith Holmes
SAMPLING SITE:Holland Cross
SAMPLED BY:SO

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

DATE RECEIVED: 2022-09-29
DATE REPORTED: 2022-10-07

SAMPLE DESCRIPTION:				MW22-01	MW22-02	MW22-03	MW22-DUP
SAMPLE TYPE:				Water	Water	Water	Water
DATE SAMPLED:				2022-09-28 10:00	2022-09-28 10:00	2022-09-28 10:00	2022-09-28 10:00
Parameter	Unit	G / S	RDL	4365513	4365514	4365515	4365516
Naphthalene	µg/L	7	0.20	<0.20	<0.20	<0.20	<0.20
Acenaphthylene	µg/L	1	0.20	<0.20	<0.20	<0.20	<0.20
Acenaphthene	µg/L	17	0.20	<0.20	<0.20	<0.20	<0.20
Fluorene	µg/L	290	0.20	<0.20	<0.20	<0.20	<0.20
Phenanthrene	µg/L	380	0.10	<0.10	<0.10	<0.10	<0.10
Anthracene	µg/L	1	0.10	<0.10	<0.10	<0.10	<0.10
Fluoranthene	µg/L	44	0.20	<0.20	<0.20	<0.20	<0.20
Pyrene	µg/L	5.7	0.20	<0.20	<0.20	<0.20	<0.20
Benzo(a)anthracene	µg/L	1.8	0.20	<0.20	<0.20	<0.20	<0.20
Chrysene	µg/L	0.7	0.10	<0.10	<0.10	<0.10	<0.10
Benzo(b)fluoranthene	µg/L	0.75	0.10	<0.10	<0.10	<0.10	<0.10
Benzo(k)fluoranthene	µg/L	0.4	0.10	<0.10	<0.10	<0.10	<0.10
Benzo(a)pyrene	µg/L	0.81	0.01	<0.01	<0.01	<0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L	0.2	0.20	<0.20	<0.20	<0.20	<0.20
Dibenz(a,h)anthracene	µg/L	0.4	0.20	<0.20	<0.20	<0.20	<0.20
Benzo(g,h,i)perylene	µg/L	0.2	0.20	<0.20	<0.20	<0.20	<0.20
2-and 1-methyl Naphthalene	µg/L	1500	0.20	<0.20	<0.20	<0.20	<0.20
Sediment				NO	YES	YES	YES
Surrogate	Unit	Acceptable Limits					
Naphthalene-d8	%	50-140		79	89	106	74
Acridine-d9	%	50-140		85	85	79	84
Terphenyl-d14	%	50-140		84	74	85	79

Certified By:

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Certificate of Analysis

AGAT WORK ORDER: 22Z951206

PROJECT: 22530229

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE:Holland Cross

SAMPLED BY:SO

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

DATE RECEIVED: 2022-09-29

DATE REPORTED: 2022-10-07

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 7: Generic Site Condition Standards for Shallow Soils in a Non-Potable Ground Water Condition - Non-Potable Ground Water - All Types of Property Uses - Coarse Textured Soils
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

4365513-4365516 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 amount
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. 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:

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 22Z951206

PROJECT: 22530229

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE:Holland Cross

SAMPLED BY:SO

O. Reg. 153(511) - PHCs F1 - F4 (with PAHs and VOC) (Water)

DATE RECEIVED: 2022-09-29

DATE REPORTED: 2022-10-07

SAMPLE DESCRIPTION:				MW22-01	MW22-02		MW22-03		MW22-DUP
SAMPLE TYPE:				Water	Water		Water		Water
DATE SAMPLED:				2022-09-28 10:00	2022-09-28 10:00		2022-09-28 10:00		2022-09-28 10:00
Parameter	Unit	G / S	RDL	4365513	4365514	RDL	4365515	RDL	4365516
F1 (C6-C10)	µg/L		50	<50	<50	25	<25	50	<50
F1 (C6 to C10) minus BTEX	µg/L	420	25	<25	<25	25	<25	25	<25
F2 (C10 to C16)	µg/L	150	100	<100	<100	100	<100	100	<100
F2 (C10 to C16) minus Naphthalene	µg/L		100	<100	<100	100	<100	100	<100
F3 (C16 to C34)	µg/L	500	100	<100	<100	100	<100	100	<100
F3 (C16 to C34) minus PAHs	µg/L		100	<100	<100	100	<100	100	<100
F4 (C34 to C50)	µg/L	500	100	<100	<100	100	<100	100	<100
Gravimetric Heavy Hydrocarbons	µg/L		500	NA	NA	500	NA	500	NA
Sediment				1	2		2		2
Surrogate	Unit	Acceptable Limits							
Toluene-d8	%	50-140		86	92	1	110	1	105
Terphenyl	% Recovery	60-140		76	62	1	69	1	74

Certified By:

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 22Z951206
PROJECT: 22530229

CLIENT NAME: GOLDER ASSOCIATES LTD
ATTENTION TO: Keith Holmes
SAMPLING SITE:Holland Cross
SAMPLED BY:SO

O. Reg. 153(511) - PHCs F1 - F4 (with PAHs and VOC) (Water)

DATE RECEIVED: 2022-09-29
DATE REPORTED: 2022-10-07

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 7: Generic Site Condition Standards for Shallow Soils in a Non-Potable Ground Water Condition - Non-Potable Ground Water - All Types of Property Uses - Coarse Textured Soils
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

4365513-4365514 Dilution factor=2
The sample was diluted because it was foamy. The reporting detection limit has been corrected for the dilution factor used.
The C6-C10 fraction is calculated using toluene response factor.
C6–C10 (F1 minus BTEX) is a calculated parameter. The calculated value is F1 minus BTEX. The calculated parameter is 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 and PAH contributions.
C>10 – C16 (F2- Naphthalene) is a calculated parameter. The calculated value is F2 - Naphthalene.
C>16 - C34 (F3-PAH) is a calculated parameter. The calculated value is F3-PAH (PAH: sum of Phenanthrene, Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Fluoranthene, Dibenzo(a,h)anthracene, Indeno(1,2,3-c,d)pyrene and Pyrene).
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
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.

Sediment parameter is comment only based on visual inspection of the sample prior to extraction and is not an accredited test.

4365515 The C6-C10 fraction is calculated using toluene response factor.
C6–C10 (F1 minus BTEX) is a calculated parameter. The calculated value is F1 minus BTEX. The calculated parameter is 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 and PAH contributions.
C>10 – C16 (F2- Naphthalene) is a calculated parameter. The calculated value is F2 - Naphthalene.
C>16 - C34 (F3-PAH) is a calculated parameter. The calculated value is F3-PAH (PAH: sum of Phenanthrene, Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Fluoranthene, Dibenzo(a,h)anthracene, Indeno(1,2,3-c,d)pyrene and Pyrene).
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
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.

Sediment parameter is comment only based on visual inspection of the sample prior to extraction and is not an accredited test.

4365516 Dilution factor=2
The sample was diluted because it was foamy. The reporting detection limit has been corrected for the dilution factor used.
The C6-C10 fraction is calculated using toluene response factor.
C6–C10 (F1 minus BTEX) is a calculated parameter. The calculated value is F1 minus BTEX. The calculated parameter is non-accredited. The parameters that are components of the calculation are

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CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE:Holland Cross

SAMPLED BY:SO

O. Reg. 153(511) - PHCs F1 - F4 (with PAHs and VOC) (Water)

DATE RECEIVED: 2022-09-29

DATE REPORTED: 2022-10-07

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 and PAH contributions.
C>10 – C16 (F2- Naphthalene) is a calculated parameter. The calculated value is F2 - Naphthalene.
C>16 - C34 (F3-PAH) is a calculated parameter. The calculated value is F3-PAH (PAH: sum of Phenanthrene, Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Fluoranthene, Dibenzo(a,h)anthracene, Indeno(1,2,3-c,d)pyrene and Pyrene).
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
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.

Sediment parameter is comment only based on visual inspection of the sample prior to extraction and is not an accredited test.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:

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Certificate of Analysis

AGAT WORK ORDER: 22Z951206

PROJECT: 22530229

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE:Holland Cross

SAMPLED BY:SO

O. Reg. 153(511) - VOCs (with PHC) (Water)

DATE RECEIVED: 2022-09-29

DATE REPORTED: 2022-10-07

SAMPLE DESCRIPTION:				MW22-01	MW22-02		MW22-03		MW22-DUP
SAMPLE TYPE:				Water	Water		Water		Water
DATE SAMPLED:				2022-09-28 10:00	2022-09-28 10:00		2022-09-28 10:00		2022-09-28 10:00
Parameter	Unit	G / S	RDL	4365513	4365514	RDL	4365515	RDL	4365516
Dichlorodifluoromethane	µg/L	3500	0.80	<0.80	<0.80	0.40	<0.40	0.80	<0.80
Vinyl Chloride	µg/L	0.5	0.34	<0.34	<0.34	0.17	2.93	0.34	<0.34
Bromomethane	µg/L	0.89	0.40	<0.40	<0.40	0.20	<0.20	0.40	<0.40
Trichlorofluoromethane	µg/L	2000	0.80	<0.80	<0.80	0.40	<0.40	0.80	<0.80
Acetone	µg/L	100000	2.0	<2.0	<2.0	1.0	<1.0	2.0	<2.0
1,1-Dichloroethylene	µg/L	0.5	0.50	<0.50	<0.50	0.30	<0.30	0.50	<0.50
Methylene Chloride	µg/L	26	0.60	<0.60	<0.60	0.30	<0.30	0.60	<0.60
trans- 1,2-Dichloroethylene	µg/L	1.6	0.40	<0.40	<0.40	0.20	0.75	0.40	<0.40
Methyl tert-butyl ether	µg/L	15	0.40	<0.40	<0.40	0.20	<0.20	0.40	<0.40
1,1-Dichloroethane	µg/L	11	0.60	<0.60	<0.60	0.30	<0.30	0.60	<0.60
Methyl Ethyl Ketone	µg/L	21000	2.0	<2.0	<2.0	1.0	<1.0	2.0	<2.0
cis- 1,2-Dichloroethylene	µg/L	1.6	0.40	<0.40	3.35	0.20	60.7	0.40	4.97
Chloroform	µg/L	2	0.40	<0.40	<0.40	0.20	<0.20	0.40	<0.40
1,2-Dichloroethane	µg/L	0.5	0.40	<0.40	<0.40	0.20	<0.20	0.40	<0.40
1,1,1-Trichloroethane	µg/L	23	0.60	<0.60	<0.60	0.30	<0.30	0.60	<0.60
Carbon Tetrachloride	µg/L	0.2	0.20	<0.20	<0.20	0.20	<0.20	0.20	<0.20
Benzene	µg/L	0.5	0.40	<0.40	<0.40	0.20	0.47	0.40	<0.40
1,2-Dichloropropane	µg/L	0.58	0.40	<0.40	<0.40	0.20	<0.20	0.40	<0.40
Trichloroethylene	µg/L	0.5	0.40	<0.40	<0.40	0.20	5.38	0.40	<0.40
Bromodichloromethane	µg/L	67000	0.40	<0.40	<0.40	0.20	<0.20	0.40	<0.40
Methyl Isobutyl Ketone	µg/L	5200	2.0	<2.0	<2.0	1.0	<1.0	2.0	<2.0
1,1,2-Trichloroethane	µg/L	0.5	0.40	<0.40	<0.40	0.20	<0.20	0.40	<0.40
Toluene	µg/L	320	0.40	8.24	<0.40	0.20	0.56	0.40	<0.40
Dibromochloromethane	µg/L	65000	0.20	<0.20	<0.20	0.10	<0.10	0.20	<0.20
Ethylene Dibromide	µg/L	0.2	0.20	<0.20	<0.20	0.10	<0.10	0.20	<0.20
Tetrachloroethylene	µg/L	0.5	0.40	<0.40	<0.40	0.20	0.80	0.40	<0.40
1,1,1,2-Tetrachloroethane	µg/L	1.1	0.20	<0.20	<0.20	0.10	<0.10	0.20	<0.20
Chlorobenzene	µg/L	140	0.20	<0.20	<0.20	0.10	<0.10	0.20	<0.20
Ethylbenzene	µg/L	54	0.20	<0.20	<0.20	0.10	<0.10	0.20	<0.20

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Certificate of Analysis

AGAT WORK ORDER: 22Z951206
PROJECT: 22530229

CLIENT NAME: GOLDER ASSOCIATES LTD
SAMPLING SITE:Holland Cross

ATTENTION TO: Keith Holmes
SAMPLED BY:SO

O. Reg. 153(511) - VOCs (with PHC) (Water)

DATE RECEIVED: 2022-09-29

DATE REPORTED: 2022-10-07

				SAMPLE DESCRIPTION:	MW22-01	MW22-02		MW22-03		MW22-DUP
				SAMPLE TYPE:	Water	Water		Water		Water
				DATE SAMPLED:	2022-09-28 10:00	2022-09-28 10:00		2022-09-28 10:00		2022-09-28 10:00
Parameter	Unit	G / S	RDL		4365513	4365514	RDL	4365515	RDL	4365516
m & p-Xylene	µg/L		0.40		<0.40	<0.40	0.20	<0.20	0.40	<0.40
Bromoform	µg/L	5	0.20		<0.20	<0.20	0.10	<0.10	0.20	<0.20
Styrene	µg/L	43	0.20		<0.20	<0.20	0.10	<0.10	0.20	<0.20
1,1,2,2-Tetrachloroethane	µg/L	0.5	0.20		<0.20	<0.20	0.10	<0.10	0.20	<0.20
o-Xylene	µg/L		0.20		<0.20	<0.20	0.10	<0.10	0.20	<0.20
1,3-Dichlorobenzene	µg/L	7600	0.20		<0.20	<0.20	0.10	<0.10	0.20	<0.20
1,4-Dichlorobenzene	µg/L	0.5	0.20		<0.20	<0.20	0.10	<0.10	0.20	<0.20
1,2-Dichlorobenzene	µg/L	150	0.20		<0.20	<0.20	0.10	<0.10	0.20	<0.20
1,3-Dichloropropene	µg/L	0.5	0.30		<0.30	<0.30	0.30	<0.30	0.30	<0.30
Xylenes (Total)	µg/L	72	0.20		<0.20	<0.20	0.20	<0.20	0.20	<0.20
n-Hexane	µg/L	5	0.40		<0.40	<0.40	0.20	<0.20	0.40	<0.40
Surrogate	Unit	Acceptable Limits								
Toluene-d8	% Recovery	50-140			86	92	1	110	1	105
4-Bromofluorobenzene	% Recovery	50-140			72	77	1	80	1	80

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 7: Generic Site Condition Standards for Shallow Soils in a Non-Potable Ground Water Condition - Non-Potable Ground Water - All Types of Property Uses - Coarse Textured Soils
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

4365513-4365514 Dilution factor=2
The sample was diluted because it was foamy. The reporting detection limit has been corrected for the dilution factor used.
Xylenes total is a calculated parameter. The calculated value is the sum of m&p-Xylene and o-Xylene.
1,3-Dichloropropene total is a calculated parameter. The calculated value is the sum of Cis-1,3-Dichloropropene and Trans-1,3-Dichloropropene.
The calculated parameter is non-accredited. The parameters that are components of the calculation are accredited.

4365515 Xylenes total is a calculated parameter. The calculated value is the sum of m&p-Xylene and o-Xylene.
1,3-Dichloropropene total is a calculated parameter. The calculated value is the sum of Cis-1,3-Dichloropropene and Trans-1,3-Dichloropropene.
The calculated parameter is non-accredited. The parameters that are components of the calculation are accredited.

4365516 Dilution factor=2
The sample was diluted because it was foamy. The reporting detection limit has been corrected for the dilution factor used.
Xylenes total is a calculated parameter. The calculated value is the sum of m&p-Xylene and o-Xylene.
1,3-Dichloropropene total is a calculated parameter. The calculated value is the sum of Cis-1,3-Dichloropropene and Trans-1,3-Dichloropropene.
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:

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Certificate of Analysis

AGAT WORK ORDER: 22Z951206

PROJECT: 22530229

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE:Holland Cross

SAMPLED BY:SO

O. Reg. 153(511) - All Metals (Water)

DATE RECEIVED: 2022-09-29

DATE REPORTED: 2022-10-07

SAMPLE DESCRIPTION:				MW22-01	MW22-02	MW22-03
SAMPLE TYPE:				Water	Water	Water
DATE SAMPLED:				2022-09-28 10:00	2022-09-28 10:00	2022-09-28 10:00
Parameter	Unit	G / S	RDL	4365513	4365514	4365515
Dissolved Antimony	µg/L	16000	1.0	1.1	<1.0	1.7
Dissolved Arsenic	µg/L	1500	1.0	2.1	1.1	1.0
Dissolved Barium	µg/L	23000	2.0	310	112	85.2
Dissolved Beryllium	µg/L	53	0.5	<0.5	<0.5	<0.5
Dissolved Boron	µg/L	36000	10.0	911	1000	471
Dissolved Cadmium	µg/L	2.1	0.20	<0.20	0.27	<0.20
Dissolved Chromium	µg/L	640	2.0	2.8	<2.0	<2.0
Dissolved Cobalt	µg/L	52	0.50	4.18	1.21	<0.50
Dissolved Copper	µg/L	69	1.0	8.1	9.3	3.9
Dissolved Lead	µg/L	20	0.50	<0.50	<0.50	0.69
Dissolved Molybdenum	µg/L	7300	0.50	17.4	8.05	13.8
Dissolved Nickel	µg/L	390	1.0	16.7	17.8	2.4
Dissolved Selenium	µg/L	50	1.0	<1.0	<1.0	2.4
Dissolved Silver	µg/L	1.2	0.20	0.27	0.75	<0.20
Dissolved Thallium	µg/L	400	0.30	<0.30	1.46	<0.30
Dissolved Uranium	µg/L	330	0.50	20.7	23.4	3.87
Dissolved Vanadium	µg/L	200	0.40	0.41	1.15	0.88
Dissolved Zinc	µg/L	890	5.0	6.3	5.2	<5.0
Mercury	µg/L	0.1	0.02	<0.02	<0.02	<0.02
Chromium VI	µg/L	110	2.000	<2.000	<2.000	<2.000

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 7: Generic Site Condition Standards for Shallow Soils in a Non-Potable Ground Water Condition - Non-Potable Ground Water - All Types of Property Uses - Coarse Textured Soils
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

4365513-4365515 Metals analysis completed on a filtered sample.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By: Iris Verástegui

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Certificate of Analysis

AGAT WORK ORDER: 22Z951206

PROJECT: 22530229

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE:Holland Cross

SAMPLED BY:SO

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

DATE RECEIVED: 2022-09-29

DATE REPORTED: 2022-10-07

				SAMPLE DESCRIPTION:	MW22-DUP
				SAMPLE TYPE:	Water
				DATE SAMPLED:	2022-09-28 10:00
Parameter	Unit	G / S	RDL	4365516	
Dissolved Antimony	µg/L	16000	1.0	<1.0	
Dissolved Arsenic	µg/L	1500	1.0	<1.0	
Dissolved Barium	µg/L	23000	2.0	120	
Dissolved Beryllium	µg/L	53	0.50	<0.50	
Dissolved Boron	µg/L	36000	10.0	1020	
Dissolved Cadmium	µg/L	2.1	0.20	0.40	
Dissolved Chromium	µg/L	640	2.0	<2.0	
Dissolved Cobalt	µg/L	52	0.50	2.00	
Dissolved Copper	µg/L	69	1.0	12.7	
Dissolved Lead	µg/L	20	0.50	<0.50	
Dissolved Molybdenum	µg/L	7300	0.50	11.0	
Dissolved Nickel	µg/L	390	1.0	23.4	
Dissolved Selenium	µg/L	50	1.0	<1.0	
Dissolved Silver	µg/L	1.2	0.20	0.86	
Dissolved Thallium	µg/L	400	0.30	1.48	
Dissolved Uranium	µg/L	330	0.50	25.6	
Dissolved Vanadium	µg/L	200	0.40	1.11	
Dissolved Zinc	µg/L	890	5.0	<5.0	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 7: Generic Site Condition Standards for Shallow Soils in a Non-Potable Ground Water Condition - Non-Potable Ground Water - All Types of Property Uses - Coarse Textured Soils
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

4365516 Metals analysis completed on a filtered sample.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By: Iris Verástegui

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Exceedance Summary

AGAT WORK ORDER: 22Z951206

PROJECT: 22530229

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
4365514	MW22-02	ON T7 NPGW CT	O. Reg. 153(511) - VOCs (with PHC) (Water)	cis- 1,2-Dichloroethylene	µg/L	1.6	3.35
4365515	MW22-03	ON T7 NPGW CT	O. Reg. 153(511) - VOCs (with PHC) (Water)	Tetrachloroethylene	µg/L	0.5	0.80
4365515	MW22-03	ON T7 NPGW CT	O. Reg. 153(511) - VOCs (with PHC) (Water)	Trichloroethylene	µg/L	0.5	5.38
4365515	MW22-03	ON T7 NPGW CT	O. Reg. 153(511) - VOCs (with PHC) (Water)	Vinyl Chloride	µg/L	0.5	2.93
4365515	MW22-03	ON T7 NPGW CT	O. Reg. 153(511) - VOCs (with PHC) (Water)	cis- 1,2-Dichloroethylene	µg/L	1.6	60.7
4365516	MW22-DUP	ON T7 NPGW CT	O. Reg. 153(511) - VOCs (with PHC) (Water)	cis- 1,2-Dichloroethylene	µg/L	1.6	4.97

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Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD
PROJECT: 22530229
SAMPLING SITE:Holland Cross

AGAT WORK ORDER: 22Z951206
ATTENTION TO: Keith Holmes
SAMPLED BY:SO

Trace Organics Analysis

RPT Date: Oct 07, 2022			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 (with PAHs and VOC) (Water)															
F1 (C6-C10)	4359297		<25	<25	NA	< 25	116%	60%	140%	115%	60%	140%	89%	60%	140%
F2 (C10 to C16)	4359985		1200	1260	5.1%	< 100	102%	60%	140%	68%	60%	140%	71%	60%	140%
F3 (C16 to C34)	4359985		2900	3030	4.4%	< 100	104%	60%	140%	67%	60%	140%	72%	60%	140%
F4 (C34 to C50)	4359985		404	417	NA	< 100	74%	60%	140%	125%	60%	140%	131%	60%	140%
O. Reg. 153(511) - PAHs (Water)															
Naphthalene	4345951		<0.20	<0.20	NA	< 0.20	117%	50%	140%	87%	50%	140%	73%	50%	140%
Acenaphthylene	4345951		<0.20	<0.20	NA	< 0.20	104%	50%	140%	101%	50%	140%	73%	50%	140%
Acenaphthene	4345951		<0.20	<0.20	NA	< 0.20	108%	50%	140%	79%	50%	140%	80%	50%	140%
Fluorene	4345951		<0.20	<0.20	NA	< 0.20	100%	50%	140%	77%	50%	140%	80%	50%	140%
Phenanthrene	4345951		<0.10	<0.10	NA	< 0.10	91%	50%	140%	70%	50%	140%	87%	50%	140%
Anthracene	4345951		<0.10	<0.10	NA	< 0.10	104%	50%	140%	77%	50%	140%	88%	50%	140%
Fluoranthene	4345951		<0.20	<0.20	NA	< 0.20	91%	50%	140%	72%	50%	140%	76%	50%	140%
Pyrene	4345951		<0.20	<0.20	NA	< 0.20	91%	50%	140%	73%	50%	140%	73%	50%	140%
Benzo(a)anthracene	4345951		<0.20	<0.20	NA	< 0.20	71%	50%	140%	103%	50%	140%	79%	50%	140%
Chrysene	4345951		<0.10	<0.10	NA	< 0.10	73%	50%	140%	105%	50%	140%	75%	50%	140%
Benzo(b)fluoranthene	4345951		<0.10	<0.10	NA	< 0.10	111%	50%	140%	98%	50%	140%	77%	50%	140%
Benzo(k)fluoranthene	4345951		<0.10	<0.10	NA	< 0.10	103%	50%	140%	107%	50%	140%	79%	50%	140%
Benzo(a)pyrene	4345951		<0.01	<0.01	NA	< 0.01	91%	50%	140%	95%	50%	140%	100%	50%	140%
Indeno(1,2,3-cd)pyrene	4345951		<0.20	<0.20	NA	< 0.20	76%	50%	140%	80%	50%	140%	74%	50%	140%
Dibenz(a,h)anthracene	4345951		<0.20	<0.20	NA	< 0.20	64%	50%	140%	71%	50%	140%	82%	50%	140%
Benzo(g,h,i)perylene	4345951		<0.20	<0.20	NA	< 0.20	107%	50%	140%	74%	50%	140%	86%	50%	140%
O. Reg. 153(511) - VOCs (with PHC) (Water)															
Dichlorodifluoromethane	4359297		<0.40	<0.40	NA	< 0.40	73%	50%	140%	83%	50%	140%	88%	50%	140%
Vinyl Chloride	4359297		<0.17	<0.17	NA	< 0.17	82%	50%	140%	89%	50%	140%	92%	50%	140%
Bromomethane	4359297		<0.20	<0.20	NA	< 0.20	101%	50%	140%	114%	50%	140%	96%	50%	140%
Trichlorofluoromethane	4359297		<0.40	<0.40	NA	< 0.40	92%	50%	140%	90%	50%	140%	104%	50%	140%
Acetone	4359297		<1.0	<1.0	NA	< 1.0	87%	50%	140%	105%	50%	140%	116%	50%	140%
1,1-Dichloroethylene	4359297		<0.30	<0.30	NA	< 0.30	82%	50%	140%	85%	60%	130%	77%	50%	140%
Methylene Chloride	4359297		<0.30	<0.30	NA	< 0.30	86%	50%	140%	77%	60%	130%	78%	50%	140%
trans- 1,2-Dichloroethylene	4359297		<0.20	<0.20	NA	< 0.20	79%	50%	140%	91%	60%	130%	118%	50%	140%
Methyl tert-butyl ether	4359297		<0.20	<0.20	NA	< 0.20	75%	50%	140%	84%	60%	130%	89%	50%	140%
1,1-Dichloroethane	4359297		<0.30	<0.30	NA	< 0.30	82%	50%	140%	77%	60%	130%	97%	50%	140%
Methyl Ethyl Ketone	4359297		<1.0	<1.0	NA	< 1.0	101%	50%	140%	75%	50%	140%	90%	50%	140%
cis- 1,2-Dichloroethylene	4359297		<0.20	<0.20	NA	< 0.20	75%	50%	140%	89%	60%	130%	76%	50%	140%
Chloroform	4359297		<0.20	<0.20	NA	< 0.20	92%	50%	140%	102%	60%	130%	107%	50%	140%
1,2-Dichloroethane	4359297		<0.20	<0.20	NA	< 0.20	77%	50%	140%	83%	60%	130%	95%	50%	140%
1,1,1-Trichloroethane	4359297		<0.30	<0.30	NA	< 0.30	76%	50%	140%	82%	60%	130%	85%	50%	140%
Carbon Tetrachloride	4359297		<0.20	<0.20	NA	< 0.20	83%	50%	140%	101%	60%	130%	79%	50%	140%

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Quality Assurance

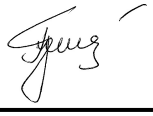
CLIENT NAME: GOLDER ASSOCIATES LTD
AGAT WORK ORDER: 22Z951206
PROJECT: 22530229
ATTENTION TO: Keith Holmes
SAMPLING SITE:Holland Cross
SAMPLED BY:SO

Trace Organics Analysis (Continued)

RPT Date: Oct 07, 2022			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
Benzene	4359297		<0.20	<0.20	NA	< 0.20	72%	50%	140%	84%	60%	130%	72%	50%	140%
1,2-Dichloropropane	4359297		<0.20	<0.20	NA	< 0.20	97%	50%	140%	75%	60%	130%	90%	50%	140%
Trichloroethylene	4359297		<0.20	<0.20	NA	< 0.20	74%	50%	140%	86%	60%	130%	73%	50%	140%
Bromodichloromethane	4359297		<0.20	<0.20	NA	< 0.20	71%	50%	140%	78%	60%	130%	82%	50%	140%
Methyl Isobutyl Ketone	4359297		<1.0	<1.0	NA	< 1.0	92%	50%	140%	89%	50%	140%	90%	50%	140%
1,1,2-Trichloroethane	4359297		<0.20	<0.20	NA	< 0.20	104%	50%	140%	111%	60%	130%	99%	50%	140%
Toluene	4359297		<0.20	<0.20	NA	< 0.20	92%	50%	140%	109%	60%	130%	74%	50%	140%
Dibromochloromethane	4359297		<0.10	<0.10	NA	< 0.10	78%	50%	140%	84%	60%	130%	78%	50%	140%
Ethylene Dibromide	4359297		<0.10	<0.10	NA	< 0.10	91%	50%	140%	100%	60%	130%	93%	50%	140%
Tetrachloroethylene	4359297		<0.20	<0.20	NA	< 0.20	92%	50%	140%	111%	60%	130%	76%	50%	140%
1,1,1,2-Tetrachloroethane	4359297		<0.10	<0.10	NA	< 0.10	81%	50%	140%	92%	60%	130%	79%	50%	140%
Chlorobenzene	4359297		<0.10	<0.10	NA	< 0.10	95%	50%	140%	112%	60%	130%	82%	50%	140%
Ethylbenzene	4359297		<0.10	<0.10	NA	< 0.10	81%	50%	140%	98%	60%	130%	83%	50%	140%
m & p-Xylene	4359297		<0.20	<0.20	NA	< 0.20	88%	50%	140%	108%	60%	130%	102%	50%	140%
Bromoform	4359297		<0.10	<0.10	NA	< 0.10	78%	50%	140%	81%	60%	130%	81%	50%	140%
Styrene	4359297		<0.10	<0.10	NA	< 0.10	89%	50%	140%	79%	60%	130%	79%	50%	140%
1,1,2,2-Tetrachloroethane	4359297		<0.10	<0.10	NA	< 0.10	105%	50%	140%	108%	60%	130%	102%	50%	140%
o-Xylene	4359297		<0.10	<0.10	NA	< 0.10	91%	50%	140%	110%	60%	130%	70%	50%	140%
1,3-Dichlorobenzene	4359297		<0.10	<0.10	NA	< 0.10	97%	50%	140%	114%	60%	130%	83%	50%	140%
1,4-Dichlorobenzene	4359297		<0.10	<0.10	NA	< 0.10	97%	50%	140%	113%	60%	130%	86%	50%	140%
1,2-Dichlorobenzene	4359297		<0.10	<0.10	NA	< 0.10	94%	50%	140%	107%	60%	130%	82%	50%	140%
n-Hexane	4359297		<0.20	<0.20	NA	< 0.20	96%	50%	140%	86%	60%	130%	90%	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:



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Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 22Z951206

PROJECT: 22530229

ATTENTION TO: Keith Holmes

SAMPLING SITE:Holland Cross

SAMPLED BY:SO

Water Analysis

RPT Date: Oct 07, 2022			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) - All Metals (Water)															
Dissolved Antimony	4346823		<1.0	<1.0	NA	< 1.0	100%	70%	130%	102%	80%	120%	110%	70%	130%
Dissolved Arsenic	4346823		1.7	2.0	NA	< 1.0	96%	70%	130%	95%	80%	120%	103%	70%	130%
Dissolved Barium	4346823		127	118	7.3%	< 2.0	98%	70%	130%	104%	80%	120%	105%	70%	130%
Dissolved Beryllium	4346823		<0.5	<0.5	NA	< 0.5	94%	70%	130%	91%	80%	120%	95%	70%	130%
Dissolved Boron	4346823		13.0	<10.0	NA	< 10.0	100%	70%	130%	100%	80%	120%	99%	70%	130%
Dissolved Cadmium	4346823		<0.20	<0.20	NA	< 0.20	101%	70%	130%	100%	80%	120%	109%	70%	130%
Dissolved Chromium	4346823		<2.0	<2.0	NA	< 2.0	98%	70%	130%	107%	80%	120%	98%	70%	130%
Dissolved Cobalt	4346823		<0.50	<0.50	NA	< 0.50	103%	70%	130%	106%	80%	120%	101%	70%	130%
Dissolved Copper	4346823		2.9	2.0	NA	< 1.0	99%	70%	130%	104%	80%	120%	99%	70%	130%
Dissolved Lead	4346823		<0.50	<0.50	NA	< 0.50	105%	70%	130%	108%	80%	120%	111%	70%	130%
Dissolved Molybdenum	4346823		1.84	1.57	NA	< 0.50	101%	70%	130%	106%	80%	120%	106%	70%	130%
Dissolved Nickel	4346823		1.3	1.8	NA	< 1.0	101%	70%	130%	109%	80%	120%	106%	70%	130%
Dissolved Selenium	4346823		<1.0	<1.0	NA	< 1.0	99%	70%	130%	93%	80%	120%	96%	70%	130%
Dissolved Silver	4346823		<0.20	<0.20	NA	< 0.20	98%	70%	130%	104%	80%	120%	98%	70%	130%
Dissolved Thallium	4346823		<0.30	<0.30	NA	< 0.30	103%	70%	130%	110%	80%	120%	111%	70%	130%
Dissolved Uranium	4346823		1.47	1.47	NA	< 0.50	99%	70%	130%	98%	80%	120%	99%	70%	130%
Dissolved Vanadium	4346823		0.40	<0.40	NA	< 0.40	103%	70%	130%	115%	80%	120%	108%	70%	130%
Dissolved Zinc	4346823		<5.0	6.4	NA	< 5.0	101%	70%	130%	101%	80%	120%	108%	70%	130%
Mercury	4361911		<0.02	<0.02	NA	< 0.02	99%	70%	130%	104%	80%	120%	101%	70%	130%
Chromium VI	4357225		<2.000	<2.000	NA	< 2	106%	70%	130%	106%	80%	120%	109%	70%	130%

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

Certified By: Iris Verástegui

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Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 22Z951206

PROJECT: 22530229

ATTENTION TO: Keith Holmes

SAMPLING SITE:Holland Cross

SAMPLED BY:SO

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Naphthalene	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
Acenaphthylene	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
Acenaphthene	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
Fluorene	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
Phenanthrene	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
Anthracene	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
Fluoranthene	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
Pyrene	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
Benzo(a)anthracene	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
Chrysene	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
Benzo(b)fluoranthene	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
Benzo(k)fluoranthene	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
Benzo(a)pyrene	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
Dibenz(a,h)anthracene	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
Benzo(g,h,i)perylene	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
2-and 1-methyl Naphthalene	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
Naphthalene-d8	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
Acridine-d9	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
Terphenyl-d14	ORG-91-5105	modified from EPA 3510C and EPA 8270E	GC/MS
Sediment			N/A
F1 (C6-C10)	VOL-91-5010	modified from MOE PHC-E3421	(P&T)GC/FID
F1 (C6 to C10) minus BTEX	VOL-91-5010	modified from MOE PHC-E3421	P&T GC/FID
Toluene-d8	VOL-91- 5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
F2 (C10 to C16)	VOL-91-5010	modified from MOE PHC-E3421	GC/FID
F2 (C10 to C16) minus Naphthalene	VOL-91-5010	modified from MOE PHC-E3421	GC/FID
F3 (C16 to C34)	VOL-91-5010	modified from MOE PHC-E3421	GC/FID
F3 (C16 to C34) minus PAHs	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
Dichlorodifluoromethane	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS

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Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 22Z951206

PROJECT: 22530229

ATTENTION TO: Keith Holmes

SAMPLING SITE:Holland Cross

SAMPLED BY:SO

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Vinyl Chloride	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Bromomethane	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Acetone	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
1,1-Dichloroethylene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Methylene Chloride	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
trans- 1,2-Dichloroethylene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Methyl tert-butyl ether	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
1,1-Dichloroethane	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
cis- 1,2-Dichloroethylene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Chloroform	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
1,1,1-Trichloroethane	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Benzene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Trichloroethylene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Bromodichloromethane	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Methyl Isobutyl Ketone	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
1,1,2-Trichloroethane	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Toluene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Dibromochloromethane	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Ethylene Dibromide	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
1,1,1,2-Tetrachloroethane	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Chlorobenzene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Ethylbenzene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS

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Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 22Z951206

PROJECT: 22530229

ATTENTION TO: Keith Holmes

SAMPLING SITE:Holland Cross

SAMPLED BY:SO

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
m & p-Xylene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Bromoform	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Styrene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
o-Xylene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
1,3-Dichloropropene	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Xylenes (Total)	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
n-Hexane	VOL-91-5001	modified from EPA 5030B & EPA 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

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Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 22Z951206

PROJECT: 22530229

ATTENTION TO: Keith Holmes

SAMPLING SITE:Holland Cross

SAMPLED BY:SO

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Dissolved Antimony	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Arsenic	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Barium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Beryllium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Boron	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Cadmium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Chromium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Cobalt	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Copper	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Lead	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Molybdenum	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Nickel	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Selenium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Silver	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Thallium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Uranium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Vanadium	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Dissolved Zinc	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Mercury	MET-93-6100	modified from EPA 245.2 and SM 3112 B	CVAAS
Chromium VI	INOR-93-6073	modified from SM 3500-CR B	LACHAT FIA

AGAT Laboratories

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)

Laboratory Use Only

Work Order #: 22795120 6

Cooler Quantity: one - Dagged ice

Arrival Temperatures: 12.8 | 12.7 | 12.3
9.0 | 9.5 | 8.8

Custody Seal Intact: ☐ Yes ☐ No ☐ N/A

Notes: 1 large, Dagged ice

Report Information:

Company: Golder / LSP
Contact: Keith Holmes
Address:
Phone: Fax:
Reports to be sent to:
1. Email: keith.p.holmes@lsp.com
2. Email:

Regulatory Requirements:

(Please check all applicable boxes)

☒ Regulation 153/04
Table 7 (Indicate One)
☐ Ind/Com
☒ Res/Park
☐ Agriculture
Soil Texture *(Check One)*
☒ Coarse
☐ Fine

☐ Excess Soils R406
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: 22530229
Site Location: Holland Cross
Sampled By: SO
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

B	Biota
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 ☐ HWSB	O. Reg 153: BTEX, F1-F4 PHCs	O. Reg 153: PAHs	O. Reg 153: PCBs	O. Reg 153: VOC	O. Reg 153: Aroclors	O. Reg 558: Landfill Disposal Characterization TCLP: ☐ M&I ☐ VOCs ☐ AENs ☐ B(a)P ☐ PCBs	O. Reg 406: Excess Soils SPLP Rainwater Leach SPLP: ☐ Metals ☐ VOCs ☐ SVOCs	O. Reg 406: Excess Soils Characterization Package pH, ICPMS Metals, BTEX, F1-F4	Corrosivity: Include Moisture ☐ Sulphide ☐	Potentially Hazardous or High Concentration (Y/N)
MW22-01	28/09/22	10 AM/PM	14	GW	only 3 vials		X	X	X	X		X						
MW22-02	↓	↓ AM/PM	14	↓			X	X	X	X		X						
MW22-03	↓	↓ AM/PM	14	↓			X	X	X	X		X						
MW22-Dup	↓	↓ AM/PM	10		No Cr6 or Hg		X	X	X	X		X						
		AM/PM																
		AM/PM																
		AM/PM																
		AM/PM																
		AM/PM																
		AM/PM																
		AM/PM																

Samples Relinquished By (Print Name and Sign)	Date	Time	Samples Received By (Print Name and Sign)	Date	Time
Keith Holmes	28/09/22	10:00	C. Cunningham	SEP 29 2022	11:55
CA to pmo	SEP 29 2022	16h00	Amber S. Chubbs		

Page 1 of 1

N°: T - 135450

APPENDIX D

Conductivity (K)Testing

BOUWER AND RICE SLUG TEST ANALYSIS
FALLING HEAD TEST 22-01

INTERVAL (metres below ground surface)

Top of Interval =	**3.05**
Bottom of Interval =	**6.27**

$$K = \frac{r_c^2 ln\left(\frac{R_e}{r_w}\right)}{2L_e} \frac{1}{t} ln\frac{y_0}{y_t}$$ where K=m/sec

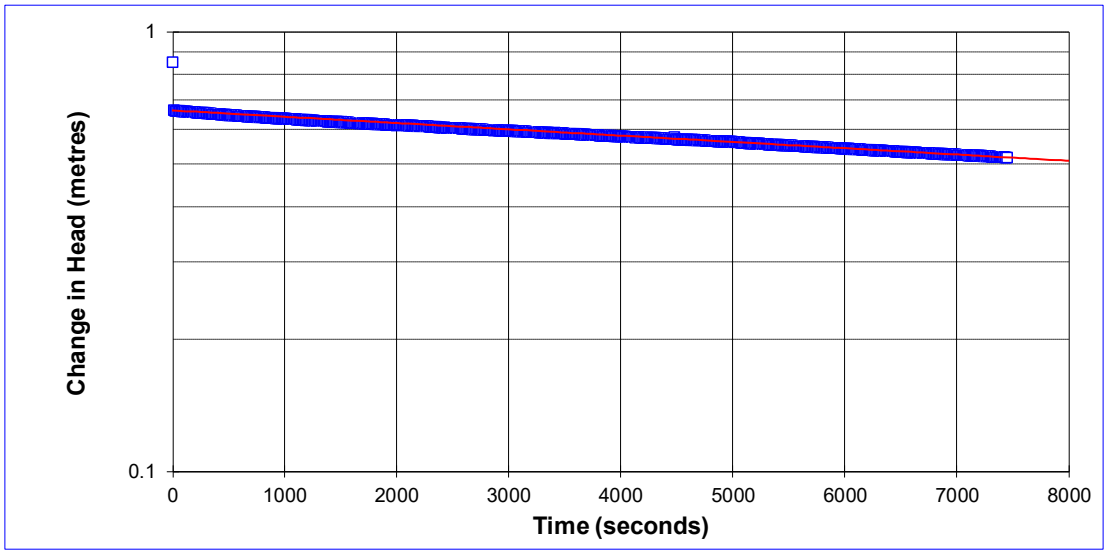
where:

r_c = casing radius (metres);
R_e = effective radius (metres);
L_e = length of screened interval (metres);
r_w = radial distance to undisturbed aquifer (metres)
y_0 = initial drawdown (metres)
y_t = drawdown (metres) at time t (seconds)

INPUT PARAMETERS	
r_c =	**0.03**
r_w =	**0.05**
L_e =	**2.44**
$ln(R_e/r_w)$	**2.66**
y_0 =	**0.66**
y_t =	**0.52**
t =	**7430**

RESULTS

K=	**2E-08**	**m/sec**
K=	**2E-06**	**cm/sec**



Project Name: Holland Cross
Project No.: 22530229
Test Date: 03-Oct-22

Analysis By: SPS
Checked By: CAMC
Analysis Date: 05-Oct-22

HVORSLEV SLUG TEST ANALYSIS
RISING HEAD TEST 22-02B

INTERVAL (metres below ground surface)

Top of Interval =	**5.95**
Bottom of Interval =	**9.00**

$$K = \frac{r_c^2}{2L_e} ln\left[\frac{L_e}{2R_e} + \sqrt{1 + \left(\frac{L_e}{2R_e}\right)^2}\right]\left[\frac{ln\left(\frac{h_1}{h_2}\right)}{(t_2 - t_1)}\right]$$

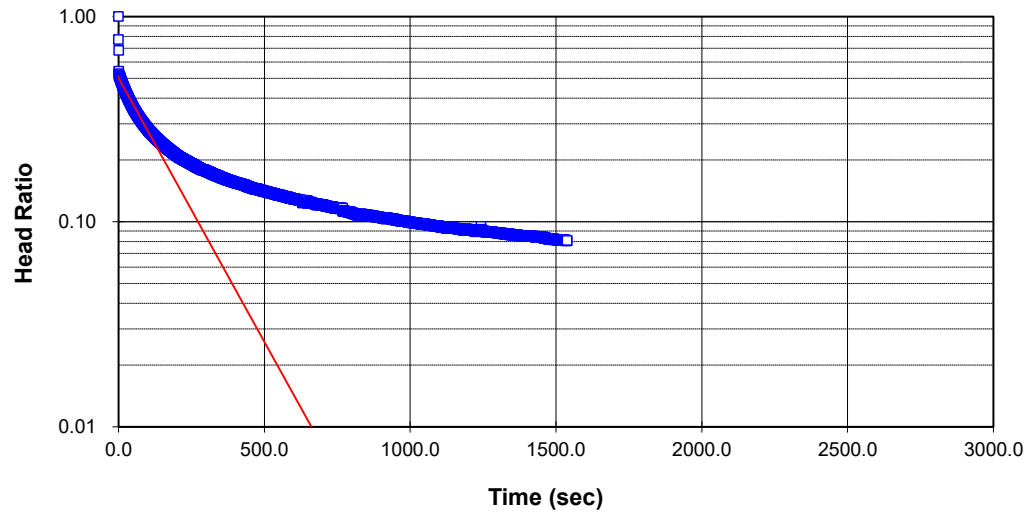
where K = (m/sec)

where:
r_c = casing radius (metres)
R_e = filter pack radius (metres)
L_e = length of screened interval (metres)
t = time (seconds)
h_t = head at time t (metres)

INPUT PARAMETERS	
r_c =	**2.5E-02**
R_e =	**4.8E-02**
L_e =	**3.1**
t_1 =	**14.5**
t_2 =	**91**
h_1/h_0 =	**0.46**
h_2/h_0 =	**0.29**

RESULTS

K=	**3E-06**	**m/sec**
K=	**3E-04**	**cm/sec**



Project Name: Holland Cross
Project No.: 22530229
Test Date: 2022-10-03

Analysis By: SPS
Checked By: CAMC
Analysis Date: 2022-10-05

Golder Associates Ltd.

BOUWER AND RICE SLUG TEST ANALYSIS
RISING HEAD TEST 22-03

INTERVAL (metres below ground surface)

Top of Interval =	**5.95**
Bottom of Interval =	**9.00**

$$K = \frac{r_c^2 ln\left(\frac{R_e}{r_w}\right)}{2L_e} \frac{1}{t} ln\frac{y_0}{y_t}$$ where K=m/sec

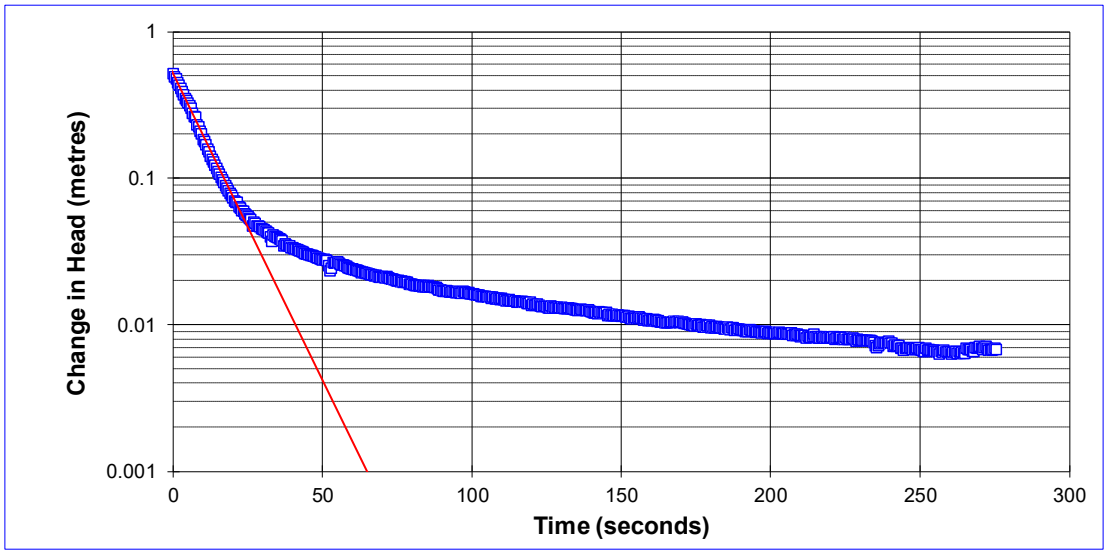
where:

r_c = casing radius (metres);
R_e = effective radius (metres);
L_e = length of screened interval (metres);
r_w = radial distance to undisturbed aquifer (metres)
y_0 = initial drawdown (metres)
y_t = drawdown (metres) at time t (seconds)

INPUT PARAMETERS	
r_c =	**0.03**
r_w =	**0.05**
L_e =	**3.05**
$ln(R_e/r_w)$	**2.96**
y_0 =	**0.49**
y_t =	**0.06**
t =	**22**

RESULTS

K=	**5E-05**	**m/sec**
K=	**5E-03**	**cm/sec**



Project Name: Holland Cross
Project No.: 22530229
Test Date: 03-Oct-22

Analysis By: SPS
Checked By: CAMC
Analysis Date: 05-Oct-22

APPENDIX E

Communication of Use of Non-Potable Groundwater Standards

November 9, 2022 Project No. 22530229

Michel Kearney, P.Geo.
Senior Hydrogeologist - Asset Management
City of Ottawa
Ottawa City Hall
110 Laurier Ave W
Ottawa, ON K1P 1J1

NOTIFICATION OF INTENT TO USE NON-POTABLE GROUNDWATER SITE CONDITON STANDARDS FOR PHASE TWO ESA AND RECORD OF SITE CONDITON FOR PART OF THE PROPERTY LOCATED AT 1560 SCOTT STREET, OTTAWA, ONTARIO

Dear Mr. Kearney,

Golder Associates Ltd. (Golder) was retained by Stantec Inc (Stantec) to conduct a Phase Two Environmental Site Assessment (ESA) of part of the property located at 1560 Scott Street ("Site", "Phase Two Property" or "RSC Property"). The location of the Phase Two Property is shown on the attached Site Plan.

On behalf of Stantec, Golder is submitting this letter to the City of Ottawa as a formal notification of intent to apply non-potable groundwater Site Condition Standards for the above noted site for the purposes of filing a Record of Site Condition under Ontario Regulation 153/04, Records of Site Condition Under Part XV.1 of the *Environmental Protection Act.* Provision of written notice to the municipality is a requirement of Ontario Regulation 153/04.

If you have any questions or comments, please feel free to contact the undersigned.

Yours truly,

Golder Associates Ltd.

Rochelle Mathew, MASc
Environmental Scientist II

RM/sg
https://golderassociates.sharepoint.com/sites/164073/project files/6 deliverables/phase two esa/appendix e - communication of use of non-potable groundwater standards/22530229- non potable notification letter _1560 scott st_9nov2022.docx

Attachments: Site Plan

Golder Associates Ltd.
1931 Robertson Road, Ottawa, Ontario, K2H 5B7, Canada T: +1 613 592 9600 F: +1 613 592 9601

LEGEND

- ROADWAY
- PHASE ONE SITE
- PHASE ONE STUDY AREA

DRAFT

0 40 80

1:2,250 METRES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. COORDINATE SYSTEM: NAD 1983 UTM ZONE 18N, PROJECTION: TRANSVERSE MERCATOR, DATUM: NORTH AMERICAN 1983

CLIENT
STANTEC

PROJECT
PHASE ONE ENVIRONMENTAL SITE ASSESSMENT
HOLLAND CROSS EXPANSIONBUILDING
1560 SCOTT STREET, OTTAWA, ONTARIO

TITLE
SITE PLAN

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2022-09-12
DESIGNED	----
PREPARED	JEM
REVIEWED	----
APPROVED	----

PROJECT NO.	CONTROL	REV.	FIGURE
22530229	0001	A	2

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

0 25mm

PATH: S:\Clients\Stantec_Consulting\Holland_Cross_Expansion\99_PROJ\225302\0001_Phase1_ESA\225302290001-HS-0002.mxd PRINTED ON: 2022-09-12 AT: 11:36:07 AM

golder.com