



**REPORT**

# Phase Two Environmental Site Assessment

## *New Civic Development for the Ottawa Hospital*

Submitted to:

**Parsons**

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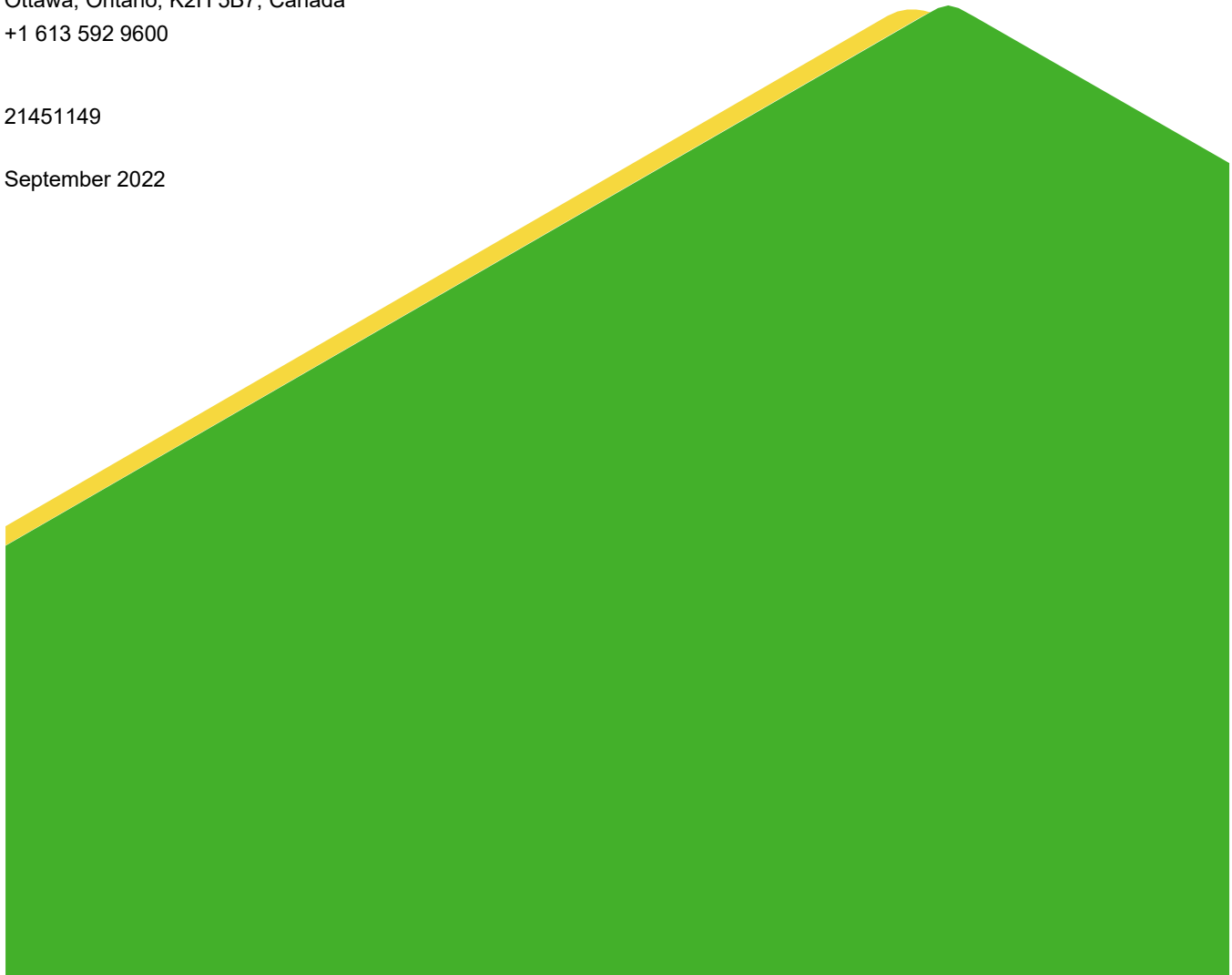
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## EXECUTIVE SUMMARY

Golder Associates Ltd. (Golder) was retained by Parsons Inc. (Parsons) on behalf of the Ottawa Hospital to conduct a Phase Two Environmental Site Assessment (ESA) for part of two parcels of land associated with the new Civic development for The Ottawa Hospital in Ottawa, Ontario (Site or Phase Two Property). The location of the Phase Two Property is provided on **Figure 1A**.

The Site consists of a 16.63-hectare parcel of land developed for commercial and parkland purposes. The Site is an irregular shaped parcel of land, located between Carling Avenue and Prince of Wales Drive excluding the portion immediately southwest of intersection between Carling Avenue and Preston Street. Golder previously completed a Phase One ESA for the Site, the results of which were documented in the reported titled "Phase One Environmental Site Assessment, The Ottawa Hospital – New Civic Campus", dated March 2020. Two parcels of land are associated with the Site, located at 930 Carling Avenue: of the West Part of Parcel B and the entirety of Parcel C, as defined in the Phase One ESA completed by Golder in 2020. These parcels of land are currently under the management of Public Services and Procurement Canada (PSPC) and leased to The Ottawa Hospital.

At the time of the Phase One ESA Site visit, Parcel B, owned by PSPC, was occupied by Queen Juliana Park which is bordered by the Trillium Line rail transit corridor on the park's eastern boundary. Parcel C occupies the largest portion of the Site and consists of mostly vacant land with three buildings on the northern portion: a Bell utility station, the Sir John Carling Building West Annex (currently in the process of demolition) and a tennis club house with outdoor courts on the southwest portion. The results of the Phase Two ESA at Parcel A and at the east portion of Parcel B (future hospital parkade) have been reported under separate cover. Exterior areas of the Site generally included vacant grass covered landscaping areas with trees and shrubs; however, dense tree coverage was observed on the north, east and south perimeter of Parcel C. Several asphalt paved parking areas were observed on the northern portion of Parcel C, associated with the former Sir John Carling Building (SJCB). Roadways, part of Birch Drive and Maple Drive, were located on the western portion of the Site.

Based on the findings of the Phase One ESA, Golder identified the following eight Areas of Potential Environmental Concern (APEC):

- APEC 1: Demolition debris from former office building on Parcel B.
- APEC 2: Building demolition debris in fill at the location of the former SJCB building.
- APEC 3: Concrete pad-mounted transformers.
- APEC 4: Gasoline and Associated Products Storage in Fixed Tanks – Former hydraulic oil elevator located in West Annex of SJCB.
- APEC 5: Reported glycol leak from parking ramp system of SJCB.
- APEC 6: Three former diesel ASTs reportedly associated with SJCB.
- APEC 7: Imported fill materials associated with various building construction and site development activities across the Site (all three parcels).
- APEC 8: Application of pesticides associated with former farming activities on Parcel C.

Golder completed a Phase Two ESA investigation of the Site between May 6, 2021, and September 1, 2022 to support the future filing of a record of Site Condition (RSC). The investigation included a sampling program of soil and groundwater at the Site. The results of the chemical analysis were compared to Table 3 Full Depth Generic Site Condition Standards in a Non-Potable Groundwater Condition (residential property use) presented in the “*Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*”, dated July 1, 2011.

Based on the analytical results of the soil and groundwater samples submitted as part of this Phase Two ESA, the reported concentrations of select metals and polycyclic aromatic hydrocarbons were identified above the applicable site condition standards as of the certification date (August 26, 2022). A risk assessment or remediation will be required prior to the submission of an RSC. The reported concentrations of all other parameters tested in soil and groundwater were below the Table 3 site condition standards.

Golder understands that remediation of a portion of the Site (APEC 2: former SJCB demolition area) is underway at the time of submission of this report, the findings of which will need to be incorporated into this report when available.



## 1.0 INTRODUCTION

Golder Associates Ltd. (Golder) was retained by Parsons to conduct a Phase Two Environmental Site Assessment (ESA) of the property located at 930 Carling Avenue (Site or Phase Two Property). The location of the Phase Two Property is shown on **Figure 1A**.

The Site consists of a 16.63-hectare parcel of land developed for residential purposes (a new development for a hospital). The Site is an irregular shaped parcel of land, located between Carling Avenue and Prince of Wales Drive excluding the northern section located immediately southwest of intersection between Carling Avenue and Preston Street. 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, The Ottawa Hospital – New Civic Campus", dated March 2021. The Site was divided into two parcels of land located at 930 Carling Avenue: the western part of Parcel B and the entirety of Parcel C, as defined in the Phase One ESA. These two parcels of land are under the management Public Services and Procurement Canada (PSPC) and leased to The Ottawa Hospital.

At the time of the Phase One ESA Site visit, Parcel B, owned by PSPC, was occupied by Queen Juliana Park, which is bordered by the Trillium Rail corridor on the parks east side. Parcel C occupies the largest portion of the Site and consisted of mostly vacant land with three buildings on the northern portion: a Bell utility station, the Sir John Carling Building West Annex (currently under demolition) and, a tennis club house with outdoor courts on the southwest portion. The results of the environmental investigation at Parcel A and the rest of Parcel B have been reported under separate cover. Exterior areas of the Site generally included vacant grass covered landscaping areas with trees and shrubs; however, dense tree coverage was observed on the north, east and south perimeter of Parcel C. Several asphalt paved parking areas were observed on the northern portion of Parcel C, associated with the former SJCB. Roadways, part of Birch Drive and Maple Drive, were located on the western portion of the Site. It is understood that the Phase Two Property is to be redeveloped for institutional land uses (a new development for a hospital).

The purpose of the Phase Two ESA is to: 1) identify potential contamination issues associated with areas of potential environmental concern ("APECs") identified by a prior Phase One ESA, and 2) further assess the extent of known contamination.

The Phase Two ESA investigation was carried out in general accordance with Golder's standard operating procedures, which conform to the requirements of O. Reg. 153/04 for the purpose of identifying contaminants of potential concern that may be present at concentrations exceeding the relevant regulatory criteria. The data from the Phase Two ESA investigation completed by Golder at the Site were incorporated into a single Phase Two ESA report following the Phase Two ESA report format required by O. Reg. 153/04.

Authorization to proceed with this investigation was received by email from Ronald Clarke, Vice President, Ottawa of Parsons on March 20, 2021 on behalf of the Ottawa Hospital. This Phase Two ESA report has been prepared for the use of Parsons on behalf of The Ottawa Hospital for the purpose of planning approvals, including obtaining an RSC, and construction planning and may not be relied upon by others without prior written consent from Golder.

## 1.1 Site Description

Golder Associates Ltd. (“Golder”) was retained by Parsons to conduct a Phase Two ESA of the following property:

Item	Detail
<b>Property Identification Number</b>	Part of PIN 04088-0001(LT) and 04088-0002(LT)
<b>Legal Description</b>	Part of Lot 1 of Concession BRF of Part 1 of Registered Plan 5R14003, City of Ottawa.

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

## 1.2 Property Ownership

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

Owner / Client	Address	Contact Information
Project Owner: The Ottawa Hospital  Property Owner: Government of Canada	1053 Carling Avenue Ottawa, ON, K1Y 4E9	Michelle Currie Senior Planning Project Manager Planning, The Ottawa Hospital 1053 Carling Avenue Ottawa, ON, K1Y 4E9 Phone: 613-798-5555, 10499

## 1.3 Current and Proposed Future Uses

The Site consists of a 16.63-hectare parcel of land developed for commercial and parkland purposes. Two parcels of land associated with the Site, located at 930 Carling Avenue: a portion of Parcel B and Parcel C as defined in the Phase One ESA. At the time of the Site visit, Parcel B, owned by PSPC, was occupied by Queen Juliana Park. Parcel C which occupies the largest portion of the Site is mostly vacant and which included two buildings on the northern portion: a Bell utility station and the Sir John Carling Building West Annex and a tennis club house with outdoor courts on the southwest portion. Exterior areas of the Site generally included vacant grass covered landscaping areas with trees and shrubs; however, dense tree coverage was observed on the north, east and south perimeter of Parcel C. Several asphalt paved parking areas were observed on the northern portion of Parcel C, associated with the SJCB. Roadways, part of Birch Drive and Maple Drive, were located on the western portion of the Site.

It is understood that the Phase Two Property is to be redeveloped for institutional land uses (a new development for a hospital).

## 1.4 Applicable Site Condition Standard

The analytical results of the samples collected for this Phase Two ESA were compared to the Table 3 generic site condition standards for coarse-textured soils in a non-potable ground water condition (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 of the Phase Two Property are supplied by the City of Ottawa municipal drinking water system. No wells were identified that are used or intended for use as a source of water;
- The Phase Two Property is not located in an area designated in a municipal official plan as a well-head protection area or other designation identified by the municipality for the protection of ground water;
- The water table is located generally within coarse shallow materials including fill;
- The nearest permanent waterbody is Dow’s Lake located approximately 350 m northeast of the Site;
- No areas of natural and scientific interest (ANSI) are known to be located on the Site or in the Phase One Study Area;
- Golder understands that areas of elevated pH were identified in previous work, inferred to be associated with concrete demolition material which is planned to be removed as part of the soil remediation being carried out by others, and therefore, the pH of surface soil is expected to be  $5 \leq \text{pH} \leq 9$  and the pH of sub-surface soil is expected to be  $5 \leq \text{pH} \leq 11$  following the aforementioned soil remediation and will meet the requirement to permit the use of the generic site condition standards;
- The intended use for the Phase Two Property is institutional;
- The overburden thickness is greater than 2 metres over more than one-third of the Phase Two Property; and,
- The soil conditions are considered to be predominantly coarse-grained soil. The grain size distribution curves are available in **Appendix D**.

## 2.0 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 a Record of Site Condition (“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.

## 2.1 Physical Setting

The Site is generally flat with slight slope downward to the northeast towards Dow's Lake. There are some areas on the southern portion of the Site with uneven terrain; however, two steep slopes are located adjacent to the north of the SJCB West Annex building as well as between Parcels B and C. The Site appears to follow the topography of the area; however, Parcel C is generally located at higher elevation compared to Parcel B. Adjacent properties to the north and east are also located at a lower elevation compared to Parcel C of the Site.

Storm water either infiltrates through landscaped or unfinished surfaces or is directed toward catch basins located on the paved portions of the Site. The nearest permanent waterbody is Dow's Lake, a man-made water body, located approximately 300 m east of the Site.

Regional groundwater flow is expected to follow the regional topography, primarily to the north towards the Ottawa River. Local groundwater flow is in the north easterly direction towards the Trillium Line rock cut, which is also confirmed by various groundwater level measurements completed as part of previous investigations. The presence of Dow's Lake to the northeast and rail tracks cut through bedrock to the east of Parcel B, as well as former on-Site buildings are likely to influence local shallow groundwater flow.

The surrounding properties include commercial and residential land uses, as illustrated on **Figure 1A**.

## 2.2 Past Investigations

The following environmental reports related to the Site were provided to Golder by Parsons or were prepared by Golder. Noteworthy findings are summarized below.

- **"2016 Phase II ESA for SJCB"**, Phase II Environmental Site Assessment, Former Sir John Carling Building, 930 Carling Avenue, Ottawa ON (DFRP# 08625), dated March 2016, prepared by Stantec Consulting Ltd. for PSPC.
- **"2016 Stormwater Sampling"**, Stormwater Effluent Sampling, Sir John Carling Building, November 16 & 23, 2016, 930 Carling Avenue, Ottawa, ON, dated December 2016, prepared by Stantec Consulting Ltd. for PSPC.
- **"2017 Phase I ESA"**, Final Phase I Environmental Site Assessment, New Ottawa Hospital Civic Campus, Carling Avenue and Preston Street, Ottawa Ontario, dated August 2017, prepared by Stantec Consulting Ltd. for PSPC.
- **"2017 Phase II ESA"**, *Phase II Environmental Site Assessment, New Ottawa Hospital Civic Campus, Ottawa ON*, dated September 2017, prepared by Stantec Consulting Ltd. for PSPC.
- **"2017 Phase III ESA"**, *Phase III Environmental Site Assessment, Former Sir John Carling Building, 930 Carling Avenue, Ottawa ON (DFRP# 08625)*, dated March 2017, prepared by Stantec Consulting Ltd. for PSPC.
- **"2017 Preliminary Remedial Option Analysis"**, *Preliminary Remedial Options Analysis Former Sir John Carling Building, 930 Carling Avenue, Ottawa ON (DFRP# 08625)*, dated March 2017, prepared by Stantec Consulting Ltd. for PSPC.

- **“Revised- Remedial Option Analysis”**, *Preliminary Remedial Options Analysis Costing- Revised, New Ottawa Hospital Civic Campus, Ottawa ON (DFRP# 08625)*, dated October 2017, prepared by Stantec Consulting Ltd. for PSPC.
- **“2017 Paterson ESA”**, *Environmental Investigation of Subsurface Conditions, Proposed New Hospital Campus, Former Sir John Carling Building Complex, Central Experimental Farm, Ottawa ON*, dated September 2017, prepared by Paterson Group Inc. for Cleland Jardine Engineering Ltd.
- **“2021 Golder Phase One ESA”**, Phase One Environmental Site Assessment, *The Ottawa Hospital – New Civic Campus (19127064)*, dated March 2021, prepared by Golder for Parsons.

Noteworthy findings from these reports are summarized in the following sections.

### 2016 Phase II ESA for SJC B

This assessment was completed for PSPC to determine the baseline subsurface conditions following demolition of the SJC B East Annex as well as estimating volume of impacted soil and groundwater. Noteworthy findings from the review of this report are discussed below:

- The investigation area consisted of the entire footprint of former SJC B with surrounding landscaped areas on Parcel C to the east and west (up to Birch Drive to the west), and parking lot located southeast of the former SJC B.
- A total of seven boreholes were advanced, with five completed as monitoring wells, to assess four areas of potential environmental concern (APECs) including the sump under the SJC B West Annex; concrete fill within the former SJC B footprint; ramps with potential glycol spill to the east of SJC B; and the former storage tank located in subbasement of former SJC B East Annex.
- Soil and groundwater samples collected were analyzed for PHCs F1-F4, VOCs, PAHs, metals and inorganics, phenols, glycols, energetics and pH. In addition, all groundwater samples were analyzed for hardness and one groundwater sample tested for Polychlorinated biphenyl (PCBs).
- Soil samples, located within the fill layer, exceeded CCME guidelines for several PAHs in four borehole locations and toluene in one location. Exceedances of the MECP standards (Table 3 Standard for parkland/residential/institutional land uses in a non-potable condition) were not observed in any of the soil samples with the exception of pH (due to the concrete debris). Delineation to identify extent of these soil impacts were not completed. Volume of impacted soil was estimated to be 12,300 m<sup>3</sup> including 5,120 m<sup>3</sup> of crushed concrete from building demolition.
- Concentration of total recoverable phenolics exceeded CCME guidelines in soil and groundwater sampled from the fill material of the former building footprint. Phenolics were not detected in soil and groundwater samples collected from outside the former building footprint. The crushed concrete was linked as the source of phenolics in both soil and groundwater. Given that MECP Table 3 criteria is not defined for total phenolics, and that subsequent investigations analyzed forensic phenols for which there are standards, the total phenolics data has been excluded from this Phase Two ESA report.

- No such exceedances of phenols were observed in groundwater samples collected from the native soil layer underneath the footprint of former SJCB. In addition, groundwater samples from all five wells exceeded FIGQGs and/or CCME guidelines for several metals (aluminum, chromium, chromium VI, copper and lead) and general chemistry parameters (chloride, fluoride, nitrate as N, nitrite as N, pH, phenols and sulfate). Extent of groundwater impacted area was estimated to be approximately 5,600 m<sup>2</sup>. Only copper and lead in one groundwater sample location exceeded the MECP Table 3 Site Standards.
- Further investigation to delineate soil and groundwater impacts as well as to evaluate contaminant migration pathways were recommended.

### 2016 Stormwater Sampling

This investigation was completed to conduct a wastewater assessment at the former SJCB West Annex, located on north portion of Parcel C of the Site. Two grab samples of stormwater effluent were collected from a storm sewer (ST-137) and from the outfall into Dow's Lake (2016-11-16-SJCB-Outfall) for analysis of phenol and total suspended solids (TSS).

Results were compared against CCME Canadian Quality Guidelines- Water Quality for the Protection of Aquatic Life- Freshwater and the City of Ottawa Sewer Use By-Law for storm sewer discharge. Concentration of TSS in sample from storm sewer and concentration of phenol in outfall sample exceeded both CCME and City of Ottawa standards.

### 2017 Phase I ESA

This investigation was completed for the Site (Parcels B and C, and off-Site Parcel A) to assess if evidence of potential and/or actual environmental contamination exists at the Site, which may be present as a result of current and/or past activities at the Site and/or neighbouring properties. Noteworthy findings from this investigation are discussed below:

- Parcel B was occupied by a temporary building (Building No. 8), located off-Site, from the late 1930s/early 1940s to the late 1970s/early 1980s, which reportedly included a coal storage room. Previous subsurface investigations, between 2000 and 2004, indicated evidence of coal and exceedances of PAHs and metals in the soil which were considered an APEC. The exact location of these exceedances has not been confirmed by Golder. No groundwater impacts were identified. An SLRA completed in 2005 concluded that no potential ecological receptors and no existing exposure pathways for humans were present at the parcel; however, potential human exposure pathway for construction workers was noted under direct contact and/or ingestion of impacted soils.
- The north portion of Parcel C was first developed in 1880s and constructed with the former SJCB in 1965-67 with 11-storied office tower and three-storied SJCB East Annex, which was demolished in 2014. A hydraulic elevator was reportedly present in the cafeteria of the SJCB West Annex. Fill material that was imported for the intended use as backfill material in 2014 was reportedly impacted by two PAHs, vanadium, and electrical conductivity. It was recommended that the soil be removed and disposed off-Site, however the location of the fill piles was unknown. The reported fill piles represented an APEC. In addition, the subsurface investigation conducted in 2016 by Stantec (2016 Phase II ESA for SJCB) identified phenol, PAH and metal contamination in soil and/or groundwater and were investigated as part of the same APEC.

- The tennis court and adjacent clubhouse, located on the southwest portion of Parcel C, were developed in 1928 and later 1980s/early 1990s. The building at the north end of Parcel B was occupied by Bell and was constructed in early/mid 1950s. Various other small buildings likely used as farmhouses or for utility related structures were present on the north portion of Parcel.
- A DSS completed at the West Annex of the SJCB confirmed the presence of friable and non-friable asbestos containing materials (ACMs), lead-containing paint, PCB-containing light ballasts, mould growth, and other designated substances and hazardous materials. In addition, the construction date of the building occupied by Bell indicated potential presence of hazardous building materials such as ACMs, lead, and PCBs as part of the building structure and equipment.
- Landfilling activities, for an undetermined length of time, until 1921 and a government office building (Building #5 for National Employment Service Headquarters) was located off-Site to the east of Parcel B at Parcel A between late 1930 and early 1980s. This building was demolished, and Parcel A was redeveloped with the present parking lot reportedly in 1983. Former landfill and waste disposal activities on this portion of the Site was considered an APEC.

In addition, a shallow soil sampling program completed in 2017 identified concentrations of metals, PAHs, organochlorine pesticides and pH in exceedance of federal criteria in the area of the AAFC's CEF, which were identified to represent three APECs. A Phase II ESA was recommended to investigate impact of the identified APECs on soil and groundwater quality at the Site.

## 2017 Phase II ESA

This investigation was conducted, for due-diligence purposes, following recommendation based on the findings of the 2017 Phase I ESA for Parcels B and C, and off-Site Parcel A. Noteworthy findings of this assessment are discussed below:

- Ten boreholes were advanced with all ten being installed with monitoring wells. Six existing monitoring wells at the Site were also sampled for groundwater analysis. The overburden in the areas investigated at the Site generally consisted of topsoil fill/asphalt underlain by silt / silty sand. Bedrock or inferred bedrock was encountered at depths ranging from 0.91 to 5.49 m bgs.
- Exceedances of CCME guidelines for some PAH concentrations were found in three locations (two located on Site) and some metal exceedances were found in three locations (one located on Site). This indicated poor quality of imported fill materials, given these were observed in shallow soil samples (within top 1.5 m bgs). Concentrations of vanadium or mercury exceeded MECP Table 3 Site Standards at three borehole locations located on Site. In addition, Electrical conductivity and pH values exceeded the provincial standards in one soil sample located off-site at Parcel A. There were additional exceedances of the provincial background standards.
- Groundwater flow in shallow soil was interpreted to flow north towards Ottawa River and may have been influenced by steep elevation drop on the northern portion of the Site. Thirteen groundwater samples were analyzed with exceedances of various metals and inorganic parameters above the applicable CCME guidelines with chloride being the only exceedance of the provincial standards. As per Section 49.1 of O. Reg 153/04, the elevated chloride concentrations in groundwater have been determined to be the result of salt application to road/sidewalk surfaces for the safety of vehicular or pedestrian traffic under conditions of snow or ice or both, and such is not considered an exceedance of MECP Table 3 Site Standards.

## 2017 Phase III ESA

This assessment was conducted to delineate soil and groundwater impacts identified as part of the 2016 Phase II ESA for SJCB with revised volume of estimated impacted soil and groundwater. In addition, an assessment to determine the source of phenol in soil and groundwater was also conducted. Noteworthy findings are included below:

- The fieldwork program included excavation of four test pits and installation of nine monitoring wells. Soil and groundwater samples were analyzed for forensic phenols, inorganics, metals, PAHs, PHCs, VOCs, PCBs and nitroglycerin.
- Soil samples analyzed as part of this field program exceeded MECP Table 3 Site Standards for various PAHs at three test pit and one borehole location. One sludge sample collected from a high voltage electrical manhole exceeded MECP Table 3 Site Standards for soil. These results have been excluded from this report as they are not representative of soil conditions. Given the CCME guidelines and MECP Table 1 Site Standards are generally more conservative compared to MECP Table 3 Site Standards, there were more exceedances of CCME guidelines and MECP Table 1 Site Standards based on the analytical results.
- Crushed concrete fill was identified as the source of phenol that were previously measured in groundwater, which likely migrated into storm sewer via a sump in basement or through existing uncapped laterals of former west annex building. No chemical evidence indicated that explosives used to demolish the building contributed to this phenol contamination.
- In addition to 44,000 m<sup>3</sup> of crushed concrete beneath the former SJCB footprint, approximately 1.5 m of fill outside the former SJCB footprint exceeded applicable federal guidelines. This fill outside the former building footprint, estimated to be between 122,000 m<sup>3</sup> 250,000 m<sup>3</sup>, is estimated to have been imported from unknown sources at the time of original development.
- Groundwater levels were variable based on seasons and would generally flow to the north. Groundwater samples from eight wells exceeded applicable CCME guidelines for phenols and some metals and inorganics parameters. The estimated areal of impacted groundwater was estimated to be approximately 29,100 m<sup>3</sup>; however, this impacted area was not fully delineated.

## 2017 Preliminary Remedial Option Analysis

Based on the information available from previous subsurface investigations, various remediation and risk management measures were developed. These options were categorized as short, medium and long term and recommended to be implemented based on future redevelopment plans. The 12 options are discussed below:

- Short term options were designed to mitigate phenols from discharging into Dow's Lake and comply with order from ECCC to halt discharge of phenols into Dow's Lake.
  - Option 1: Phenols Risk Assessment and Snow Removal
  - Option 2: Outflow Interception- Phenols Treatment
  - Option 3: Phenols Risk Assessment, Snow Removal and 0.5 ha Clay Cap
  - Option 4: Phenols Risk Assessment and Temporary 0.5 ha Clay Cap
  - Option 5: Phenols Risk Assessment and Temporary Outflow Total Suspended Solids Removal



- Medium term options were designed to mitigate risk and implementing remediation measures with moderate cost which may be completed within one year.
  - Option 6: 1 ha Clay Cap
  - Option 7: 0.5 ha Clay Cap and Perimeter cut-off wall
  - Option 8: 0.5 ha Clay Cap and Pump & Treat
  - Option 9: In Situ stabilization and/or treatment
- Long term options focused on mass removal at a significant higher cost; however, would facilitate redevelopment of the Site.
  - Option 10: Excavation and On-site containment
  - Option 11: Excavation and Off-site disposal
  - Option 12: In Situ Stabilization and/or treatment
- These options were evaluated for cost, effectiveness, timeframe and sustainability. The result indicated Options 5, 7 and 11 to be implemented for the short, medium- and long-term scenarios.

### Revised - Remedial Option Analysis

Stantec completed this assessment to detail cost estimate options for three federal entities based on their land parcels and associated environmental issues. The noteworthy findings of the revised incremental costing are discussed below:

- Three cost options were developed including:
  - Option 1 with excavation of all material within the former building footprint and disposal as construction waste at a licensed landfill. Disposal of all excess soil as non-hazardous soil at a licensed landfill. Groundwater treatment required prior to discharge to municipal sewer.
  - Option 2 which consists of excavation and re-use of 75% of construction fill waste and 75% of excess soil on-site. Excavation of all material within the former building footprint, screening to separate concrete, and disposal of 25% of this material as construction waste at a licensed landfill. Excavation and disposal of 25% of excess soil off-site. Groundwater treatment required prior to discharge to municipal sewer.
  - Option 3 with excavation and re-use of 50% of construction fill waste and 35% of excess soil on-site. Excavation of all material within the former building footprint, screening to separate concrete, and disposal of 50% of this material as construction waste at a licensed landfill. Excavation and disposal of 65% of excess soil off-site. Groundwater treatment required prior to discharge to municipal sewer.
- Recommendation was made to prioritize recycling and re-use of construction concrete fill given high costs associated with removal and disposal of the material. Also, soil management should include a combination of re-use on-site, re-use (of clean soil) offsite, and off-site disposal in proportions to minimize overall disposal and management costs.
- Stantec recommended additional investigation work including test-pitting in the waste concrete and drilling where there were data gaps and to allow a better cost estimation between Option 2 and Option 3.

- Furthermore, regulatory and permitting requirements for site development should be determined and clarified as additional requirement early as possible. If a RSC is required to support the redevelopment of the Site, the requirements for additional environmental site assessment and risk assessment will impact redevelopment schedule. In addition, the investigations required to support filing of an RSC will be more rigorous and will impact the project budget.

### 2017 Paterson ESA

This investigation was conducted concurrently with a geotechnical investigation and included Parcel C of the Site. A total of 13 boreholes, nine of which were installed with monitoring wells, were completed to a maximum depth of 11.2 m bgs. Noteworthy findings from review of this report are discussed below.

- Subsurface stratigraphy consisted of asphalt or topsoil overlying fill over glacial till deposit. Auger refusals were encountered at all borehole locations between 2.0 and 11.2 m bgs, indicating variable overburden thickness.
- A total of 12 soil samples were submitted for laboratory analysis of PHCs F1 to F4, BTEX and/or metals. Concentrations of vanadium above MECP Table 3 Site Standards, and concentrations of barium, chromium and cobalt above MECP Table 1 were observed. Vanadium was linked to naturally occurring metals in the clay and was not a contaminant.
- Nine groundwater samples were analyzed for PHCs, BTEX and PAHs with no exceedance of MECP Table 1 or 3 standards for any parameters observed in any of the samples.

### 2020 Golder Phase One ESA

Golder conducted a Phase One ESA entitled, “*Phase One Environmental Site Assessment for The Ottawa Hospital – New Civic Campus, Ottawa, Ontario*”, draft dated March 2020, to assess the likelihood of soil and/or groundwater contamination resulting from historical or present activities at the Site 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. The location of the PCAs is provided in **Figure 1B** and the location of the APECs is provided in **Figure 1C**. The APECs identified in the 2020 Golder Phase One ESA are summarized in the following table:

Area of Potential Environmental Concern <sup>1</sup>	Location of APEC on Phase One Property	Potentially Contaminating Activity <sup>2</sup>	Location of PCA	Contaminants of Potential Concern <sup>3</sup>	Media Potentially Impacted
<b>APEC 1:</b> PCA ID # A – Former Dow's Lake landfill	Entire Parcel A of the Site	PCA 58: Waste Disposal and Waste Management, including thermal treatment, landfilling and transfer of waste, other than use of biosoils as soil conditioners	On-Site	PHCs, BTEX, VOCs, PAHS, Metals and Inorganics	Soil and Groundwater
<b>APEC 2:</b> PCA ID # D – Demolition debris from former office building on Parcel B.	Former building footprint on Parcel B	Demolition debris from office building on Parcel B	On-Site	PHCs, BTEX, PAHS, Metals and Inorganics	Soil and Groundwater
<b>APEC 3:</b> PCA ID # C – Building demolition debris in fill at the location of the former SJCB building.	Former SJCB building footprint on Parcel C	Building demolition debris in fill layer associated with former SJCB building footprint	On-Site	PHCs, BTEX, VOCs, PAHS, Metals, Inorganics, Energetics and Phenol	Soil and Groundwater
<b>APEC 4:</b> PCA ID # B1, B2, B3 – Concrete Pad-mounted transformers	Adjacent north and west of SJCB West Annex	PCA 55: Electricity Generator, Transformation and Power Station (Hydro Ottawa Sub-Station)	On-Site	PCBs	Soil and Groundwater
<b>APEC 5:</b> PCA ID # E – Former hydraulic oil elevator located in West Annex of SJCB.	SJCB West Annex on Parcel C	PCA 28: Gasoline and Associated Products Storage in Fixed Tanks	On-Site	PHCs, BTEX	Soil and Groundwater
<b>APEC 6:</b> PCA ID # F1 and F2 – Reported glycol leak from parking ramp system of SJCB	East portion of former SJCB East Annex	Reported glycol leak from parking ramp system of SJCB	On-Site	Glycol	Soil and Groundwater
<b>APEC 7:</b> PCA ID # G1, G2 and G3 – Three former diesel ASTs reportedly associated with SJCB.	Former SJCB on Parcel C	PCA 28: Gasoline and Associated Products Storage in Fixed Tanks	On-Site	PHCs, BTEX	Soil and Groundwater
<b>APEC 8:</b> PCA ID # not applicable ('Various Across Site') – Imported fill materials associated with various building construction and site development activities across the Site (both parcels).	Entire Site (Parcels B and C)	PCA 30: Importation of Fill Material of Unknown Quality (not indicated on Figure 2)	On-Site	PHCs, BTEX, PAHS, Metals and Inorganics	Soil and Groundwater

Area of Potential Environmental Concern <sup>1</sup>	Location of APEC on Phase One Property	Potentially Contaminating Activity <sup>2</sup>	Location of PCA	Contaminants of Potential Concern <sup>3</sup>	Media Potentially Impacted
<b>APEC 9:</b> PCA ID # not applicable (Entire area of Parcel C): Application of pesticides associated with former farming activities on Parcel C	Entire area of Parcel C	PCA 40: Pesticides (including Herbicides, Fungicides and Anti-Fouling Agents) Manufacturing, Processing, Bulk Storage and Large-Scale Applications	On-Site	OC Pesticides	Soil

**Notes:**

- 1 Area of potential environmental concern means the area on, in or under a phase one property where one or more contaminants are potentially present, as determined through the phase one environmental site assessment, including through, •(a) identification of past or present uses on, in or under the phase one property, and •(b) identification of potentially contaminating activity
- 2 Potentially contaminating activity means a use or activity set out in Column A of Table 2 of Schedule D that is occurring or has occurred in a phase one study area
- 3 Contaminants of potential concern specified using the method groups as identified in the "Protocol for in the Assessment of Properties under Part XV.1 of the Environmental Protection Act, March 9, 2004, amended as of July 1, 2011
  - ORP – other regulated parameters (hexavalent chromium, mercury and hot water soluble boron)
  - PAH – polycyclic aromatic hydrocarbons
  - PHC – petroleum hydrocarbon fractions F1-F4
  - VOC – volatile organic compounds

APEC #1 identified in the Golder Phase One ESA is related to an APEC located entirely on Parcel A and is therefore not considered to be an APEC to the Phase Two Property.

### 3.0 SCOPE OF THE INVESTIGATION

#### 3.1 Overview of Site Investigation

The Phase Two ESA investigation activities were completed, between May 6, 2021, and August 26, 2022, which 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:** The Golder Phase Two field program included the installation of 34 boreholes in 2021 and 27 boreholes in 2022. The rationale for the selected location of the boreholes is provided in the Sampling and Analysis Plan is provided in **Appendix A**. The Record of Borehole sheets from the current investigation are presented in **Appendix B**. Borehole logs from previous subsurface investigations are presented in **Appendix C**. The location of the boreholes is provided on **Figure 1D**. The monitoring well construction details are presented in **Tables 1A and B**.

- **Soil Sampling:** Selected soil samples were collected between May 3 and June 11, 2021 and February 22 and April 6, 2022, from boreholes and between June 16, 2021, and June 25, 2021, from surficial soil samples collected at the Site. Soil samples were submitted for chemical analysis of one or more of the following: PHCs, BTEX, VOCs, PAHs, PCBs, metals, hydride-forming metals and/or other regulated parameters (hot water-soluble boron, hexavalent chromium, mercury and/or methyl mercury).
- **Groundwater Monitoring and Sampling:** Groundwater samples were collected between May 25, 2021 and June 9, 2021 and August 26, 2022. Groundwater samples were submitted for analysis of one or more of the following: PHCs, BTEX, VOCs, PAHs, PCBs, metals, hydride-forming metals, and/or other regulated parameters (mercury and hexavalent chromium).
- **Surveying:** Elevations were geodetically surveyed in-house on May 28, June 9 and June 25, 2021 and January 27, May 9, June 10 and June 21, 2022 for 14 monitoring wells on Site (21-202, 21-213, 21-215, 21-218, 21-219, 21-221 D, 21-221 S, 21-222 D, 21-222 S, 21-224, 21-225, 21-226, MW16-1A, MW16-11, MW16-13).
- **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 a single 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.

## 3.2 Media Investigated

To address the potential environmental issues identified in the Phase One ESA, the Phase Two ESA field program included sampling of soil and groundwater from wells screened within the overburden and bedrock 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 **Table 2**. The sampling and analysis plan (**Appendix A**) 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.

## 3.3 Phase One Conceptual Site Model

The following key Site features are presented on **Figures 1A and 1B**:

- Existing buildings and structures;
- Water bodies and areas of natural significance located in the Phase One Study Area;
- Drinking water wells on Site;
- Roads (including names) within the Phase One Study Area;
- Uses of properties adjacent to the Site; and,
- Location of identified PCAs in the Phase One Study Area.

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

- The Site consists of a 16.63-hectare parcel of land developed for commercial and parkland purposes. There are two contiguous parcels of land associated with the Site, located at 930 Carling Avenue: the west portion of Parcel B and Parcel C, as defined in the Phase One ESA.
- At the time of the Phase One Site visit, Parcel B, owned by PSPC, was occupied by Queen Juliana Park. Parcel C which occupies the largest portion of the Site is mostly vacant and included three buildings on the northern portion: a Bell utility station, the Sir John Carling Building West Annex (which was under demolition), and a tennis club house with outdoor courts on the southwest portion. No interior areas of any buildings or structure (former SJCB west annex, Bell building or Dara Tennis Club building) were accessible at the time of the Site visit.
- Exterior areas of the Site generally included vacant grass covered landscaping areas with trees and shrubs; however, dense tree coverage was observed on the north, east and south perimeter of Parcel C. Several asphalt paved parking areas were observed on the northern portion of Parcel C, associated with the former SJCB. Roadway, part of Birch Drive and Maple Drive, were located on the western portion of the Site.
- Dow's Lake is located approximately 350 m northeast of the Site; no areas of natural significance were identified on or within 30 m of the Phase One Property.
- Surface water at the Phase One Property infiltrates into the subsurface through on-Site landscaped areas or flows overland to catch basins connected to the municipal storm sewer system.
- Potable water in the vicinity of the Site is provided by the City of Ottawa.
- A single well record completed in 1964, associated with water supply for cooling and air conditioning, was available and was located south of former SJCB on Parcel C of the Site. Additional wells for monitoring and testing purposes were installed at the Site according to previous reports reviewed; however, were not observed at the time of the Site visit due to snow cover on the ground.
- Stratigraphy at the Site consists of Till, plain with local relief (<5 m) on the northern portion of the Site (Parcel B). The stratigraphy for Parcel C consists of shallow bedrock (limestone and dolostone) on the northern portion whereas southern portion consists of off-shore marine deposits with clay and silt. The depth to bedrock across the Site is variable and generally decreases from south to north. Southeast corner of Parcel C has inferred bedrock depth between 10 to 15 m bgs whereas central portion of the Site (in the vicinity of SJCB) has shallow bedrock has previously been encountered at 6 to 7 m bgs.
- At the time of the Phase One ESA, the surrounding properties within the Phase One Study Area included:
  - **West:** Government office buildings including Dominion Observatory as well as farming lands associated with Agriculture and Agri-Food Canada's (AAFC) Central Experiment Farm (CEF).
  - **North:** Bounded by Carling Avenue followed by commercial land uses across Carling Avenue. Beyond the commercial buildings on Carling Avenue is a residential neighbourhood.
  - **South:** Combination of government office buildings and farming area associated with AAFC's CEF.
  - **East:** Bounded by Queen Juliana Park (remainder of Parcel B) followed by the Trillium Line rail corridor. Parcel C is bound by Prince of Wales Drive followed by parkland.

- The following PCAs were identified in the Phase One Study Area (**Figure 1B**), which result in APECs to the Site:

PCA ID (see Figure 2)	Location	PCA	Information Source	Rationale for Potential Contribution of the PCA to an APEC
n/a	Various areas across the Site	<b>30. Importation of Fill Material of Unknown Quality</b> – Imported fill materials associated with various building construction and site development activities across the Site.	Site observations, Previous Reports	The PCA is located on-Site and as such is considered an APEC.
A	Entire Parcel A of the Site	<b>30. Importation of Fill Material of Unknown Quality</b> – Former Dow's Lake landfill was located 100 m east of the Site with documented impacts to soil and groundwater. No municipal solid waste noted in previous investigations (landfilled material limited to soil and demolition debris).	Previous Reports	The PCA is located off-Site with known impact to soil and groundwater. As such, this is not considered an APEC.
B1, B2, B3	North portion of Parcel C (adjacent north and west of the SJCB West Annex)	<b>55. Electricity Generator, Transformation and Power Station (Hydro Ottawa Sub-Station)</b> – Three concrete pad mounted transformers in the vicinity of the SJCB West Annex building.	Site observations	Given that PCAs are located on-Site, each PCA location is considered APECs for the Site
C	North portion of Parcel C (building footprint of SJCB, East Annex and West Annex)	Building demolition debris in fill layer associated with former SJCB building footprint with documented exceedance of PAHs, metals and/or phenols in soil (fill) and groundwater (compared to federal guidelines with limited exceedances of provincial standards at one location).	Site observations, Previous Reports, Aerials	Given the PCA is located on-Site with documented impacts to soil and groundwater in the vicinity of former SJCB, it is considered an APEC.
D	Parcel B of the Site	Demolition debris from office building on Parcel B with documented PAHs (federal guidelines) and metals (federal guidelines and provincial standards) impacts within fill layer.	Site observations, Previous Reports, Aerials	Given the potential presence of demolition debris across majority of Parcel B, this on-Site PCA is considered an APEC.
E	SJCB West Annex Building (northern portion of Parcel C)	<b>28. Gasoline and Associated Products Storage in Fixed Tanks</b> – Former hydraulic oil elevator located in West Annex of SJCB.	Site observations, Previous Reports	Given the PCA is located on-Site with no additional information (i.e., secondary containment), it is considered an APEC.

PCA ID (see Figure 2)	Location	PCA	Information Source	Rationale for Potential Contribution of the PCA to an APEC
F1, F2	East of former SJCB East Annex Building on Parcel C	Reported glycol leak from parking ramp system of SJCB East Annex	Site observations, Previous Reports	Given the potential for this reported glycol leak from parking ramp system of SJCB to impact soil and groundwater at the Site, it is considered an APEC.
G1, G2, G3	Northern portion of Parcel C	<b>28. Gasoline and Associated Products Storage in Fixed Tanks</b> – Three former diesel ASTs reportedly associated with SJCB.	Site observations, Previous Reports	Given the PCAs are located on-Site with potential impact to soil quality at the Site and groundwater in the area, these three PCAs are considered as APECs.
H	Off-Site (approx. 80 m west of the Site)	<b>28. Gasoline and Associated Products Storage in Fixed Tanks</b> – Former diesel generator at 1 Observatory Crescent (Bldg #7).	Site observations, Previous Reports	Given inferred cross-gradient location of this PCA compared to the Site and separation by roadways with associated underground utilities, it is not considered an APEC for the Site.
I	Off-Site (approximately 70 m northwest of the Site)	<b>28. Gasoline and Associated Products Storage in Fixed Tanks</b> – Gasoline and Diesel USTs at 350 Loretta Avenue	Site observations, ERIS Report, HLUI	Given inferred cross-gradient location of this PCA compared to the Site and separation by roadways with associated underground utilities, it is not considered as an APEC for the Site.
J	Off-Site (approximately 50 m north of the Site)	<b>10. Commercial Autobody Shops</b> – Auto Service garage with four USTs at 829 Carling Avenue	Site observations, HLUI	Given inferred down-gradient location of this PCA compared to the Site, separation by a roadway with underground utilities between this PCA and Site, as well as absence of any reported spills associated the USTs, this PCA is not considered an APEC for the Site.
K	Off-Site (approximately 60 m west of the Site)	<b>28. Gasoline and Associated Products Storage in Fixed Tanks</b> – Three USTs at 960 Carling Avenue	Site observations, ERIS Report, HLUI	Given inferred cross-gradient location of this PCA compared to the Site and separation by roadways with associated underground utilities, it is not considered as an APEC for the Site.



PCA ID (see Figure 2)	Location	PCA	Information Source	Rationale for Potential Contribution of the PCA to an APEC
L	Off-Site (approximately 100 m northwest of the Site)	<b>28. Gasoline and Associated Products Storage in Fixed Tanks</b> – Retail fuel outlet with USTs at 111 Sherwood Drive	Site observations, HLUJ	Given distance of this PCA from the Site, inferred cross-gradient location compared to the Site and separation by roadways with associated underground utilities, it is not considered as an APEC for the Site.
M	Off-Site (approximately 40 m north of parcel A)	<b>33. Metal Treatment, Coating, Plating and Finishing</b> – Campbell Steel and Iron Works Ltd at 855 Carling Avenue	FIPs	Based on the separation of the PCA by roadway with associate underground utilities, and inferred cross-gradient location, this off-Site PCA is not considered an APEC.
N	Off-Site (approximately 100 m north of Parcel B)	<b>28. Gasoline and Associated Products Storage in Fixed Tanks</b> – Fuel oil Depot with 8 USTs at 140 Hickory Street	FIPs	Based on the distance from the Site, separation by roadways with associate underground utilities, and inferred down-gradient location, this off-Site PCA is not considered an APEC.
O	Off-Site (between Parcel A and B)	<b>46. Rail Yards, Tracks and Spurs</b> – Railway tracks, located between Parcel A and B, currently used by O-Train.	Site observations, Aerials	Given this off-Site PCA is located at a lower elevation compared to the Site, any fill related issues likely has been removed at the time of installation of these railway tracks.
n/a	On-Site (entire area of Parcel C)	<b>PCA 40: Pesticides (including Herbicides, Fungicides and Anti-Fouling Agents) Manufacturing, Processing, Bulk Storage and Large-Scale Applications</b> – Pesticide application associated with former farming activities on Parcel C	Aerials	Given this PCA is located on-Site, it is considered an APEC.

- The following APECs were identified on the Site:

Area of Potential Environmental Concern <sup>1</sup>	Location of APEC on Phase One Property	Potentially Contaminating Activity <sup>2</sup>	Location of PCA	Contaminants of Potential Concern <sup>3</sup>	Media Potentially Impacted
<b>APEC 1:</b> PCA ID # D – Demolition debris from former office building on Parcel B.	Former building footprint on Parcel B	Demolition debris from office building on Parcel B	On-Site	PHCs, BTEX, PAHS, Metals and Inorganics	Soil and Groundwater
<b>APEC 2:</b> PCA ID # C – Building demolition debris in fill at the location of the former SJC B building.	Former SJC B building footprint on Parcel C	Building demolition debris in fill layer associated with former SJC B building footprint	On-Site	PHCs, BTEX, VOCs, PAHS, Metals, Inorganics, Energetics and Phenol	Soil and Groundwater
<b>APEC 3:</b> PCA ID # B1, B2, B3 – Concrete Pad-mounted transformers	Adjacent north and west of SJC B West Annex	PCA 55: Electricity Generator, Transformation and Power Station (Hydro Ottawa Sub-Station)	On-Site	PCBs, PHCs and BTEX	Soil and Groundwater
<b>APEC 4:</b> PCA ID # E – Former hydraulic oil elevator located in West Annex of SJC B.	SJC B West Annex on Parcel C	PCA 28: Gasoline and Associated Products Storage in Fixed Tanks	On-Site	PHCs, BTEX	Soil and Groundwater
<b>APEC 5:</b> PCA ID # F1 and F2 – Reported glycol leak from parking ramp system of SJC B	East portion of former SJC B East Annex	Reported glycol leak from parking ramp system of SJC B	On-Site	Glycol	Soil and Groundwater
<b>APEC 6:</b> PCA ID # G1, G2 and G3 – Three former diesel ASTs reportedly associated with SJC B.	Former SJC B on Parcel C	PCA 28: Gasoline and Associated Products Storage in Fixed Tanks	On-Site	PHCs, BTEX	Soil and Groundwater
<b>APEC 7:</b> PCA ID # not applicable ('Various Across Site') – Imported fill materials associated with various building construction and site development activities across the Site (both parcels).	Entire Site (Parcels B and C)	PCA 30: Importation of Fill Material of Unknown Quality (not indicated on Figure 2)	On-Site	PHCs, BTEX, PAHS, Metals and Inorganics	Soil and Groundwater

Area of Potential Environmental Concern <sup>1</sup>	Location of APEC on Phase One Property	Potentially Contaminating Activity <sup>2</sup>	Location of PCA	Contaminants of Potential Concern <sup>3</sup>	Media Potentially Impacted
<b>APEC 8:</b> PCA ID # not applicable (Entire area of Parcel C): Application of pesticides associated with former farming activities on Parcel C	Entire area of Parcel C	PCA 40: Pesticides (including Herbicides, Fungicides and Anti-Fouling Agents) Manufacturing, Processing, Bulk Storage and Large-Scale Applications	On-Site	OC Pesticides	Soil

- Underground utilities are present at the Site, which include natural gas, electricity, communications, water and sewer/sanitary pipelines.
- Regional groundwater flow in the underlying aquifers is expected to be to the north towards Ottawa River located approximately 2.75 km north of the Site. Local groundwater flow is anticipated to be influenced by the presence of Dow's Lake to the northeast, the Trillium Line rail tracks which cut through bedrock between Parcels B and A, and the presence of the former building foundations/fill material.

### 3.4 Deviations from Sampling and Analysis Plan

The sampling and analysis plan is provided in **Appendix A** which incorporates the 2021 investigation program. 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. This plan covers the activities undertaken during the Phase Two ESA. Deviations from the sampling and analysis plan are captured as below:

#### April 29, 2021:

- Due to the location of boreholes 21-223 and 21-220 these boreholes were not advanced during the first phase of the investigation but will be sampled separately following the demolition/remediation of the existing Annex Building.

#### May 25, 2021 and June 7, 2021:

- Monitoring wells installed by others (MW16-3, MW16-6, MW16-7, MW16-8, MW16-9, MW16-10, MW16-14) could not be located on Site. Monitoring wells MW16-11 and MW16-13 installed by others were located on Site and groundwater from these two monitoring wells were sampled for PHCs, BTEX, VOCs, PAHs, metals, hydride-forming metals and ORPs.
- VOC analyses requested for BH21-217 SA77, collected on May 6, 2021, were not completed by laboratory due to a logistical error. This sample was intended as a duplicate and therefore does not materially affect the findings of the Phase Two ESA.
- Borehole 21-201 caved between 11.9 to 12.9 m bgs. The screen was installed above the cave between 8.8 m to 11.9 m bgs, followed by a bentonite seal between 7.2 to 8.3 m bgs and well cuttings between 1.5 to 7.2 m bgs. The water level was measured to be approximately 6.5 m bgs on June 24, 2021, which is above the targeted well screen interval.

- Borehole 21-204 caved between 9.2 to 10.9 m bgs. The screen was installed between 6.1 to 9.2 m bgs, followed by a bentonite slurry between 5.2 to 5.8 m bgs and well cuttings between 0.9 to 5.2 m bgs. The water level was measured to be approximately 5.2 m bgs on June 24, 2021, which is above the targeted well screen interval.
- Borehole 21-222D caved between 6.1 to 9.2 m bgs. The screen was installed between 10.6 to 12.2 m bgs, followed by a bentonite seal between 13.7 to 14.3 m bgs and well cuttings between 0.9 to 6.1 m bgs. The water level was measured to be approximately 6.8 m bgs on June 9, 2021, which was above the targeted well screen interval.

#### June 11, 2021

- Soil samples collected at a depth of 0.3 to 0.9 m bgs from boreholes BH21-101 to BH21-108 were submitted for analysis of metals, hydride-forming metals, and ORPs. Due to a logistical error, analysis of PAHs were conducted by the laboratory. This does not affect the findings of the Phase Two ESA.

#### June 16, 2021

- Additional surficial soil samples were collected manually using a shovel at depths between 0.0 to 0.6 m bgs in the vicinity of 21-202 and submitted for analysis of methyl mercury.
- Additional surficial soil samples SSA1 to SSA3 were collected manually using a shovel at depths between 0.0 to 0.3 m bgs in the vicinity of transformers B1, B2 and B3 and submitted for analysis of PHCs, BTEX and PCBs.

#### June 25, 2021

- Additional surficial soil samples SSA4 (approximately 5 m north of 21-201) and SSA6 (approximately 5 m south of 21-201) were collected manually using a shovel at depths between 0.0 to 0.6 m bgs in the vicinity of monitoring well 21-201 and submitted for analysis of metals, hydride-forming metals and ORPs.
- Additional surficial soil samples SSA5 (approximately 1 m west of 21-201) and SSA7 (near the location of former monitoring well MW17-7) were collected manually using a shovel at depths between 0.0 to 0.6 m bgs and submitted for analysis of methyl mercury.

#### 2022

- Due to low yielding well conditions and low water levels within the monitoring well 22-405, samples could not be collected from monitoring well 22-405 for analysis of petroleum hydrocarbons F1 to F4.

Despite deviations to the sampling and analysis plan, the goal of delineation or investigation has been subsequently met.

### 3.5 Impediments

During the Phase Two ESA, access to the West Annex of the SJCB was not available due to safety considerations. As such, an investigation to supplement the previous investigation of one APEC (APEC 4) has not been completed at the time of this report. Golder has requested the consulting firm supervising the demolition and remediation on behalf of PSPC collect soil samples from the excavation to assess this APEC. At the time of this report, these results have not been received.

## 4.0 INVESTIGATION METHOD

### 4.1 General

The following sections describe the field investigation methodology employed during the Phase Two ESA. The field work was conducted between May 6, 2021, and August 5, 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.

### 4.2 Underground Utility Locates

Prior to commencing the intrusive field program, Golder retained the services of a private utility location contractor (USL-1) to contact Ontario One Call and arrange for the identification of public utilities, to locate private and public utilities within the work area, to mark the locations of the utilities and to clear the proposed drilling locations.

### 4.3 Borehole Installation

Golder retained George Downing Estate Drilling Limited of Hawkesbury, Ontario ("Downing") and CCC Geotechnical and Environmental Drilling Limited of Ottawa, Ontario ("CCC") for borehole drilling and monitoring well installation. These subcontractors are licensed and insured environmental drilling companies with all operators being fully certified under the requirements of O.Reg. 903 of the Environmental Protection Act. The table below provides a summary of the borehole installations.

Borehole ID	Date	Subcontractor	Drilling Method	Casing	Total Depth (m bgs)	Depth to Bedrock (m bgs)	Bedrock Description
21-101	June 11, 2021	CCC	200-mm OD Power Auger	108-mm ID Hollow-Stem Auger	1.5	-	-
21-102	June 11, 2021	CCC	200-mm OD Power Auger	108-mm ID Hollow-Stem Auger	1.5	-	-
21-103	June 11, 2021	CCC	200-mm OD Power Auger	108-mm ID Hollow-Stem Auger	1.5	-	-
21-104	June 11, 2021	CCC	200-mm OD Power Auger	108-mm ID Hollow-Stem Auger	1.5	-	-
21-105	June 11, 2021	CCC	200-mm OD Power Auger	108-mm ID Hollow-Stem Auger	1.5	-	-
21-106	June 11, 2021	CCC	200-mm OD Power Auger	108-mm ID Hollow-Stem Auger	1.5	-	-
21-107	June 11, 2021	CCC	200-mm OD Power Auger	108-mm ID Hollow-Stem Auger	1.5	-	-
21-108	June 11, 2021	CCC	200-mm OD Power Auger	108-mm ID Hollow-Stem Auger	1.5	-	-

Borehole ID	Date	Subcontractor	Drilling Method	Casing	Total Depth (m bgs)	Depth to Bedrock (m bgs)	Bedrock Description
21-201	June 8, 2021	Downing	200-mm OD Power Auger and Rotary Drill/Wash Boring	108-mm ID Hollow-Stem Auger and NW casing/NQ Core	12.9	-	-
21-202	May 25, 2021	Downing	200-mm OD Power Auger and Rotary Drill/Wash Boring	108-mm ID Hollow-Stem Auger and NW casing/NQ Core	21.8	16.5	LIMESTONE, with thin shale partings
21-203	May 19, 2021	Downing	200-mm OD Power Auger and DCPT	108-mm ID Hollow-Stem Auger and AW Rods	16.9	-	-
21-204	June 9, 2021	Downing	200-mm OD Power Auger	108-mm ID Hollow-Stem Auger	10.9	-	-
21-205	June 2, 2021	Downing	200-mm OD Power Auger and Rotary drilling	108-mm ID Hollow-Stem Auger and NW Casing/NQ Core	14.6	-	-
21-205A	June 8, 2021	Downing	200-mm OD Power Auger and DCPT	108-mm ID Hollow-Stem Auger and AW Rods	10.6	-	-
21-206	May 19, 2021	Downing	200-mm OD Power Auger	108-mm ID Hollow-Stem Auger	12.1	-	-
21-207	June 4, 2021	Downing	Rotary Drilling (Wash Boring)	HW Casing/HQ Core	21.6	12.17	SHALEY NODULAR LIMESTONE
21-208	June 1, 2021	Downing	200-mm OD Power Auger and DCPT	108-mm ID Hollow-Stem Auger and AW Rods	14.3	-	-
21-209	June 10, 2021	Downing	200-mm OD Power Auger and DCPT	108-mm ID Hollow-Stem Auger and AW Rods	10.9	-	-
21-210	June 2, 2021	Downing	200-mm OD Power Auger	108-mm ID Hollow-Stem Auger	9.2	-	-
21-211	May 20, 2021	Downing	200-mm OD Power Auger	108-mm ID Hollow-Stem Auger	10.8	-	-
21-212	June 10, 2021	Downing	200-mm OD Power Auger and DCPT	108-mm ID Hollow-Stem Auger and AW Rods	13.2	-	-
21-213	May 31, 2021	Downing	200-mm OD Power Auger and Rotary Drill	108-mm ID Hollow-Stem Auger and NQ Core	15.8	12.20	SHALEY LIMESTONE
21-214	May 22, 2021	Downing	200-mm OD Power Auger and Rotary Drill	108-mm ID Hollow-Stem Auger and NQ Core	12.3	8.28	SHALEY LIMESTONE

Borehole ID	Date	Subcontractor	Drilling Method	Casing	Total Depth (m bgs)	Depth to Bedrock (m bgs)	Bedrock Description
21-215	May 28, 2021	Downing	200-mm OD Power Auger	108-mm ID Hollow-Stem Auger	7.1	-	-
21-216	May 5, 2021	Downing	200-mm OD Power Auger and Rotary Drill	108-mm ID Hollow-Stem Auger and NQ Core	15.2	-11.13	SHALEY LIMESTONE
21-217	May 5, 2021	Downing	200-mm OD Power Auger	108-mm ID Hollow-Stem Auger	8.8	-	-
21-218	May 7, 2021	Downing	200-mm OD Power Auger	108-mm ID Hollow-Stem Auger	13.6	-	-
21-219	May 6, 2021	Downing	200-mm OD Power Auger and Rotary drilling	108-mm ID Hollow-Stem Auger, HW casing, and NQ Core	14.7	10.84	LIMESTONE
21-221	May 20, 2021	Downing	200-mm OD Power Auger and Rotary drilling	108-mm ID Hollow-Stem Auger and NW Casing/ NQ core	17.6	13.41	SHALEY LIMESTONE
21-222	May 12, 2021	Downing	200-mm OD Power Auger and DCPT	108-mm ID Hollow-Stem Auger and AW Rods	14.0	-	-
21-224	May 10, 2021	Downing	200-mm OD Power Auger and Rotary Drill	108-mm ID Hollow-Stem Auger and NQ Core	20.2	16.92	SHALEY LIMESTONE
21-225	May 3, 2021	Downing	8" OD Power Auger	41/4" ID Hollow-Stem Auger	13.0	-	-
21-226	May 4, 2021	Downing	8" OD Power Auger	41/4" ID Hollow-Stem Auger	11.0	-	-
22-109	March 29-30, 2022	Downing	8" OD Power Auger	41/4" ID Hollow-Stem Auger	11.13	-	-
22-110	April 1, 2022	Downing	8" OD Power Auger	41/4" ID Hollow-Stem Auger	10.21	-	-
22-111	March 29, 2022	Downing	8" OD Power Auger	41/4" ID Hollow-Stem Auger	5.18	-	-
22-112	March 29, 2022	Downing	8" OD Power Auger	41/4" ID Hollow-Stem Auger	7.85	4.01	LIMESTONE
22-113	March 30, 2022	Downing	8" OD Power Auger	41/4" ID Hollow-Stem Auger	12.18	8.36	LIMESTONE
22-301	March 21, 2022	Downing	8" OD Power Auger	41/4" ID Hollow-Stem Auger	35.36	31.39	LIMESTONE
22-302	May 3-4, 2022	Downing	Washbore	HW/HQ	28.67	27.15	LIMESTONE
22-303	April 5, 2022	Downing	Washbore	HW/HQ	20.22	17.02	LIMESTONE
22-304	May 6, 2022	Downing	8" OD Power Auger	41/4" ID Hollow-Stem Auger	13.03	-	-
22-305	May 6, 2022	Downing	8" OD Power Auger	41/4" ID Hollow-Stem Auger	13.64	-	-

Borehole ID	Date	Subcontractor	Drilling Method	Casing	Total Depth (m bgs)	Depth to Bedrock (m bgs)	Bedrock Description
22-306	March 25, 2022	Downing	Washbore	HW/HQ	26.92	17.58	LIMESTONE
22-307	May 7, 2022	Downing	Washbore	HW/HQ	22.27	20.35	SHALEY LIMESTONE
22-308	April 28-29, 2022	Downing	Washbore	HW/HQ	20.29	17.27	LIMESTONE
22-309	May 5, 2022	Downing	Washbore	HW/HQ	19.30	17.59	SHALEY LIMESTONE
22-310	April 6-8, 2022	Downing	8" OD Power Auger	41/4" ID Hollow-Stem Auger	19.18	16.15	LIMESTONE
22-401	March 16-17, 2022	Downing	8" OD Power Auger	41/4" ID Hollow-Stem Auger	13.62	9.73	LIMESTONE
22-402	March 7, 2022	Downing	8" OD Power Auger	41/4" ID Hollow-Stem Auger	4.22	-	-
22-403	February 28, 2022				10.72	3.05	SHALEY LIMESTONE
22-404	March 1, 2022	Downing	8" OD Power Auger	41/4" ID Hollow-Stem Auger	4.88	-	-
22-405	February, 25, 2022	Downing	8" OD Power Auger	41/4" ID Hollow-Stem Auger	6.09	3.02	SHALEY LIMESTONE
22-406	March 1, 2022	Downing	8" OD Power Auger	41/4" ID Hollow-Stem Auger	2.64	-	-
22-407	March 7, 2022	Downing	8" OD Power Auger	41/4" ID Hollow-Stem Auger	4.57	-	-
22-408	March 3, 2022	Downing	8" OD Power Auger	41/4" ID Hollow-Stem Auger	12.98	3.90	SHALEY LIMESTONE
22-409	March 7, 2022	Downing	8" OD Power Auger	41/4" ID Hollow-Stem Auger	5.79	-	-
22-410	March 7, 2022	Downing	8" OD Power Auger	41/4" ID Hollow-Stem Auger	4.70	-	-
22-411	March 2, 2022	Downing	8" OD Power Auger	41/4" ID Hollow-Stem Auger	8.35	4.73	SHALEY LIMESTONE
22-412	March 1, 2022	Downing	8" OD Power Auger	41/4" ID Hollow-Stem Auger	3.91	-	-

**Notes:**

- Bedrock not encountered during drilling.  
DCPT: Dynamic Cone Penetration Test

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**Downing**

Between May 3 and May 7, 2022, boreholes (21-201 to 21-210, 21-212 to 21-219, 21-221, 21-222, 21-225, 21-226, 22-109 to 22-113, 22-301, 22-304, 22-305, 22-310, 22-401 to 22-412) were advanced by Downing using a CME-75 track-mounted or truck-mounted drill rig fitted with a hydraulic percussion hammer and an 8.5" (0.21 m) hollow-stem auger to facilitate the near continuous sampling of subsurface materials from surface to the point of borehole termination. During the same time period, wash boring techniques were used to advance boreholes 21-201, 21-202, 21-205, 21-207, 21-219, 21-221, 22-302, 22-303, 22-306, 22-307, 22-308 and 22-309 through



cobbles and boulders within the glacial till and/or sand and gravel layers. Standard penetration testing and 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.

Boreholes 21-201, 21-203, 21-204, 21-205A, 21-208, 21-209, 21-212 and 21-222 were advanced, without sampling, using dynamic cone penetration testing (DCPT) to depths of 10.9 to 16.9 m below ground surface, where cone refusal was encountered.

Upon encountering refusal, selected boreholes were extended into the bedrock using rotary diamond drilling techniques while retrieving NQ or HQ sized core. Within these boreholes, the drilled lengths in the bedrock ranged between 3.3 and 9.4 m.

At monitoring wells 21-201, 21-205 and 21-206, the overburden was drilled to auger refusal (between approximately 5.0 to 13.7 m bgs) using hollow stem augers, within which NW casing was then installed and set with grout for use as a temporary casing through which NQ coring equipment was used to core the completion depth of approximately 12.9 to 21.8 m bgs in overburden. At monitoring wells, 21-202, 21-213, 21-214 and 21-221, following drilling through the overburden with hollow stem augers, a permanent casing was cemented into place and rock coring was completed through the casing with NQ coring equipment to the targeted depth. At 21-219, following drilling through the overburden with hollow stem augers, HW casing was installed and set with grout for use as a temporary through which NQ coring equipment was used to core the completion depth.

## CCC

On June 11, 2021, shallow boreholes (21-101 to 21-108) were advanced by CCC using a truck-mounted CME-75 drill rig, equipped an 8.5" (0.21 m) hollow-stem auger. 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.

## 4.4 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.

As per the sampling and analysis plan, provided in **Appendix A**, at least one soil sample was submitted from each test location where fill material was encountered. One soil sample, representing the inferred shallow water table was submitted from each sampling location. One soil sample representing "worst-case" conditions at each sampling location was selected for laboratory analysis based on the field headspace screening measurements, 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. Additional samples were submitted per location on hold or extract and hold to vertically delineate for impacts at select locations if required. A summary of the soil samples submitted for analysis is provided in **Table 2A**.

Geologic descriptions, visual and olfactory observations, and results of field headspace measurements are presented on the Record of Borehole sheets in **Appendix B**. Historic borehole logs are provided in **Appendix C**.

## 4.5 Field Screening Measurements

All samples were field screened for visual and olfactory evidence of environmental impacts including staining and odours. Soil samples were placed into polyethylene bags and thermo-equilibrated for approximately 15 minutes in a warm environment prior to being tested for total organic vapour concentrations and combustible vapour concentrations using a pre-calibrated RKI Eagle 2™ portable vapour meter, with methane response switched off. The RKI Eagle 2™ has the following specifications:

Equipment	Parameters Detected	Detection Limit	Precision	Accuracy	Calibration Standard
RKI Eagle 2	Combustible gas	0-50,000 ppm	NA	±2%	Hexane (1650 ppm)
RKI Eagle 2	Total organic vapour	0-2,000 ppm	NA	±5%	Isobutylene (100 ppm)

Daily calibration checks completed by Golder, and the instrument recalibrated if the span gas was outside the acceptability range of ±10% of the span gas.

Soil samples were selected for submission to the laboratory based on the highest CVC reading as well as visual and olfactory observations.

## 4.6 Groundwater: Monitoring Well Installation

The wells were constructed of a 50-mm diameter polyvinyl chloride (PVC) pipe and a #10 slotted PVC well screen, approximately 3.1 m in length placed, where required, to intercept the inferred groundwater table. Monitoring well 21-222 D and 22-411 D were installed with 1.5m and 3.04m long screens (respectively) at depth to assess deep groundwater quality and support the hydrogeological investigation. A sand-pack consisting of clean silica sand was placed within the annulus space surrounding the screened section of the wells, and a bentonite slurry was injected from the top of the sand layer to within 0.3 m of the surface to prevent surface water infiltration along the PVC riser. The monitoring well was sealed with a bentonite slurry with a minimum thickness of from 0.55 metres above the sand pack followed by well cuttings at some locations.

At 21-221, the monitoring well was sealed 0.7 metres above the screen of 21-221D with a bentonite slurry (13.7 to 14.3 m bgs), followed by silica sand between 12.5 to 13.7 m bgs and natural sand between 10.1 to 12.5 m bgs spanning the screen interval of 21-221S (10.4 to 13.5 m bgs), which was subsequently sealed by a second bentonite slurry between 8.8 to 10.1 m bgs, followed by well cuttings.

A well 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. Following monitoring well installation activities, the wells were equipped with dedicated Waterra™ tubing (approximately 1.25 cm in diameter) and inertial lift foot valve for well development purposes.

- Twenty-three boreholes were installed with monitoring wells during drilling activities (21-201, 21-202, 21-204, 21-213, 21-215, 21-218, 21-219, 21-221 D, 21-221 S, 21-222 D, 21-222 S, 21-224, 21-225, 21-226, 22-112, 22-301, 22-303, 22-308, 22-310, 22-401, 22-405, 22-411 S, and 22-411 D).
- Multi-level monitoring wells were installed at boreholes locations 21-221, 21-222 and 22-411 in a separately augered hole.
- A summary of existing wells as well as wells installed during this field program are provided in **Tables 1A and 1B**.

## 4.7 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 surging the well screen and removing up to ten well volumes using a Waterra® Hydrolift Tubing Actuator and dedicated Waterra® pumps (tubing with foot valves), or by purging the well dry three times if the well was considered a “low yield” monitoring well.

The monitoring wells were allowed to recharge for at least 24 hours to allow the groundwater levels to equilibrate.

## 4.8 Groundwater: Monitoring and Sample Collection

During purging, qualitative observations were made of water colour, clarity, and the presence of hydrocarbon sheen or odour. Purging was completed by pumping at least three well volumes or, where the well was considered a “low-yield” monitoring well, by purging at least one half of the well volume.

Groundwater samples were collected using a low flow purging methodology with a peristaltic pump. The low flow purging technique was used to collect representative samples of the groundwater in the formation adjacent to the well screen without any undue disturbance of the well sediment.

The low flow groundwater sampling method used involved purging each well at a constant pumping rate (between 0.1 and 1 L/min) using dedicated 6.3 mm (1/4 inch) diameter low density polyethylene (LDPE) tubing attached to a peristaltic pump. The peristaltic pump was connected to a flow-through cell containing a multi-parameter meter to measure field parameters (groundwater temperature, pH, and conductivity) during purging and prior to sampling. A groundwater sample was collected once the groundwater level was stable and after the water quality parameters stabilized over three successive measurement intervals.

Water quality parameters were taken obtained using the Horiba U-52 water quality meter. Specifications for the water quality meter are summarized in the following table:

Parameter	Measurement Range	Precision	Accuracy
pH	0.00 to 14.00 pH	0.01 pH	±0.1 pH
Conductivity	0.00 to 100 mS/cm	0.000 to 0.999 mg/cm: 0.001 mS/cm 1.00 to 9.99 mS/cm: 0.01 mS/cm 10.0 to 99.9 mS/cm: 0.1 cm	± 1%
Temperature	-10 to 55 °C	0.01 °C	± 0.3 +0.005  t  °C
Oxidation Reduction Potential	-2000 mV to +2000 mV	1 mV	± 15 mV
Dissolved Oxygen	0 to 50 mg/L	0.01 mg/L	0 to 20 mg/L: ± 0.2 mg/L 20 to 50 mg/L: ± 0.5 mg/L

Parameters measured on a continuous basis included: temperature, conductivity, pH, dissolved oxygen, turbidity, and Oxidation Reduction Potential. The methodology consisted of achieving three consecutive readings for temperature, conductivity, pH and dissolved oxygen with a maximum deviation of 10%, then collecting a representative groundwater sample. Following the stabilization of water quality parameters, laboratory-supplied containers were filled with the groundwater samples by means of the peristaltic pump used for the low flow purging. The groundwater monitoring details are provided in **Table 3**.

Groundwater samples collected for dissolved metals including hydride forming metals, hexavalent chromium and mercury were field-filtered using a Waterra™ 0.45 µm filter. 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**. Trip blanks were submitted for the analysis of BTEX on May 25, 2021, and June 2, 2021.

## 4.9 Sediment: Sampling

No sediment samples were collected as part of this investigation.

## 4.10 Analytical Testing

The contact information for the analytical laboratory: AGAT Laboratories Ltd., 5835 Coopers Avenue, Mississauga, Ontario, L4Z 1Y2 (Hina Siddiqui, Project Manager 905-712-5100 and Travis Judd, Project Manager, 905-712-5130).

The contact information for the analytical laboratory: Bureau Veritas, 100-36 Antares Drive, Nepean, Ontario, K2E 7W5 (Katherine Szozda, Project Manager 613-408-5043)

These analytical laboratories are 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).

## 4.11 Single Well Response Tests

Single-well response testing was carried out by Golder at monitoring wells BH21-201, BH21-202, BH21-204, BH21-213, BH21-215, BH21-221D and BH21-221S between June 2 and 29, 2021 to estimate the bulk hydraulic conductivity of the soils or bedrock adjacent to the screened intervals, discussed in Section 5.4. This testing was carried out by rapidly inserting or removing a solid slug into the well and monitoring the subsequent water level recovery. The hydraulic conductivity of the screened material was interpreted from the water level displacement data using the Hvorslev (1951) method:

$$\ln(H_0) - \ln(h) = \frac{2KLt}{r_c^2 \ln(r_e/r_w)}$$

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

Where:

- K = hydraulic conductivity
- $r_c$  = 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)

## 4.12 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.

## 4.13 Elevation Surveying

Elevations were geodetically surveyed in-house on May 28, June 9 and June 25, 2021 and January 27, May 9, June 10 and June 21, 2022 for 26 monitoring wells on Site (22-112, 22-301, 22-303, 22-308, 22-310, 22-401, 22-405, 22-411 S, 22-411 D, 21-202, 21-213, 21-215, 21-218, 21-219, 21-221 D, 21-221 S, 21-222 D, 21-222 S, 21-224, 21-225, 21-226, MW16-1A, MW16-11, MW16-13). 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 masl, datum: NAD 1983 (Canadian Spatial Reference System 2010), Zone: Modified TM Zone 09, Geoid Model: CGVD 1928.

## 4.14 Quality Assurance and Quality Control Measures

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.
- The collection of field duplicate samples at a minimum frequency of one duplicate for every ten samples.
- 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.1 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. Sampling equipment in contact with soil, groundwater, or sediment was cleaned by mechanical means; washed with a phosphate-free, laboratory-grade detergent (e.g., LiquiNox) and, if necessary, an appropriate desorbing wash solution; 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 the primary and duplicate samples submitted for analysis by media.

Media	Analysis	Sampling Date	Sample and Duplicate
Soil	PHCs, BTEX and PAHs	06/02/2021	21-205 SA4 and 21-205 SA44
	Metals, hydride-forming metals, ORPs	05/28/2021	21-215 SA3 and 21-215 SA33
	PHCs, BTEX, PAHs, metals, hydride-forming metals, ORPs	05/06/2021	BH21-217 SA7 and BH21-217 SA77
	PCBs	05/20/2021	21-221 SA6 and 21-221 SA66
	PHCs, BTEX, VOCs, PAHs, metals, hydride-forming metals, ORPs	05/10/2021	BH21-224 SA10 and BH21-224 SA100
	PHCs, BTEX, VOCs, PAHs, metals, hydride-forming metals, ORPs	05/03/2021	21-225 SA4 and 21-225 SA44
	PHCs, BTEX, PAHs, metals	2022-03-29	22-111 SA01B and 22-111 DUP01
	PHCs, BTEX, PAHs, metals	2022-03-02	22-411 SA2 and 22-411 SA22
Groundwater	PHCs, BTEX, VOCs, PAHs, PCBs, hydride-forming metals, metals, ORPs	05/25/2021	21-219 and DUP-1
	PHCs, BTEX, VOCs, PAHs, hydride-forming metals, metals, ORPs	05/25/2021	21-222S and DUP-2
	PHCs, BTEX, PAHs	08/04/2022	22-411D and DUP-1

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Checked by: ND

## 5.0 SUBSURFACE CONDITIONS

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

### 5.1 Geology

The soil conditions encountered throughout the site generally consisted of topsoil and/or fill material overlying a native overburden consisting of sands, localized silty clays, glacial till and interbedded sand and gravel deposits. Surficial topsoil exists at all of the locations and ranges in thickness between 0.15 to 0.46 m. The topsoil overlies a layer of fill consisting of sand to silty sand containing organic matter, some gravel and some clay layers to varying depths between 0.2 to 1.2 m bgs. At some locations, surficial fill was underlain by an intermediate fill layer consisting of silty clays, silty sands and sands with some organic matter between depths of 2.1 to 8.4 m bgs. Some debris was noted in the fill materials, including asphalt and/or concrete fragments (21-213, 21-214, 21-224, 22-109, 22-113, 22-401) and brick (21-222, 22-406, 22-407, 22-408). Black staining (21-214, 21-226) and debris including brick, wood and concrete fragments (21-222) were observed in intermediate fill at some locations.

The fill was underlain by native deposits of highly fissured silty clays to clays with a weathered crust and sensitive silty clay between depths of 0.9 to 5.3 m bgs and/or silty sand glacial till consisting of various amounts of cobbles, boulders and gravel in a matrix of silty sand to sandy silt which were encountered between depths of 0.8 to

16.92 m bgs. In the southwestern portion of the site (Boreholes 21-201 to 21-208), the glacial till is underlain by deposits of interlayered gravelly sand, silty sands and sandy gravels that were encountered at depths between 6.9 to 14.6 m bgs. A layer of buried topsoil was observed between 0.8 to 1.2 m bgs underlying fill material at 21-221 and between 2.3 and 2.4 m bgs at 21-226.

Bedrock, consisting of shaley nodular limestone, with thin shale partings, was proven using diamond drilling techniques while recovering NQ/HQ sized core at six of the thirty borehole locations at depths between approximately 8.3 to 16.9 m bgs. Subsurface soil conditions encountered are provided in the Record of Borehole logs in **Appendix B**.

## 5.2 Groundwater: Elevations and Flow Direction

Shallow monitoring wells 22-112, 22-301, 22-303, 22-308, 21-201, 21-204, 21-218, 21-224, and 21-226 were used in the interpretation of shallow groundwater contours and shallow groundwater flow direction. Deep monitoring wells 22-401, 22-405, 22-411S, 22-411 D, 21-201, 21-213 and 21-215 were used in the interpretation of deep groundwater contours and deep groundwater flow direction. Groundwater elevations from 21-221D was not used in the interpretation of deep groundwater flow contours or direction or as the screen was installed in a different stratigraphic unit (bedrock) at this location.

Any temporary fluctuation in water levels on the Phase Two Property is not anticipated to affect the conclusions of the Phase Two ESA.

The base of the shallow groundwater monitoring well screens were installed at elevations ranging from approximately 70.07 to 79.23 m asl (3.79 to 23.17 m bgs). The base of the existing deep groundwater monitoring well screens were installed at elevations ranging from approximately 50.51 to 69.96 m asl (4.37 to 23.17 m bgs). The screened media consisted generally of silty sand, sand, sandy clay to silty clay at the both the shallow and deep wells, with the exception of shallow wells 21-222S and 21-224 which were screened in fill material (sand and silty sand), 21-219, 21-225 and 21-226 which were screened in fill material and native silty clay or silty sand, and deep wells 21-202, 21-221D, 22-405 and 22-411D which were screened in limestone bedrock.

The elevations of the potentiometric surface at each monitoring well are summarized in **Table 4**. Groundwater elevations ranged from 63.04 to 79.83 m asl (3.79 to 23.17 m bgs) on August 4, 2022. Based on the interpreted groundwater elevation contours presented in **Figures 2A and 2B**, the inferred direction of shallow and deep groundwater flow in overburden is locally to the northeast towards the O-train rock cut; and locally influenced by the steep drop in elevation to the west of MW16-1A.

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. Based on the shallow groundwater elevations, it appears that there is some level of dewatering occurring beneath the former building footprint. 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 on the Site should be expected. Given the limited number of monitoring events, seasonal trends could not be identified; however shallow groundwater water levels are typically highest following the spring recharge and decline throughout the summer and fall months into the winter.

## 5.3 Groundwater: Hydraulic Gradients

### Horizontal Hydraulic Gradients

The average horizontal hydraulic gradient was estimated for groundwater flow in overburden within the overburden consisting of silty sand fill and a sandy clay to silty clay to clay hydrostratigraphic unit based on water levels collected on August 4, 2022, and the inferred shallow and deep groundwater contours are presented on **Figure 2A** and **Figure 2B** respectively. The horizontal hydraulic gradient for groundwater flow was calculated to be between 0.016 m/m and 0.032 m/m in the potentiometric groundwater surface estimated from the groundwater levels from the shallow wells and between 0.023 to 0.038 m/m in the potentiometric groundwater surface estimated from groundwater levels from the deep wells. Variability in hydraulic gradients calculated at the Phase Two property may be related to the presence of foundations/buried structure, bedding materials, and buried services at the Site.

### Vertical Hydraulic Gradients

Groundwater elevations are shown on **Figures 2A and 2B**. The vertical hydraulic gradient was negligible at 0.05 m/m downward groundwater at 22-411, and 0.008 m/m upward groundwater flow at 21-221.

## 5.4 Hydraulic Conductivity

The hydraulic conductivity test locations and results are summarized in the table below.

### Hydraulic Conductivity Test Results

Monitoring Well ID	Screened Interval (m bgs)	Screened Lithology	Hydraulic Conductivity (m/s)
BH21-201	8.84 to 11.89	Gravelly sand to sandy gravel	$2 \times 10^{-4}$
BH21-202	17.22 to 20.27	Limestone bedrock	$4 \times 10^{-5}$
BH21-204	6.10 to 9.14	Glacial till	$1 \times 10^{-5}$
BH21-213	9.14 to 12.19	Glacial till/gravelly sand	$8 \times 10^{-6}$
BH21-215	4.01 to 7.06	Glacial till	$3 \times 10^{-6}$
BH21-221D	14.58 to 23.11	Limestone bedrock	$1 \times 10^{-6}$
BH21-221S	10.41 to 13.46	Glacial till, sand	$1 \times 10^{-4}$

#### Notes:

m bgs = metres below ground surface

m/s = metres per second

The estimated hydraulic conductivities are consistent with typical values<sup>1</sup> for sand and gravel ( $10^{-1}$  to  $10^{-4}$  metres per second [m/s]) and limestone bedrock ( $10^{-5}$  to  $10^{-7}$  m/s). The measured hydraulic conductivity in the glacial till is at the high end of reported hydraulic conductivities for this type of unit ( $10^{-6}$  and  $10^{-12}$  m/s) and may be related to the predominance of sandy materials with the till.

<sup>1</sup> Freeze, R. A. & Cherry, J. A. (1979). Groundwater. Englewood Cliffs, NJ, Prentice-Hall,



## 6.0 RESULTS

### 6.1 Coarse Soil Texture

Four soil samples representative of glacial till consisting of silty sand to sandy silt (21-208 SA9 (6.1-6.7 m bgs), 21-210 SA9 (6.1-6.9 m bgs), 21-212 SA10 (6.9-7.5 m bgs) and 21-217 SA10 (6.9-7.5 m bgs)) and four soil samples that were representative of glacial till consisting of silty clay (21-208 SA5 (3.1-3.7 m bgs), 21-210 SA5 (3.1-3.7 m bgs), 21-212 SA4 (2.3-2.9 m bgs) and 21-217 SA4 (2.3-2.9 m bgs)) were submitted to Golder's geotechnical laboratory in Ottawa, Ontario for grain size analysis using sieves and hydrometer. The grain size analysis results are provided in **Appendix D**. These samples were considered to be sufficient, given that native soil encountered during the Phase II ESA was generally homogeneous, with coarse textured sands representing greater than one third of the soil at the property by volume.

The water table is generally located within the silty sand or fill materials and the dominant contaminant transport in groundwater would likely to be dominated by these coarse-grained soils. Accordingly, the MECP generic site condition standards for coarse textured soils are applicable.

### 6.2 Soil: Field Screening

All soil samples were field screened for visual and olfactory evidence of environmental impacts including staining and odours. Headspace vapour measures were conducted for all soil samples collected as part of this investigation and are provided in the Record of Borehole sheets in **Appendix B**.

### 6.3 Soil: Quality

Table 2 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 5e. Laboratory Certificates of Analysis for the soil samples are included in Appendix E.

A summary of the number of soil samples analyzed and the number of soil samples exceeding the MECP Table 3 Site Standards is provided below.

Parameter	Number of soil samples analyzed in 2021-22	Number of historical soil samples analyzed	Number of soil samples exceeding the Table 3 Site Standards (number in brackets represent historical soil samples)
Metals (including hydrides)	57	40	9 (0) <sup>a</sup>
Hot-water soluble Boron	53	-	0
Hexavalent chromium	53	31	0 (0)
Mercury	57	31	(2)
Methyl Mercury	3	-	0
PCBs	8	18	0 (0)
PAHs	71	37	2 (4)
VOCs	12	30	0 (0)
PHCs	66	27	0 (0)
BTEX	66	33	1 (0)
Surface soil pH	-	17	0 (6)
Subsurface soil pH	-	28	0 (13)
Energetics	-	8	(0)
Forensic Phenols	-	32	(0)
OC Pesticides	-	14	(0)
Cyanide	-	20	(0)

**Notes:**

<sup>a</sup> Cobalt and vanadium are of natural origin in the marine clays of the Ottawa region and not considered to be exceedances of MECP Table 3 Site Standards.

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Checked by: ND

A summary of exceedances in soil of the MECP Table 3 Site Standards is provided below:

**22-111:** Concentrations of barium, cobalt and vanadium were detected in soil from the borehole between depths of 1.52 to 2.13 m bgs collected on March 29, 2022, in exceedance of MECP Table 3 Site Standards. Barium, cobalt and vanadium are of natural origin in natural marine clays of the Ottawa region, and therefore are not considered to be exceedances.

**22-303:** Concentrations of barium, cobalt and vanadium were detected in soil from the borehole between depths of 0.76 to 1.37 m bgs collected on April 5, 2022, in exceedance of MECP Table 3 Site Standards. Barium, cobalt and vanadium are of natural origin in natural marine clays of the Ottawa region, and therefore are not considered to be exceedances.

**22-310:** Concentrations of barium, cobalt and vanadium were detected in soil from the borehole between depths of 0.76 to 1.37 m bgs collected on March 29, 2022, in exceedance of MECP Table 3 Site Standards. Barium, cobalt and vanadium are of natural origin in natural marine clays of the Ottawa region, and therefore are not considered to be exceedances.

**22-404:** Concentrations of lead were detected in soil from the borehole between depths of 0 to 0.61 m bgs collected on March 1, 2022, in exceedance of MECP Table 3 Site Standards.

**22-405:** Concentrations of fluoranthene, benzo(a)anthracene, benzo(b)fluoranthene, and benzo(a)pyrene were detected in soil from the borehole between depths of 1.52 to 2.13 m bgs collected on February 25, 2022, in exceedance of MECP Table 3 Site Standards.

**22-406:** Concentrations of anthracene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, and dibenzo(a,h)anthracene were detected in soil from the borehole between depths of 1.52 to 2.13 m bgs collected on March 1, 2022, in exceedance of MECP Table 3 Site Standards.

**22-407:** Concentrations of lead were detected in soil from the borehole between depths of 1.52 to 2.13 m bgs collected on March 7, 2022, in exceedance of MECP Table 3 Site Standards.

**22-410:** Concentrations of lead were detected in soil from the borehole between depths of 0.76 to 1.37 m bgs collected on March 7, 2022, in exceedance of MECP Table 3 Site Standards.

**22-412:** Concentrations of benzene were detected in soil from the borehole between depths of 0.76 to 1.37 m bgs collected on March 1, 2022, in exceedance of MECP Table 3 Site Standards.

**21-201:** Concentrations of arsenic, lead and mercury were detected in soil from the borehole 21-201 between depths of 0 to 0.6 m bgs and of thallium between 3.8 to 4.4 m bgs collected on June 8, 2021 in exceedance of MECP Table 3 Site Standards.

**21-202:** Concentrations of mercury was detected in a soil sample from the borehole 21-202 between depths of 0 to 0.6 m bgs collected on May 25, 2021 in exceedance of MECP Table 3 Site Standards. The concentration of mercury analyzed in a soil sample collected between depths of 6.1 to 6.9 m bgs at borehole 21-202 on May 25, 2021 and methyl mercury analyzed in the surficial soil between depths of 0 to 0.6 m bgs from a soil sample collected manually on June 16, 2021 in the vicinity of borehole 21-201 (labelled 21-202 SA1) were both detected at concentrations below Table 3 standards.

**21-210:** Concentrations of cobalt and vanadium were detected in soil from the borehole 21-210 between depths of 0.8 to 1.4 m bgs on June 2, 2021, in exceedance of MECP Table 3 Site Standards. Cobalt and vanadium are of natural origin in natural marine clays of the Ottawa region, and therefore are not considered to be exceedances.

**SSA4:** Concentrations of arsenic, lead and mercury were detected in soil from the surficial sample SSA4 between depths of 0 to 0.6 m bgs on June 25, 2021, in exceedance of MECP Table 3 Site Standards.

**SSA6:** Concentrations of mercury was detected in soil from the surficial sample SSA6 between depths of 0 to 0.6 m bgs on June 25, 2021, in exceedance of MECP Table 3 Site Standards.

In addition, a summary of historical exceedances in soil of the MECP Table 3 Site Standards is provided below. A summary of the historical soil analytical results is provided in **Table 5B**.

**BH8:** Concentration of vanadium was detected in soil from the borehole BH8 between depths of 0.3 to 0.6 m bgs on July 26, 2017, in exceedance of MECP Table 3 Site Standards. Vanadium is of natural origin in natural marine clays of the Ottawa region, and therefore are not considered to be exceedances.

**MW17-05:** Concentration of vanadium was detected in soil from the borehole MW17-05 between depths of 0 to 0.9 m bgs on July 26, 2017, in exceedance of MECP Table 3 Site Standards. The concentration of vanadium in a soil sample collected on July 26, 2017 between depths of 2.1 to 3.05 m bgs at borehole MW17-05 satisfied MECP Table 3 Site Standards. Vanadium is of natural origin in natural marine clays of the Ottawa region, and therefore are not considered to be exceedances.

**MW17-07:** Concentration of mercury was detected in soil from the borehole MW17-07 between depths of 0 to 1.5 m bgs on July 26, 2017, in exceedance of MECP Table 3 Site Standards. The concentration of mercury in a soil sample collected on July 26, 2017 between depths of 4.6 to 6.1 m bgs at borehole MW17-07 satisfied MECP Table 3 Site Standards.

**MW17-08:** Concentration of mercury was detected in soil between depths of 0 to 1.5 m bgs at borehole MW17-08 from a sample collected on July 26, 2017, in exceedance of MECP Table 3 Site Standards. The concentration of mercury in both the primary and duplicate samples collected from depths of 1.5 to 2.4 m bgs at borehole MW17-08 on July 26, 2017 satisfied MECP Table 3 Site Standards.

**MW16-10:** Concentration of several PAHs were detected in soil from the borehole MW16-10 between depths of 0.8 to 1.5 m bgs on August 2, 2016, in exceedance of MECP Table 3 Site Standards.

**TP16-1:** The concentrations of benzo(a)pyrene and fluoranthene in soil between depths of 4.7 and 5.8 m bgs collected on July 28, 2016 from test pit TP16-1 were in exceedance of MECP Table 3 Site Standards.

**TP16-2:** The concentration of fluoranthene in soil between depths of 4.1 and 5.2 m bgs collected on July 28, 2016 from test pit TP16-2 was in exceedance of MECP Table 3 Site Standards.

**TP16-4:** The concentration of several PAHs detected in soil from the test pit TP16-4 between depths of 2.3 to 3.0 m bgs on July 28, 2016 from test pit TP16-4, in exceedance of MECP Table 3 Site Standards.

Several surface and subsurface soil samples had pH levels elevated above the allowable limits for Table 3 Standards in the vicinity of the former SJCB. It is inferred that these exceedances are related to concrete debris in the fill material from building demolition. Golder understands that this soil with elevated pH was to be removed through remedial activities and that no elevated pH is to remain following remediation.

## 6.4 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 6C**, along with the applicable MECP Table 3 Site condition standards. Laboratory certificates of analysis for groundwater are provided in **Appendix E**.

Golder completed sampling of monitoring wells at the Site between May 25, 2021, and June 9, 2021. A summary of the number of groundwater samples analyzed and number of samples exceeding the MECP Table 3 Site condition standards is provided below.

Parameter	Number of groundwater samples analyzed in 2021-22	Number of historical groundwater samples analyzed	Number of groundwater samples exceeding the Table 3 Site Standards (number in brackets represent historical soil samples)
Metals (including hydrides)	17	22	0 <sup>a</sup> (0) <sup>b</sup>
Hg	14	22	0 (0)
Hexavalent chromium	12	5	0 (0)
PHC F1-F4	17	20	0 (0)
BTEX	21	23	0 (0)
PAHs	19	26	0 (0)
PCBs	2	10	0 (0)
VOCs	14	20	0 (0)
Energetics	-	5	(0)
Phenols	-	11	(0)
OC Pesticides	2	5	(0)
Cyanide	-	13	(0)

**Notes:**

Bracketed values: Number of historical groundwater samples exceeding MECP Table 3 Site Standards

<sup>a</sup> Concentrations of lead were detected in groundwater in a sample collected from monitoring well 21-218 on May 25, 2021 were in exceedance of MECP Table 3 Site Standards, which were not verified when resampled on June 9, 2021.

<sup>b</sup> Concentrations of copper and lead were in exceedance of MECP Table 3 Site Standards in a groundwater sample collected from MW16-1 on March 17, 2016. This monitoring well was destroyed during construction and replaced by MW16-1A installed in its vicinity in 2016. Resampling at MW16-1A in 2017 and 2021 did not verify these exceedances.

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Checked by: ND

A summary of exceedances in groundwater of the MECP Table 3 Site Standards in samples collected as part of this investigation and previous investigations is provided below:

**21-218:** Concentrations of lead were detected in groundwater in the sample collected on May 25, 2021 from monitoring well, 21-218, in exceedance of MECP Table 3 Site Standards. This well was resampled on June 9, 2021 and the concentration of lead was below the detection limit in groundwater. Accordingly, this result is not considered to represent an exceedance of MECP Table 3 Site Standards.

**MW16-1:** Concentrations of copper and lead were detected in groundwater in the sample collected on March 17, 2016, from monitoring well, MW16-1, in exceedance of MECP Table 3 Site Standards. This well was reportedly destroyed due to construction in 2016 and replaced with MW16-1A. Monitoring well 21-222S was installed during the present investigation to assess soil and groundwater quality in the vicinity of MW16-1. Groundwater samples collected at monitoring wells in the vicinity of the former MW16-1 including 21-222 and MW16-1A as part of the present investigation showed no exceedances in groundwater. Accordingly, this result is not considered to represent an exceedance of MECP Table 3 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, surface water or in any groundwater or surface water samples. Monitoring for free phase product was conducted during groundwater sample collection. No evidence of free product in groundwater was observed during groundwater sampling between May 25, 2021, and June 9, 2021.

## 6.5 Sediment: Quality

No sediment samples were collected as part of this investigation.

## 6.6 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 soil and groundwater sampling. 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 soil and groundwater samples 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 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 E. The analytical laboratory did not qualify any of the analytical results. The RPD calculations are provided in Tables 7A and 7B.

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

## 7.0 PHASE TWO CONCEPTUAL SITE MODEL

The Phase Two Conceptual Site Model (CSM) is presented in the following sections according to the requirements outlined in O. Reg.153/04. The Phase Two CSM is based on the results of the Phase One and Two ESAs carried out by Golder (2020 and 2021). Golder has relied, in part, on historical investigations carried out at the Site by Stantec in 2016 and 2017 and Paterson in 2017. Golder has reviewed these reports and not identified any quality assurance or quality control issues and sampling and analytical methods used correspond to the requirements of Ontario Regulation 153/04, as amended, and the Protocol for Analytical Methods used in the Assessment of Properties under Part XV.1 of the *Environmental Protection Act*, Laboratory Services Branch, Ministry of the Environment, July 1, 2011.

## 7.1 Background

The Site consists of a 16.63-hectare parcel of commercial and parkland land to be developed for institutional purposes (a new development for a hospital). The Site is an irregular shaped parcel of land, located between Carling Avenue and Prince of Wales Drive excluding the northern section located immediately southwest of intersection between Carling Avenue and Preston Street. There are two parcels of land associated with the Site, located at 930 Carling Avenue: part of Parcel B and Parcel C, as defined in the Phase One ESA. These two parcels of land are currently under the management of PSPC and leased to the Ottawa Hospital.

The Site is shown on **Figure 1A**, potentially contaminating activities (PCAs) (**Figure 1B**) and the resulting areas of potential environmental concern (APECs) are shown on **Figure 1C**. The APECs identified on Site are summarized below. Section 43.1 of O. Reg. 153/04 is not applicable to the Site. No water bodies or areas of natural significance, as defined by Section 41 of O. Reg. 153/04, were identified on or within the Phase One Study Area.

Area of Potential Environmental Concern <sup>1</sup>	Location of APEC on Phase One Property	Potentially Contaminating Activity <sup>2</sup>	Location of PCA	Contaminants of Potential Concern <sup>3</sup>	Media Potentially Impacted
<b>APEC 1:</b> PCA ID # D – Demolition debris from former office building on Parcel B.	Former building footprint on Parcel B	Demolition debris from office building on Parcel B	On-Site	PHCs, BTEX, PAHS, Metals and Inorganics	Soil and Groundwater
<b>APEC 2:</b> PCA ID # C – Building demolition debris in fill at the location of the former SJCB building.	Former SJCB building footprint on Parcel C	Building demolition debris in fill layer associated with former SJCB building footprint	On-Site	PHCs, BTEX, VOCs, PAHS, Metals, Inorganics, Energetics and Phenol	Soil and Groundwater
<b>APEC 3:</b> PCA ID # B1, B2, B3 – Concrete Pad-mounted transformers	Adjacent north and west of SJCB West Annex	PCA 55: Electricity Generator, Transformation and Power Station (Hydro Ottawa Sub-Station)	On-Site	PCBs, PHC, and BTEX	Soil and Groundwater
<b>APEC 4:</b> PCA ID # E – Former hydraulic oil elevator located in West Annex of SJCB.	SJCB West Annex on Parcel C	PCA 28: Gasoline and Associated Products Storage in Fixed Tanks	On-Site	PHCs, BTEX	Soil and Groundwater
<b>APEC 5:</b> PCA ID # F1 and F2 – Reported glycol leak from parking ramp system of SJCB	East portion of former SJCB East Annex	Reported glycol leak from parking ramp system of SJCB	On-Site	Glycol	Soil and Groundwater
<b>APEC 6:</b> PCA ID # G1, G2 and G3 – Three former diesel ASTs reportedly associated with SJCB.	Former SJCB on Parcel C	PCA 28: Gasoline and Associated Products Storage in Fixed Tanks	On-Site	PHCs, BTEX	Soil and Groundwater

Area of Potential Environmental Concern <sup>1</sup>	Location of APEC on Phase One Property	Potentially Contaminating Activity <sup>2</sup>	Location of PCA	Contaminants of Potential Concern <sup>3</sup>	Media Potentially Impacted
<b>APEC 7:</b> PCA ID # not applicable ('Various Across Site') – Imported fill materials associated with various building construction and site development activities across the Site (both parcels).	Entire Site (Parcels B and C)	PCA 30: Importation of Fill Material of Unknown Quality (not indicated on Figure 2)	On-Site	PHCs, BTEX, PAHS, Metals and Inorganics	Soil and Groundwater
<b>APEC 8:</b> PCA ID # not applicable (Entire area of Parcel C): Application of pesticides associated with former farming activities on Parcel C	Entire area of Parcel C	PCA 40: Pesticides (including Herbicides, Fungicides and Anti-Fouling Agents) Manufacturing, Processing, Bulk Storage and Large-Scale Applications	On-Site	OC Pesticides	Soil

**Notes:**

- 1 Area of potential environmental concern means the area on, in or under a phase one property where one or more contaminants are potentially present, as determined through the phase one environmental site assessment, including through, •(a) identification of past or present uses on, in or under the phase one property, and •(b) identification of potentially contaminating activity
- 2 Potentially contaminating activity means a use or activity set out in Column A of Table 2 of Schedule D that is occurring or has occurred in a phase one study area
- 3 Contaminants of potential concern specified using the method groups as identified in the "Protocol for in the Assessment of Properties under Part XV.1 of the Environmental Protection Act, March 9, 2004, amended as of July 1, 2011
  - ORP – other regulated parameters (hexavalent chromium, mercury and hot water soluble boron)
  - PAH – polycyclic aromatic hydrocarbons
  - PHC – petroleum hydrocarbon fractions F1-F4
  - VOC – volatile organic compounds

The APECs are shown on **Figure 1C**. Based on the borehole logs, fill material was encountered frequently as part of this investigation. **Figure 1D** shows the borehole and monitoring well locations relative to the identified location of the APECs.

It is understood that the Phase Two Property is to be redeveloped with residential land uses (hospital development).

## 7.2 Stratigraphy

Based on available mapping, the stratigraphy at the Site consists of Till, plain with local relief (<5 m) on the northern portion of the Site (Parcel B). The stratigraphy for Parcel C consists of shallow bedrock (limestone and dolostone) on the northern portion. The depth to bedrock across the Site is variable and generally decreases from south to north. Southeast corner of Parcel C has inferred bedrock depth between 10 to 15 m bgs whereas central portion of the Site (in the vicinity of SJCB) has shallow bedrock is approximately 6 to 7 m bgs.

The soil conditions encountered throughout the site generally consisted of topsoil and fill material overlying a native overburden consisting of sands, silts and clays. Surficial topsoil was encountered between depths of 0 to



0.5 m bgs overlying a layer of I fill consisting of sand to silty sand containing organic matter, some gravel and some clay layers to varying depths between 0.2 to 1.2 m bgs. At some locations, surficial fill was underlain by an intermediate fill layer consisting of silty clays, silty sands and sands with some organic matter between depths of 2.1 to 8.4 m bgs. Some debris was noted in the fill materials, including concrete fragments (21-213, 21-214, 21-224, 22-109, 22-113, 22-401) and brick (21-222, 22-406, 22-407, 22-408). Black staining (21-214, 21-226) and debris including brick, wood and concrete fragments (21-222) were observed in intermediate fill at some locations.

The surficial fill was underlain by highly fissured silty clays to clays with a weathered crust between depths of 0.9 to 5.3 m bgs and/or silty sand glacial till consisting of native sands to sandy gravels between depths of 0.8 to 14.0 m bgs overlying gravelly silty sands, sands, silty sands to sandy gravels that extend to depths between 6.9 to 16.9 m bgs. A layer of native topsoil was observed between 0.8 to 1.2 m bgs underlying fill material at 21-221 and between 2.3 and 2.4 m bgs at 21-226. A layer of sand with trace gravel was interbedded within glacial till between 14.5 to 15.3 m bgs at 21-224.

Bedrock, consisting of shaley nodular limestone, with thin shale partings, was encountered at six of the 30 borehole locations at depths between approximately 8.3 to 21.6 m bgs. Subsurface soil conditions encountered are provided in the Record of Borehole sheets in **Appendix B**.

### 7.3 Hydrogeology

Shallow monitoring wells 22-112, 22-301, 22-303, 22-308, 21-201, 21-204, 21-218, 21-224, and 21-226 were used in the interpretation of shallow groundwater contours and shallow groundwater flow direction.

Deep monitoring wells 22-401, 22-405, 22-411S, 22-411 D, 21-201, 21-213 and 21-215 were used in the interpretation of deep groundwater contours and deep groundwater flow direction. Groundwater elevations from 21-221D was not used in the interpretation of deep groundwater flow contours or direction or as the screen was installed in a different stratigraphic unit (bedrock) at this location.

Any temporary fluctuation in water levels on the Phase Two Property is not anticipated to affect the conclusions of the Phase Two ESA.

The base of the shallow groundwater monitoring well screens were installed at elevations ranging from approximately 70.70 to 79.83 m asl (3.79 to 12.19 m bgs). The base of the existing deep groundwater monitoring well screens were installed at elevations ranging from approximately 50.51 to 69.96 m asl (4.37 to 23.17 m bgs). The screened media consisted generally of silty sand, sand, sandy clay to silty clay at the both the shallow and deep wells, with the exception of shallow wells 21-222S and 21-224 which were screened in fill material (sand and silty sand), 21-219, 21-225 and 21-226 which were screened in fill material and native silty clay or silty sand, and deep wells 21-202, 21-221D, 22-405 and 22-411D which were screened in limestone bedrock.

The elevations of the potentiometric surface at each monitoring well are summarized in **Table 4**. Groundwater elevations ranged from 63.04 to 79.83 m asl (3.79 to 23.17 m bgs) on August 4, 2022. Based on the interpreted groundwater elevation contours presented in **Figures 2A and 2B**, the inferred direction of shallow and deep groundwater flow in overburden is locally to the northeast towards the O-train rock cut; however, the shallow groundwater flow appears to be locally influenced by the former SJCB building and the steep drop in elevation to the west of MW16-1A.

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. Based on the shallow groundwater elevations, it appears that there is some level of dewatering occurring beneath the former building footprint. 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 on the Site should be expected. Given the limited number of monitoring events, seasonal trends could not be identified; however shallow groundwater water levels are typically highest following the spring recharge and decline throughout the summer and fall months into the winter.

Single-well response testing was carried out by Golder at monitoring wells BH21-201, BH21-202, BH21-204, BH21-213, BH21-215, BH21-221D and BH21-221S between June 2 and 29, 2021 to estimate the bulk hydraulic conductivity of the soils or bedrock adjacent to the screened intervals. This testing was carried out by rapidly inserting or removing a solid slug into the well and monitoring the subsequent water level recovery. The hydraulic conductivity of the screened material was interpreted from the water level displacement data using the Hvorslev (1951) method. The hydraulic conductivity of the aquifer was calculated to be between  $8 \times 10^{-6}$  and  $2 \times 10^{-4}$  metres per second (m/s) in sand and gravel and between  $1 \times 10^{-6}$  and  $4 \times 10^{-5}$  in bedrock.

Based on the hydraulic conductivity and the horizontal gradient, the calculated linear groundwater velocity ranges from 0.8 to 29 m/year in sand and gravel and between 0.1 and 4.1 m/year in bedrock. On a local scale, the actual groundwater velocity will vary considerably based upon variations in hydraulic gradient and grain size, and lateral continuity of the various strata.

## 7.4 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 on **Figures 3A through H (plan view) to 5A, 5B, 6 and 7 (cross-sections)**.

### Fill 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, polycyclic aromatic hydrocarbons (PAH), and other regulated parameters including mercury, hexavalent chromium and hot-water soluble boron.

Surficial fill was generally composed of silty sand to sand, containing organic matter, some gravel and some clay layers. Some debris, including concrete fragments (21-213, 21-214, 21-224, 22-109, 22-113, 22-104) and brick (21-222, 22-406, 22-407, 22-408). Intermediate fill layers were generally composed of silty clays, silty sands and sands with some organic matter. Black staining or mottling (21-214, 21-226) and debris including brick, wood and concrete fragments (21-222) were observed in intermediate fill at some locations.

## Metals

The concentrations of arsenic and lead were in exceedance of MECP Table 3 Site Standards in surficial fill between depths of 0 to 0.6 m bgs at borehole 21-201 and the concentration of lead exceeded MECP Table 3 Standards in soil samples collected from the surface up to a depth of 2.13 m bgs in boreholes 22-404, 22-407, and 22-410. The metal impacts observed in surficial fill at 21-201, 22-404, 22-407 and 22-410 are likely related to poor fill quality. Additional surficial soil samples between depths of 0 to 0.6 m bgs at SSA4 and SSA6 in the vicinity of 21-201 were submitted for metals analysis and were found to have concentrations of select metals parameters (arsenic and lead at SSA4) in exceedance of MECP Table 3. The metals impacts at 21-201 and SSA4 were horizontally delineated by the Site boundary to the west and by the analytical results from samples collected MW17-06 (0-0.9 m bgs) on July 26, 2017 and by the Site boundary to the north, to the east by MW17-08 (0-1.5 m bgs) and BH9 (0.6-1.2 m bgs) and to the south by SSA4 (0-0.6 m bgs). The aforementioned impacts were vertically delineated by a soil sample at 21-201 between 3.8 to 4.4 m bgs, however, the thallium concentration detected in this soil sample was in exceedance of MECP Table 3 Site Standards. The concentration of thallium is expected to be naturally occurring and is not considered an exceedance.

Lead concentrations in the northern portion of the site were laterally delineated by 21-221, 22-411, 22-412, 22-406, 22-405 and the property boundaries. The depth of impact was laterally delineated by samples collected from 2.29 to 2.9 m bgs at 22-404 and 3.05-3.66 m bgs at 22-410.

The concentrations of cobalt and vanadium were in exceedance of MECP Table 3 Site Standards in soil samples collected between depths of 0.8 to 1.4 m bgs at borehole 21-210. In addition, exceedances of vanadium were observed in surficial fill historically between 0 to 0.91 m bgs (MW17-05) and between 0.3 to 0.6 m bgs at (BH8). These metals impacts were horizontally delineated to the north by the Site boundary, to the east by 21-219 (0.8-1.4 m bgs), to the southeast by BH5 (0.7-1.3 m bgs), to the south by 21-208 (0.8-1.4 m bgs), 21-209 (0-0.6 m bgs) and BH9 (0.6-1.2 m bgs), and to the northwest by MW17-06 (0-0.9 m bgs). Concentrations of barium, cobalt and vanadium were in exceedance of MECP Table 3 Site Standards in soil samples collected between depths of 0.76 to 1.37 m bgs at 22-303 and 22-310 and in soil samples collected between depths of 1.52 to 2.13 m bgs at borehole 22-111. In accordance with Section 49.1 of O. Reg 153/04, the concentrations of barium, cobalt and vanadium do not exceed the naturally occurring range of concentrations typically found in natural marine clays in the Ottawa region, and therefore are not considered to be exceedances.

The extent of the arsenic and lead exceedances is provided on **Figures 3A and 5A**.

## Other Regulated Parameters (Hg, MeHg, CrVI, B-HWS)

The concentration of mercury was in exceedance of MECP Table 3 Site Standards in surficial fill between depths of 0 to 0.6 m bgs at borehole 21-201. The mercury impacts observed in surficial fill at 21-201 are likely related to poor fill quality. The mercury impacts were vertically delineated by a soil sample at 21-201 between 3.8 to 4.4 m bgs. In addition, a surficial soil (SSA5) was submitted for analysis of methyl mercury at a depth between 0 to 0.6 m bgs, which satisfied the applicable standards. Additional surficial soil samples between depths of 0 to 0.6 m bgs at SSA4 and SSA6 in the vicinity of 21-201 were submitted for metals and mercury analysis and were found to have concentrations of mercury (SSA4 and SSA6) in exceedance of MECP Table 3. The concentration of mercury in a soil sample collected on July 26, 2017, consisting of topsoil and sand between depths of 0 to 1.5 m bgs at borehole MW17-08 was in exceedance of applicable site standards. The mercury impacts in surficial soil at MW17-08 were vertically delineated by a soil sample collected between depths of 1.5 to 2.4 m bgs, which satisfied the applicable standards.

The mercury impacts at 21-201, MW17-08, SSA4 and SSA6 were horizontally delineated by the Site boundary to the west and by the analytical results from samples collected between 0 to 0.9 m bgs at MW17-06 and MW17-05 (0-0.9 m bgs) to the north, and by the analytical results collected at 21-208 (0.8-1.4 m bgs) and 21-204 (0.2-0.6 m bgs) to the east.

The concentration of mercury was in exceedance of MECP Table 3 Site Standards in surficial fill between depths of 0 to 0.6 m bgs at borehole 21-202. The mercury impacts were vertically delineated by the analytical results of the sample collected between depths of 6.1 to 6.9 m bgs at borehole 21-202. Concentrations of methyl mercury in surficial soil samples collected in the vicinity of 21-202 manually using a shovel (21-202 SA1) satisfied the applicable standards. The metals impacts in surficial fill at 21-202 were horizontally delineated to the north by the Site boundary and to the west by the analytical results from soil samples collected between 0 to 0.9 m bgs MW17-6 and to the east by the analytical results from soil samples collected between 0 to 0.6 m bgs at 21-209, to the south by soil samples collected between 0.6 to 1.2 m bgs at BH9 and to the east by soil samples collected between 0.8 to 1.4 m bgs at 21-208.

The concentration of mercury was elevated historically at MW17-07 between depths of 0 to 1.5 m bgs. The concentration of methyl mercury in the surficial soil sample collected manually by shovel in the vicinity of MW17-07 on June 25, 2021, at SSA7 was reported below the detection level. The mercury impacts at MW17-07 are horizontally delineated to the north by 21-208 and 21-202, to the east by 21-204 and inferred to be delineated to the south between 21-204 and the Site boundary and to the west by the Site boundary. The mercury impacts between depths of 0 to 1.2 m bgs at MW17-07 were vertically delineated by the analytical results of a soil sample collected between depths of 4.6 to 6.1 m bgs at MW17-07.

The extent of the mercury exceedances is provided on **Figures 3A, 5A and 7**.

### PAHs

The concentration of several PAHs was detected in soil from the borehole MW16-10 between depths of 0.8 to 1.5 m bgs, from intermediate fill in the test pit TP16-4 between depths of 2.3 to 3 m bgs. The concentration of fluoranthene was detected in soil from the test TP16-2 between depths of 4.1 to 5.2 m bgs and the concentrations of fluoranthene and benzo[a]pyrene in soil between depths of 4.7 to 5.8 m bgs from the test pit TP16-1 between July and August 2017 in exceedance of MECP Table 3 Site Standards. The concentration of several PAHs was detected above MECP Table 3 Standards at 22-405 and 22-406 in the northeast portion of the site. The PAH exceedances at these locations are attributed to poor quality fill material. As such, the delineation is considered as the interface between native soil and fill material.

The PAH impacts in the vicinity of MW16-10 were investigated through the installation of borehole 21-216 during the present investigation and were vertically delineated by the analytical results of the soil sample collected between depths of 4.6 to 5.2 m bgs at borehole 21-216. The PAH impacts in the surficial soil near MW16-10 were horizontally delineated by the Site boundary to the east, and the analytical results of surficial soil samples collected at 21-215 (0-0.6 and 1.5-2.1 m bgs), 21-217 (0-0.6 m bgs) and MW16-6 (0-0.7 m bgs) to the south, 21-226 (0-0.6 m bgs), by MW16-7 (0.6-1.5 m bgs) to the west and by MW16-9 (0-0.8 m bgs) to the north.

The PAH impacts in the vicinity of test pits TP16-1 and TP16-4 were investigated through the installation of borehole 21-224 and were vertically delineated by the analytical results of the soil sample collected between depths of 6.9 to 7.6 m bgs at borehole 21-224. The PAH impacts in intermediate fill near test pits TP16-4 and TP16-1 were horizontally delineated by the analytical results of soil samples collected at 21-222 (3.1-3.7 m bgs),

MW16-1 (6.1-7.6 m bgs) and 21-216 (4.6-5.2 m bgs) to the north, 21-217 (4.6-5.2 m bgs) and 21-214 (4.6-5.2 m bgs and 7.6-8.2 m bgs) to the east, and 21-218 (5.3-6.0 m bgs) and 21-206 (3.8-4.4 m bgs) to the south.

The PAH impacts in intermediate sand fill material at test pit TP16-2 were investigated through the installation of borehole 21-218 and were vertically delineated by the analytical results of the soil sample collected between depths of 5.3 and 6.0 m bgs at borehole 21-218. These PAH impacts were horizontally delineated by the analytical results of 21-206 (3.8-4.4 m bgs) to the south.

The PAH impacts in the northeast corner of the site at 22-405 and 22-406 were attributed to poor fill quality and laterally delineated by 22-404, 22-407, 22-412 and the property boundary. Vertical delineation was not possible due to poor recovery, however impacts are expected to be contained to the fill material extending to a depth of approximately 3.02 and 2.29 m bgs, respectively.

The extent of the PAH exceedances is provided on **Figures 3C, 5B, 6**. Golder understands that the PAH impacts in the central portion of the site in the vicinity of the former Sir John Carling Building were to be remediated through work completed on Site by others.

### **Benzene**

One soil sample, collected from 22-412 at a depth of 0.76 to 1.37 m bgs exceeded the standard for benzene with a concentration of 0.31 µg/g compared to the standard of 0.21 µg/g. The benzene in this sample may be related to poor fill quality. The benzene exceedance is laterally delineated by boreholes 22-406, 22-407, 22-408, 22-411 and the property boundary. The vertical extent of impacts of soil impacts have not been delineated. The extent of the benzene impacts are shown on Figure 3C.

### **pH**

Several surface and subsurface soil samples had pH levels elevated above the allowable limits for Table 3 Standards in the vicinity of the former SJC. It is inferred that these exceedances are related to concrete debris in the fill material from building demolition. Golder understands that the soil with elevated pH was to be removed through remedial activities and that no elevated pH is to remain following remediation.

All other tested parameters in soil met the MECP Table 3 Site Standards.

## **7.5 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 locations of groundwater sample results are shown on **Figures 4A through H (plan view)**. Building foundations and utility foundations are inferred to represent a potential preferential (i.e., higher permeability) flow pathway for contaminated groundwater.

### **Metals Concentrations**

Concentrations of lead were detected in groundwater in the sample collected on May 25, 2021 from monitoring well, 21-218, in exceedance of MECP Table 3 Site Standards. This well was resampled on June 9, 2021 and the concentration of lead was below the detection limit in groundwater. Accordingly, this result is not considered to represent an exceedance of MECP Table 3 Site Standards.

Concentrations of copper and lead were detected in groundwater in the sample collected on March 17, 2016, from monitoring well, MW16-1, in exceedance of MECP Table 3 Site Standards. This well was reportedly destroyed due to construction in 2016 and replaced with MW16-1A. Monitoring well 21-222S was installed during the

present investigation to assess soil and groundwater quality in the vicinity of MW16-1. Groundwater samples collected at monitoring wells in the vicinity of the former MW16-1 including 21-222 and MW16-1A as part of the present investigation showed no exceedances in groundwater. Accordingly, this result is not considered to represent an exceedance of MECP Table 3 Site Standards.

A summary of groundwater analytical results for metals is shown on **Figure 4A**.

### **PAH Concentrations**

The detection limits for two PAH parameters in groundwater were elevated above the MECP Table 3 Site Standards for all locations sampled in 2021 for benzo[g,h,i]perylene and indeno[1,2,3-cd]pyrene. These parameters were sampled site-wide historically between 2016 and 2107 on four occasions. All historical results had detection limits below the Table 3 standards with no detectable concentrations reported. Further, the results of the present investigation suggest that these VOCs with reported elevated detection limits are not considered to be PCOCs in relation to the APECs at the Site. As such the elevated PAH detection limits at these locations are inferred to not represent potential exceedances at the Site.

A summary of groundwater analytical results for PAHs is shown on **Figure 4C**.

## **Contaminant Migration and Receptors**

### **Fill**

Shallow fill material on Site was noted to be impacted with arsenic and lead (21-201) and lead (22-404, 22-407, 22-410) and within the vicinity of 21-201 at manual surface soil sampling location SSA4 between depths of 0 to 0.6 m bgs, with mercury at boreholes 21-201 and 21-202 and at manual surface soil sampling locations in the vicinity of 21-201 SSA4 and SSA6 between depths of 0 to 0.6 m bgs and at borehole MW17-08 between depths of 0 to 1.5 m bgs. In addition, elevated concentrations of vanadium were noted at borehole MW17-05 between depths of 0 to 0.9 m bgs, at borehole BH8 between depths of 0.3 to 0.6 m bgs, and cobalt and vanadium between depths of 0.8 to 1.4 m bgs at borehole 21-210. Elevated concentrations of barium, cobalt, and vanadium were found between depths of 0.76 m to 1.37 m bgs at 22-303 and 22-310 and between depths of 1.52 to 2.13 m bgs at 22-111. In accordance with Section 49.1 of O. Reg 153/04, the concentrations of barium, cobalt and vanadium do not exceed the naturally occurring range of concentrations typically found in natural marine clays in the Ottawa region, and therefore are not considered to be exceedances. Shallow fill material was also noted to be impacted by PAHs at borehole MW16-10 between depths of 0.8 to 1.5 m bgs. The depth for these samples were above the water table. The potential exposure to these parameters is via direct contact to impacted fill materials at surface by future site users, including subsurface maintenance workers.

Intermediate fill material on Site was noted to be impacted with PAHs at test pits TP16-1 (4.7 to 5.8 m bgs), TP16-2 (4.1-5.2 m bgs) and TP16-4 (2.3-3 m bgs). The PAH impacts were vertically delineated by the analytical results for a sample collected between 4.6 to 5.2 m bgs at borehole 21-216 and 6.9 to 7.6 m bgs at borehole 21-224. These impacts extend below the water table and could potentially be mobilized by groundwater; however, monitoring wells installed at these locations did not have PAH parameters detected above the Table 3 Standards. Additionally PAH impacts were found at 22-405 and 22-406 and one benzene exceedance at 22-412 in the northeast of the site; however these impacts were noted to be above the water table which was noted within the bedrock. The potential exposure to these parameters is via direct contact to impacted fill materials at surface by future site users, including subsurface maintenance workers.

### **Thallium**

Intermediate soil on Site was noted to be impacted with thallium at borehole 21-201 between depths of 3.8 to 4.4 m bgs. These impacts extend above the water table. The potential exposure to these metals is via direct contact to during work at the site including subsurface maintenance workers.

### **Climatic/Meteorological Considerations**

Groundwater elevations ranged from 70.00 to 76.94 m asl (2.64 to 2.93 m bgs) on June 9, 2021. Based on the interpreted groundwater elevation contours presented in **Figures 2A and 2B**, the inferred direction of shallow and deep groundwater flow in overburden is locally to the northeast towards the O-train rock cut; however, the shallow groundwater flow is locally influenced by the former SJCB building and the steep drop in elevation to the west of MW16-1A.

## **8.0 CONCLUSIONS**

The Phase Two ESA investigated the eight APECs identified in the 2021 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 were above the applicable site condition standards as of the certification date (August 26, 1, 2022). A risk assessment or remediation is required prior to the submission of an RSC. Golder understands that a remediation is underway at the Site at the time of submission of this report.

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
Phase One Environmental Site Assessment, <i>The Ottawa Hospital – New Civic Campus</i> (19127064), dated March 2021, prepared by Golder for Parsons.	March 2021
Ontario Regulation 153/04: Records of Site Condition – Part XV.1 of the Act	January 2014
Ontario Geological Survey. 2010. <i>Surficial Geology of Southern Ontario</i> . Ontario Geological Survey Map Miscellaneous Release – Data 128-REV. Scale 1:50,000.	2010
Ontario Geological Survey. 2011. <i>Bedrock Geology of Ontario</i> . Ontario Geological Survey Map Miscellaneous Release – Data 126 – Revision 1. Scale 1: 250,000.	2011
<i>Environmental Investigation of Subsurface Conditions, Proposed New Hospital Campus, Former Sir John Carling Building Complex, Central Experimental Farm, Ottawa ON</i> , dated September 2017, prepared by Paterson Group Inc. for Cleland Jardine Engineering Ltd.	September 2017
<i>Preliminary Remedial Options Analysis Costing- Revised, New Ottawa Hospital Civic Campus, Ottawa ON (DFRP# 08625)</i> , dated October 2017, prepared by Stantec Consulting Ltd. for PSPC.	October 2017
<i>Preliminary Remedial Options Analysis Former Sir John Carling Building, 930 Carling Avenue, Ottawa ON (DFRP# 08625)</i> , dated March 2017, prepared by Stantec Consulting Ltd. for PSPC.	March 2017
<i>Phase III Environmental Site Assessment, Former Sir John Carling Building, 930 Carling Avenue, Ottawa ON (DFRP# 08625)</i> , dated March 2017, prepared by Stantec Consulting Ltd. for PSPC.	March 2017
<i>Phase II Environmental Site Assessment, New Ottawa Hospital Civic Campus, Ottawa ON</i> , dated September 2017, prepared by Stantec Consulting Ltd. for PSPC.	September 2017
<i>Final Phase I Environmental Site Assessment, New Ottawa Hospital Civic Campus, Carling Avenue and Preston Street, Ottawa Ontario</i> , dated August 2017, prepared by Stantec Consulting Ltd. for PSPC.	August 2017
<i>Stormwater Effluent Sampling, Sir John Carling Building, November 16 &amp; 23, 2016, 930 Carling Avenue, Ottawa, ON</i> , dated December 2016, prepared by Stantec Consulting Ltd. for PSPC.	December 2016
<i>Phase II Environmental Site Assessment, Former Sir John Carling Building, 930 Carling Avenue, Ottawa ON (DFRP# 08625)</i> , dated March 2016, prepared by Stantec Consulting Ltd. for PSPC.	March 2016
Hvorslev, M.J. 1951. Time Lag and Soil Permeability in Groundwater Observations. U.S. Army Corps of Engineers, Waterways Experiment Station, Vicksburg, Mississippi, Bull. No. 36, 51 pp.	Hvorslev, 1951



## LIMITATIONS

This report was prepared for the exclusive use of Parsons. 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.

It is owner's responsibility to have a licensed well technician properly abandon all monitoring wells, if required.

## SIGNATURES

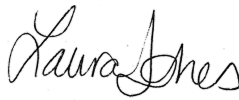
The undersigned Qualified Person confirms that he/she was responsible for conducting and/or supervising this Phase Two ESA and the associated findings and conclusions.

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.

### **Golder Associates Ltd.**



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[https://golderassociates.sharepoint.com/sites/140130/project files/6 deliverables/01 - environmental/01 - sap 1/21451149-001-rev0 - toh phase two e rsc report - aug 2022 draft.docx](https://golderassociates.sharepoint.com/sites/140130/project%20files/6%20deliverables/01%20-%20environmental/01%20-%20sap%201/21451149-001-rev0%20-%20toh%20phase%20two%20e%20rsc%20report%20-%20aug%202022%20draft.docx)

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## Tables

**Table 1A - Monitoring Well Construction Details**  
**The Ottawa Hospital**

Monitoring Well	Date of well completion	Ground surface elevation (m asl) <sup>1</sup>	Top of pipe elevation (m asl) <sup>1</sup>	Borehole depth (m bgs)	Well Depth (m bgs)	Well depth elevation (masl) <sup>1</sup>	Screen interval (m bgs)	Screen interval elevation (m asl) <sup>1</sup>	Screened media
21-201	June 08, 2021	82.458	83.326	12.88	11.89	70.57	8.84 to 11.89	71.44 to 74.49	Silty gravelly SAND to silty sandy GRAVEL; brown, cobbles, boulders; n-c, wet, very dense.
21-202	May 25, 2021	81.196	82.073	21.82	20.27	60.93	17.23 to 20.27	61.80 to 64.84	Bedrock.
21-204	June 09, 2021	81.091	82.014	10.88	9.15	71.94	6.1 to 9.15	72.86 to 75.91	Gravelly SILTY SAND; grey, cobble, boulders; n-c, wet, compact.
21-213	May 31, 2021	76.106	76.941	15.80	12.20	63.91	9.15 to 12.2	64.74 to 67.79	Gravelly SILTY SAND to SAND; grey, possible cobbles and boulders; n-c, wet, compact to dense to very loose.
21-215	May 28, 2021	72.791	73.680	7.06	23.17	49.62	13.17 to 23.17	50.51 to 60.51	Gravelly SILTY SAND; grey; possible cobbles and boulders; moist to wet, loose.
21-218	May 10, 2021	78.540	79.407	13.59	9.45	69.09	6.4 to 9.45	69.96 to 73.01	FILL; SILTY SAND to SAND and GRAVEL; grey; trace gravel, n-c, wet, loose to compact.
21-219	May 07, 2021	79.398	80.302	14.69	4.57	74.83	1.52 to 4.57	75.73 to 78.78	SANDY CLAY to SILTY CLAY; trace sand and gravel; brown, highly fissured; w~PL, moist to wet, very stiff.
21-221 D	May 25, 2021	74.586	75.546	17.63	17.63	56.96	14.58 to 17.63	57.92 to 60.97	Limestone; fresh, thinly bedded, medium grey to brownish grey, fine to medium grained, non-porous, medium to weak shale.
21-221 S	May 25, 2021	74.586	75.553	17.63	13.47	61.12	10.42 to 13.47	62.08 to 65.13	Gravelly SILTY SAND to SAND to silty sandy GRAVEL; grey, possible cobbles and boulders; n-c, wet, very loose to compact.
21-222 D	May 12, 2021	78.827	79.728	14.02	12.20	66.63	10.67 to 12.2	67.53 to 69.06	Gravelly SILTY SAND; grey; possible cobbles and boulders; wet, dense to loose.
21-222 S	May 13, 2021	78.827	79.749	14.02	7.62	71.21	4.57 to 7.62	72.13 to 75.18	FILL; gravelly SILTY SAND to sandy GRAVEL; brown to grey brown, concrete fragments, brick fragments, organic matter, wood; n-c, moist, loose to very dense; to gravelly SILTY SAND; grey possible cobbles and boulders; wet, dense to loose.
21-224	May 11, 2021	78.898	79.798	20.20	7.62	71.28	4.57 to 7.62	72.18 to 75.23	FILL; gravelly SILTY SAND with construction waste; grey to grey-brown; asphalt fragments, concrete fragments, n-c, moist, compact to very dense.
21-225	May 03, 2021	75.214	76.134	12.98	5.18	70.03	2.13 to 5.18	70.95 to 74.00	FILL to SILTY CLAY and CLAY; trace gravel; brown-grey, highly fissured; cohesive; w>PL, very stiff.
21-226	May 04, 2021	75.310	76.254	10.95	5.18	70.13	2.13 to 5.18	71.07 to 74.12	TOPSOIL to CLAYEY SILT; trace sand and gravel, black to grey-brown, moist to wet, loose to compact.
22-16	June 21, 2022	65.969	65.863	2.97	3.05	62.92	1.52 to 3.05	62.81 to 64.34	(SM/ML) SILTY SAND to sandy SILT, some plastic fines and gravel; grey (GLACIAL TILL); cohesive, w>PL, soft
22-21	June 20, 2022	66.247	66.102	3.05	3.05	63.20	1.52 to 3.05	63.05 to 64.58	Slightly weathered to fresh, bedded, nodular, grey/dark grey, fine to medium grained, slightly porous, medium strong SHALEY LIMESTONE
22-24	June 20, 2022	70.638	70.580	4.17	4.17	66.47	2.64 to 4.17	66.41 to 67.94	Slightly weathered to fresh, bedded/nodular, grey to dark grey, fine to medium grained, slightly porous, medium strong SHALEY LIMESTONE
22-112	March 30, 2022	73.593	74.488	3.79	3.79	69.80	2.26 to 3.79	70.70 to 72.23	2.26 to 2.29 mbgs: (ML/CL) CLAYEY SILT to SILTY CLAY, some to trace sand; brown; cohesive, w<PL, soft to stiff 2.29 to 2.90 mbgs: (ML/CL) CLAYEY SILT to SILTY CLAY, some sand; brown; cohesive, w>PL, wet, soft 2.90 to 3.79 mbgs: (ML) sandy SILT, some clay, some gravel; brown (GLACIAL TILL); cohesive to slightly cohesive, w>PL, wet, compact
22-301	March 23, 2022	84.597	85.629	35.36	35.36	49.24	3.35 to 6.4	79.23 to 82.28	(SM) gravelly SILTY SAND; brown to grey, possible cobbles and boulders (GLACIAL TILL); non-cohesive, moist to wet, loose to very dense

**Table 1A - Monitoring Well Construction Details  
The Ottawa Hospital**

Monitoring Well	Date of well completion	Ground surface elevation (m asl) <sup>1</sup>	Top of pipe elevation (m asl) <sup>1</sup>	Borehole depth (m bgs)	Well Depth (m bgs)	Well depth elevation (masl) <sup>1</sup>	Screen interval (m bgs)	Screen interval elevation (m asl) <sup>1</sup>	Screened media
22-303	April 06, 2022	80.567	81.478	20.22	20.22	60.35	7.62 to 10.67	70.81 to 73.86	(SM) gravelly SILTY SAND to SILTY SAND, some gravel, some clay; grey, contains cobbles and boulders (GLACIAL TILL); non-cohesive, wet, compact to very dense
22-308	April 29, 2022	82.934	83.806	20.29	20.29	62.64	9.14 to 12.19	71.62 to 74.67	(SM) gravelly SILTY SAND, trace plastic fines; grey, contains rock fragments, potential cobbles and boulders (GLACIAL TILL); non-cohesive, wet, loose to very dense
22-310	May 05, 2022	80.542	81.403	19.18	6.10	61.36	3.05 to 6.1	75.30 to 78.35	3.05 to 3.66 mbgs: (SM) gravelly silty sand, some clay; grey brown to brown (GLACIAL TILL); slightly cohesive, compact 3.66 to 5.18 mbgs: (SM) SILTY SAND, some clay, some gravel; grey brown to grey (GLACIAL TILL); non-cohesive, wet, compact to loose 5.18 to 6.1 mbgs: (SM) SILTY SAND, some clay, some gravel; grey (GLACIAL TILL); slightly cohesive, wet, loose
22-401	March 17, 2022	68.558	69.506	13.62	13.62	54.94	4.88 to 7.92	61.59 to 64.63	4.88 to 5.18 mbgs: (SW/SM) SAND to SILTY SAND, some low plasticity fines; grey (GLACIAL TILL); slightly cohesive, moist to wet, very loose to loose 5.18 to 7.62 mbgs: (SW/SM) SAND to SILTY SAND, some low plasticity fines, some gravel; grey (GLACIAL TILL); slightly cohesive, wet, loose to dense 7.62 to 7.92 mbgs: (SW) SAND, some gravel, some low plasticity fines; grey (GLACIAL TILL); non-cohesive, moist, compact to very dense
22-405	February 25, 2022	67.187	68.234	6.09	6.09	61.10	4.57 to 6.09	62.14 to 63.66	Fresh to slightly weathered, thinly to medium bedded, pale grey to black, fine to medium grained, non to slightly porous, medium strong SHALEY LIMESTONE
22-411S	March 02, 2022	66.722	67.760	8.35	4.57	62.15	1.32 to 4.37	63.39 to 66.44	1.32 to 2.13 mbgs: (SM) gravelly SILTY SAND; grey brown (GLACIAL TILL); non-cohesive, moist to wet, loose 2.13 to 4.57 mbgs: (SM) gravelly SILTY SAND; grey, possible cobbles and boulders (GLACIAL TILL); non-cohesive, wet, loose to dense
22-411D	March 02, 2022	66.722	67.778	8.35	8.35	58.37	5.31 to 8.35	59.43 to 62.47	Fresh, thinly to medium bedded, medium grey to brownish grey, fine to medium grained, non-porous, medium strong SHALEY LIMESTONE - Lost core from 4.57 m to 4.60 m - Broken/lost core from 4.69 m to 4.73 m - Broken core from 5.02 m to 5.03 m - Broken core from 5.79 m to 5.5 m - Broken/lost core from 6.21 m to 6.24 m - Broken/lost core from 6.57 m to 6.56 m

**Notes:**

BH Borehole  
m metres  
m asl metres above sea level  
m bgs metres below ground surface  
n-c non-cohesive  
w water content  
PL Plasticity Limit  
1 Elevations were referenced to the Canadian Geodetic Vertical Datum 1928 (CGVD 1928).  
Table to be read in conjunction with accompanying report

**Table 1B - Historic Monitoring Well Construction Details  
The Ottawa Hospital**

Monitoring Well	Date of well completion	Ground surface elevation (m) <sup>2</sup>	Top of pipe elevation (m) <sup>2</sup>	Borehole depth (m)	Well Depth (m bgs)	Well depth elevation (m) <sup>2</sup>	Screen interval (m bgs)	Screen interval elevation (m) <sup>2</sup>	Screened media
BH1	July 27, 2017	-	-	7.34	6.10	-	3.05 to 6.1	-	GLACIAL TILL; Stiff to very soft, brown to grey silty clay, some sand and gravel, trace cobbles and boulders
BH2	July 27, 2017	-	-	8.18	6.10	-	3.05 to 6.1	-	GLACIAL TILL; Very soft to very stiff, brown silty clay, some sand, trace gravel, cobbles and boulders
BH3	July 28, 2017	-	-	11.20	6.10	-	3.05 to 6.1	-	GLACIAL TILL; Very stiff to firm, brown silty clay, trace sand, gravel, cobbles and boulders
BH4A	July 24, 2017	-	-	11.15	6.10	-	3.05 to 6.1	-	GLACIAL TILL; Very stiff to firm, brown silty clay, some sand, gravel, cobbles and boulders
BH5	July 24, 2017	-	-	10.26	6.10	-	3.05 to 6.1	-	GLACIAL TILL; Soft to very stiff, brown silty clay, some sand, gravel, cobbles and boulders
BH6	July 26, 2017	-	-	10.31	6.10	-	3.05 to 6.1	-	GLACIAL TILL; Firm to hard, brown silty clay, some sand, trace gravel, cobbles and boulders
BH8	July 26, 2017	-	-	8.86	6.10	-	3.05 to 6.1	-	GLACIAL TILL; Very soft to very stiff, brown silty clay, some sand, trace gravel, cobbles and boulders
BH10	July 26, 2017	-	-	7.29	6.10	-	3.05 to 6.1	-	GLACIAL TILL; Very soft to stiff, brown silty clay, trace sand, gravel, cobbles and boulders
MW17-03 <sup>1</sup>	July 27, 2017	79.52	79.42	3.20	3.20	76.32	1.68 to 3.2	76.32 to 77.84	SILTY SAND; black organic soils, trace gravel, trace wood, grey, wet
MW17-04 <sup>1</sup>	July 27, 2017	85.13	85.06	2.74	2.90	82.23	1.37 to 2.9	82.23 to 83.76	SILTY SAND; grey, trace gravel, moist to wet
MW17-05 <sup>1</sup>	July 26, 2017	94.49	94.39	6.10	6.10	88.39	3.05 to 6.1	88.39 to 91.44	SILTY SAND; brown-grey, trace gravel, wet
MW17-06 <sup>1</sup>	July 26, 2017	95.09	95.03	4.60	4.60	90.49	1.55 to 4.6	90.49 to 93.54	SILTY SAND; brown-grey, trace gravel, moist to wet
MW17-07 <sup>1</sup>	July 26, 2017	96.64	94.58	7.62	6.71	89.93	3.66 to 6.71	89.93 to 92.98	SILTY SAND; brown-grey, trace gravel, moist to wet
MW17-08 <sup>1</sup>	July 26, 2017	95.59	95.52	5.49	5.28	90.31	2.23 to 5.28	90.31 to 93.36	SILTY SAND; brown, trace gravel, moist (PRESUMED)
MW17-09 <sup>1</sup>	July 27, 2017	99.19	99.12	7.62	6.71	92.48	3.66 to 6.71	92.48 to 95.53	SILTY SAND; brown-grey, trace gravel, moist to wet
MW17-10 <sup>1</sup>	July 27, 2017	96.57	96.48	7.32	6.10	90.47	3.05 to 6.1	90.47 to 93.52	SILTY SAND; grey, trace gravel, wet
MW16-1	March 14, 2016	77.34	77.25	9.14	8.69	68.65	5.64 to 8.69	68.65 to 71.7	SILTY SAND (FILL); grey, gravel, crushed concrete, brick fragments, dry; CLAY; grey, moist, black staining, wet
MW16-1A	August 02, 2016	78.05	77.96	10.36	10.06	67.99	7.32 to 10.06	67.99 to 70.73	CLAY; grey, moist, black staining, wet
MW16-3	March 14, 2016	77.89	77.85	9.14	6.10	71.79	3.05 to 6.1	71.79 to 74.84	SAND (FILL); brown, gravel, dry to GRAVEL (FILL); trace silt, moist
MW16-5	March 15, 2016	76.03	76.00	6.71	6.10	69.93	3.05 to 6.1	69.93 to 72.98	SILTY SAND; grey, gravel, trace clay, moist to wet
MW16-6	March 11, 2016	74.76	74.71	7.32	5.64	69.12	2.59 to 5.64	69.12 to 72.17	SILTY SAND; brown to grey, gravel, trace clay, seam of coarse brown sand at ~4.25 mbgs, moist to wet

**Table 1B - Historic Monitoring Well Construction Details  
The Ottawa Hospital**

Monitoring Well	Date of well completion	Ground surface elevation (m) <sup>2</sup>	Top of pipe elevation (m) <sup>2</sup>	Borehole depth (m)	Well Depth (m bgs)	Well depth elevation (m) <sup>2</sup>	Screen interval (m bgs)	Screen interval elevation (m) <sup>2</sup>	Screened media
MW16-7	March 14 2016	75.35	75.24	9.14	6.71	68.64	3.66 to 6.71	68.64 to 71.69	SILTY SAND; brown to grey, coarse-grained sand, gravel, trace clay, moist to wet
MW16-7A	August 03, 2016	75.19	75.11	8.53	8.53	66.66	5.49 to 8.53	66.66 to 69.7	SILTY SAND; brown to grey, trace to some gravel, wet to moist; SILTY CLAY, with sand, trace gravel, wet
MW16-8	August 03, 2016	74.87	74.83	6.10	6.10	68.77	3.05 to 6.1	68.77 to 71.82	SILTY CLAY; grey, with light brown sand, moist to wet
MW16-9	August 03, 2016	73.79	73.78	6.10	6.10	67.69	3.05 to 6.1	67.69 to 70.74	SILTY CLAY; brown to grey, with sand, moist to wet
MW16-10	August 02, 2016	73.79	73.71	5.33	4.27	69.52	1.22 to 4.27	69.52 to 72.57	SANDY CLAY; light brown, trace gravel, dry; SILTY CLAY; light grey, trace to some sand, gravel, moist to wet, oxidation; SILTY SAND; light brown, some clay, gravel, wet
MW16-11	August 04, 2016	72.64	72.56	4.57	3.35	69.29	1.22 to 3.35	69.29 to 71.42	SAND; red-brown, trace clay, wood, dry to moist; SILTY CLAY; grey, trace to some sand, trace gravel, moist to wet; SANDY SILT to grey, trace clay, gravel, wet
MW16-12	August 04, 2016	75.96	75.93	7.62	7.62	68.34	4.57 to 7.62	68.34 to 71.39	SILTY CLAY; grey-blue, wet
MW16-13	August 03, 2016	77.76	77.73	6.10	6.10	71.66	3.05 to 6.1	71.66 to 74.71	SILTY CLAY; grey-blue, wet
MW16-14	August 03, 2016	79.51	79.45	7.62	7.62	71.89	4.57 to 7.62	71.89 to 74.94	SILTY CLAY; grey, trace gravel, wet

**Notes:**

- BH Borehole
- m metres
- m asl metres above sea level
- m bgs metres below ground surface
- 1 Elevations were measured using a level survey and a local datum (top of fire hydrant at corner of Birch Drive and driveway for Building 49, which was assigned an elevation of 100.00).
- 2 Elevations were referenced to the Canadian Geodetic Vertical Datum 1928 (CGVD 1928) in masl unless otherwise referenced.

- Not available

Table to be read in conjunction with accompanying report

**Table 2A - Summary of Soil Samples Submitted for Laboratory Analysis  
The Ottawa Hospital**

Sample Location	Sample ID	Sample Date	Sample Depth (mbgs)	Soil Sample Description	PHCs	BTEX	VOCs	PAHs	PCBs	Metals	Hydride Forming Metals (As, Se, Sb)	ORPs (B-HWS, Cr(VI), Hg)	Hg only	Methyl Hg	pH	Energetics	CrVI	Cyanide	Phenolics	Pesticides
BH22-01	BH22-01 SA2a	23-Feb-22	1.52 to 1.83	FILL - (SP) SAND, fine to medium, some silt and clay; brown; non-cohesive, moist, very dense	X	X		X		X	X	X	X				X			
BH22-02	BH22-02 SA2	22-Feb-22	0.76 to 1.37	FILL - (SM/SP) SILTY SAND to SAND, fine to medium, some clay, trace gravel; brown to light brown; non-cohesive, moist, compact	X	X		X		X	X	X	X				X			
BH22-03	BH22-03 SA4	23-Feb-22	2.29 to 2.31	FILL - (SP) SAND, fine to medium, some silt; brown to light brown, mottled reddish orangish black; non-cohesive, moist, loose to very	X	X		X		X	X	X	X				X			
BH22-04	BH22-04 SA2	22-Feb-22	0.76 to 1.37	FILL - (SM/SP) SAND to SILTY SAND, trace clay; brown mottled black; non-cohesive, moist, compact	X	X		X		X	X	X	X				X			
BH22-05	BH22-05 SA2	22-Feb-22	0.76 to 1.37	FILL - (CI) SILTY CLAY, trace sand and gravel; brown; cohesive, w>PL, very stiff	X	X		X		X	X	X	X				X			
BH22-06	BH22-06 SA2	22-Feb-22	0.76 to 1.37	FILL - (SM) SILTY SAND, some gravel; brown, contains brick fragments, potential cobbles; non-cohesive, moist, compact	X	X		X		X	X	X	X				X			
BH22-07	BH22-07 SA3	24-Feb-22	1.52 to 2.13	FILL - (SM) SILTY SAND; brown, contains rock fragments, wood chips, gravel pockets; non-cohesive, moist, loose to very dense	X	X		X		X	X	X	X				X			
BH22-08	BH22-08 SA3	25-Feb-22	1.52 to 2.13	FILL - (CH) CLAY, trace silt, sand, and gravel; brown mottled black and red, contains gravel, cobbles, and weathered bedrock; cohesive, w>PL, very stiff to hard	X	X		X		X	X	X	X				X			
BH22-09	BH22-09 SA2	22-Feb-22	0.76 to 1.37	FILL - (CI) SILTY CLAY; brown, contains brick fragments; cohesive, w>PL, firm	X	X		X		X	X	X	X				X			
BH22-10	BH22-10 SA2	24-Feb-22	0.76 to 1.37	FILL - (SM) SILTY SAND, some clay; brown mottled black; non-cohesive, moist, compact	X	X		X		X	X	X	X				X			
22-109	22-109 SA02	29-Mar-22	0.76 to 1.37	FILL - (SM/ML) sandy SILT to SILTYSAND, some clay; grey brown; non-cohesive, moist, dense	X	X		X		X	X	X	X				X			
	22-109 SA03	29-Mar-22	1.52 to 2.13	(SM) gravelly SILTY SAND, some clay; grey (GLACIAL TILL); slightly cohesive, moist to wet, very loose to compact	X	X		X		X	X	X	X				X			
22-111	22-111 SA01B	29-Mar-22	0.08 to 0.61	FILL - (SW) gravelly SAND, some silt; dark grey, contains bricks; non-cohesive, moist, compact	X	X		X		X	X	X	X				X			
	22-111 DUP01	29-Mar-22	0.08 to 0.61	FILL - (SW) gravelly SAND, some silt; dark grey, contains bricks; non-cohesive, moist, compact	X	X		X		X	X	X	X				X			
	22-111 SA03	29-Mar-22	1.52 to 2.13	(CH) CLAY; brown, mottled, fissured (WEATHERED CRUST); cohesive, w<PL, firm to stiff	X	X		X		X	X	X	X				X			
22-112	22-112 SA01	24-Mar-22	0.0 to 0.61	TOPSOIL - (0.0 - 0.30 mbgs) - (SM) SILTY SAND, trace clay, trace gravel; dark brown; non-cohesive, moist FILL - (below 0.30 mbgs) - (SP) SAND, fine; grey to brown; non-cohesive, moist, compact	X	X		X		X	X	X	X				X			
22-113	22-113 SA02A	30-Mar-22	0.76 to 1.07	FILL - (SW) SAND, some to trace clay and silt, some gravel, some asphalt; brown; non-cohesive, moist, compact	X	X		X		X	X	X	X				X			
	22-113 SA04A	30-Mar-22	2.29 to 3.66	(SM) gravelly SILTY SAND, some clay; brown (GLACIAL TILL); slightly cohesive, wet, compact to loose	X	X		X		X	X	X	X				X			
22-301	22-301 SA2	18-Mar-22	0.75 to 1.37	FILL - (SM) SILTY SAND, some plastic fines, trace gravel; brown, mottled; white/grey and black; non-cohesive, moist, loose	X	X		X		X	X	X	X				X			
	22-301 SA6	18-Mar-22	3.81 to 4.34	(SM) gravelly SILTY SAND; brown to grey, possible cobbles and boulders (GLACIAL TILL); non-cohesive, moist to wet, loose to very dense	X	X		X		X	X	X	X				X			



**Table 2A - Summary of Soil Samples Submitted for Laboratory Analysis  
The Ottawa Hospital**

Sample Location	Sample ID	Sample Date	Sample Depth (mbgs)	Soil Sample Description	PHCs	BTEX	VOCs	PAHs	PCBs	Metals	Hydride Forming Metals (As, Se, Sb)	ORPs (B-HWS, Cr(VI), Hg)	Hg only	Methyl Hg	pH	Energetics	CrVI	Cyanide	Phenolics	Pesticides
22-303	22-303 SA02	05-Apr-22	0.76 to 1.37	FILL - (ML/CL) CLAYEY SILT to SILTY CLAY, trace sand; brown; slightly cohesive, w<PL, firm to stiff	X	X		X		X	X	X	X				X			
22-310	22-310 SA02	05-Apr-22	0.76 to 1.37	(Cl/CL) SILTY CLAY; brown; cohesive, w<PL, stiff to very stiff	X	X		X		X	X	X	X				X			
22-402	402 SA6	03-Mar-22	3.81 to 4.22	(SM) SILTY SAND, some low plasticity fines, some gravel; grey, contains cobbles and boulders (GLACIAL TILL);non-cohesive to slightly cohesive, wet, loose to very dense	X	X		X		X	X	X	X				X			
	402 SA3	03-Mar-22	1.52 to 2.13	FILL - (SM) SILTY SAND, some low plasticity fines; brown; non-cohesive, moist, loose	X	X		X		X	X	X	X				X			
22-403	403 SA2	28-Feb-22	0.76 to 1.37	FILL - (0.56 to - 1.22 mbgs) - (SM) gravelly SILTY SAND; dark brown to black, contains ash and coal; non-cohesive, moist, dense Below 1.22 mbgs - (PT) Amorphous PEAT; black; non-cohesive, moist, loose	X	X		X		X	X	X	X				X			
	403 SA3	28-Feb-22	1.52 to 2.13	(PT) - (1.52 - 1.68 mbgs) Amorphous PEAT; black; non-cohesive, moist, loose Below 1.68 mbgs - (SM) gravelly SILTY SAND; grey brown, possible cobbles (GLACIAL TILL);non-cohesive, wet, loose	X	X		X		X	X	X	X				X			
22-404	404 SA1	01-Mar-22	0.0 to 0.61	TOPSOIL/FILL - (0.0 - 0.20 mbgs) - (SM) SILTY SAND, trace gravel; brown to dark brown, contains organic matter (rootlets); non-cohesive, moist/frozen, very dense FILL - (0.20 - 0.56 mbgs) - (SM) gravelly SILTY SAND; brown; non-cohesive, moist/frozen, very dense FILL - (below 0.56 mbgs) - (SM) SILTY SAND, trace to some gravel; black, contains ash/slag; non-cohesive, moist, very dense to compact	X	X		X		X	X	X	X				X			
	404 SA4	01-Mar-22	2.29 to 2.90	(SM) gravelly SILTY SAND; grey, possible cobbles and boulders(GLACIAL TILL); non-cohesive, wet, very loose to dense	X	X		X		X	X	X	X				X			
BH22-405	BH22-405 SA3	25-Feb-22	1.52 to 2.13	FILL - (SP) SAND, fine to medium, trace silt, trace clay; brown, mottled reddish black; non-cohesive, moist, compact	X	X		X		X	X	X	X				X			
22-406	406 SA2	01-Mar-22	0.76 to 1.37	FILL - (0.76 - 1.07 mbgs) - (SM) gravelly SILTY SAND, angular; brown; non-cohesive, moist, compact FILL - (below 1.07 mbgs) - (SM/ML) gravelly SILTY SAND to sandy SILT; dark brown, contains concrete, brick and ash; non-cohesive, moist, compact to loose	X	X		X		X	X	X	X				X			
22-407	407 SA3	07-Mar-22	1.52 to 2.13	FILL - (SW) SAND, some silt, some gravel; brown, with layers of black asphalt; non-cohesive, moist to wet, dense to loose	X	X		X		X	X	X	X				X			
22-408	408 SA2	03-Mar-22	0.76 to 1.37	FILL - (0.76 - 0.91 mbgs) - (SM) gravelly SILTY SAND, sub-rounded to sub-angular; brown; non-cohesive, moist, compact FILL - (0.91 - 1.07 mbgs) - (SM) gravelly SILTY SAND; black, contains ash, slag and brick; non-cohesive, moist, compact FILL - (below 1.07 mbgs) - (SM) SILTY SAND, trace to some gravel; grey, contains organic matter; non-cohesive, moist, compact to loose	X	X		X		X	X	X	X				X			
22-410	410 SA2	07-Mar-22	0.76 to 1.37	FILL - (ML-SM) sandy SILT to SILTYSAND, some clay, some gravel; brown; non-cohesive, moist to wet, very dense	X	X		X		X	X	X	X				X			
	410 SA5	07-Mar-22	3.05 to 3.66	(SW/SM) SAND to SILTY SAND, some low plastic fines, some silt, some gravel; grey brown to grey (GLACIAL TILL);non-cohesive, wet, compact	X	X		X		X	X	X	X				X			
22-411	411 SA2	02-Mar-22	0.76 to 1.37	(SM) gravelly SILTY SAND; grey brown(GLACIAL TILL); non-cohesive, moist to wet, loose	X	X		X		X	X	X	X				X			

**Table 2A - Summary of Soil Samples Submitted for Laboratory Analysis  
The Ottawa Hospital**

Sample Location	Sample ID	Sample Date	Sample Depth (mbgs)	Soil Sample Description	PHCs	BTEX	VOCs	PAHs	PCBs	Metals	Hydride Forming Metals (As, Se, Sb)	ORPs (B-HWS, Cr(VI), Hg)	Hg only	Methyl Hg	pH	Energetics	CrVI	Cyanide	Phenolics	Pesticides
	411 SA22 (Duplicate)	02-Mar-22	0.76 to 1.37	(SM) gravelly SILTY SAND; grey brown(GLACIAL TILL); non-cohesive, moist to wet, loose	X	X		X		X	X	X	X				X			
22-412	412 SA2	02-Mar-22	0.76 to 1.37	FILL - (0.76 - 1.14 mbgs) - (SM) gravelly SILTY SAND; grey brown, contains silty clay layers; non-cohesive, moist, dense FILL - (below 1.14 mbgs) - (SM) gravelly SILTY SAND; black, contains ash and slag; non-cohesive, moist, dense	X	X		X		X	X	X	X				X			
21-101	21-101 SA1	11-Jun-21	0.30-0.91	FILL - (0.30-0.81 mbgs) - (SM) SILTY SAND, trace gravel; brown to dark brown, contains organic matter (rootlets), possible cobbles and boulders; non-cohesive, moist, loose. Below 0.81 mbgs, (SM) gravelly SILTY SAND; grey brown, contains cobbles and boulders (GLACIAL TILL); non-cohesive, moist, compact				X												
	21-102 SA1	11-Jun-21	0.30-0.91	FILL - (0.30-0.61 mbgs) - (SM) SILTY SAND, fine to medium; brown to dark brown, contains organic matter (rootlets); non-cohesive, moist, compact. Below 0.61 mbgs, (SM) gravelly SILTY SAND; grey brown, contains cobbles and boulders (GLACIAL TILL); non-cohesive, moist, compact to dense.				X												
21-103	21-103 SA1	11-Jun-21	0.30-0.91	FILL - (0.36-0.61 mbgs) - (SM) gravelly SILTY SAND; dark brown to grey brown, contains organic matter; non-cohesive, moist, compact. Below 0.61 mbgs - (SM) gravelly SILTY SAND; grey brown, contains cobbles and boulders (GLACIAL TILL); non-cohesive, moist, compact.				X												
21-104	21-104 SA1	11-Jun-21	0.30-0.91	Gravelly SILTY SAND (SM); grey brown, contains organic matter, possible cobbles and boulders (GLACIAL TILL); non-cohesive, moist, loose to compact.				X												
21-105	21-105 SA1	11-Jun-21	0.30-0.91	FILL - (0.30-0.71 mbgs) - (SM/ML) SILTY SAND to sandy SILT, trace to some gravel; dark brown to brown, contains organic matter; non-cohesive, moist, loose. Below 0.71 mbgs - (SM) gravelly SILTY SAND; grey brown, contains cobbles and boulders (GLACIAL TILL); non-cohesive, moist, loose to compact.				X												
21-106	21-106 SA1	11-Jun-21	0.30-0.91	Gravelly SILTY SAND - (SM); grey brown, contains cobbles and boulders (GLACIAL TILL); non-cohesive, moist, compact.				X												
21-107	21-107 SA1	11-Jun-21	0.30-0.91	FILL - from 0.33-0.42 mbgs - (SM/ML) SILTY SAND to sandy SILT, fine; brown to dark brown, contains organic matter; non-cohesive, moist				X												
				FILL - from 0.42-0.69 mbgs - (SW) gravelly SAND, fine to coarse, some silt; brown, contains cobbles and boulders; non-cohesive, moist, compact. Below 0.69 mbgs - (SM) gravelly SILTY SAND; grey brown, contains cobbles and boulders (GLACIAL TILL); non-cohesive, moist, compact to dense.																
21-108	21-108 SA1	11-Jun-21	0.30-0.91	TOPSOIL - from 0.30-0.46 mbgs - (SM/ML) SILTY SAND to sandy SILT, trace gravel; dark brown, contains organic matter (rootlets); non-cohesive, moist (SP) SAND - below 0.46 mbgs, fine to medium, trace silt; brown, possibly stratified; non-cohesive, moist, very loose to loose.				X												
21-201	21-201 SA1	08-Jun-21	0-0.61	TOPSOIL (0.00-0.38 mbgs) - (SM) SILTY SAND; dark brown, contains organic matter (rootlets); non-cohesive, moist, loose. FILL (0.38-0.62 mbgs) - (SM) SILTY SAND, brown to dark brown, contains organic matter; non-cohesive, moist, loose.	X	X		X		X	X	X								
	21-201 SA6	08-Jun-21	3.81-4.42	SILTY gravelly SAND to SILTY sandy GRAVEL (SM/GM); grey to red brown, contains cobbles and boulders; non-cohesive, moist to wet, compact to very dense.						X	X		X							

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Sample Location	Sample ID	Sample Date	Sample Depth (mbgs)	Soil Sample Description	PHCs	BTEX	VOCs	PAHs	PCBs	Metals	Hydride Forming Metals (As, Se, Sb)	ORPs (B-HWS, Cr(VI), Hg)	Hg only	Methyl Hg	pH	Energetics	CrVI	Cyanide	Phenolics	Pesticides
21-202	21-202 SA1	25-May-21	0-0.61	TOPSOIL (0.00 - 0.25 mbgs) - (SM) SILTY SAND; dark brown, contains organic matter (rootlets); non-cohesive, moist, very loose. FILL (0.25-0.61 mbgs) - (SM) SILTY SAND; dark brown to brown, contains organic matter; non-cohesive, moist, very loose.	X	X		X		X	X	X								
	21-202 SA1 <sup>a</sup>	16-Jun-21	0-0.61	SILTY SAND; dark brown, trace organics.									X							
	21-202 SA4	25-May-21	2.29-2.9	(SM) gravelly SILTY SAND; grey brown, possible cobbles and boulders (GLACIAL TILL); non-cohesive, moist, loose to dense.	X	X		X												
	21-202 SA9	25-May-21	6.10-6.71	(SM) gravelly SILTY SAND; grey, contains cobbles and boulders (GLACIAL TILL); non-cohesive, wet, very loose.	X	X		X					X							
21-203	21-203 SA1	19-May-21	0-0.61	TOPSOIL (0.00-0.25 mbgs) - (SM) SILTY SAND, trace gravel; dark brown, contains organic matter (rootlets); non-cohesive, moist, loose. FILL (0.25-0.61) - (SM) SILTY SAND; brown; non-cohesive, moist, very loose to dense.	X	X		X		X	X	X								
	21-203 SA5	19-May-21	3.05-3.66	(SM) gravelly SILTY SAND; grey brown, possible cobbles and boulders (GLACIAL TILL); non-cohesive, moist to wet, very loose to compact.	X	X		X												
21-204	21-204 SA1	09-Jun-21	0-0.61	TOPSOIL (0.00-0.15 mbgs) - (SM) SILTY SAND; dark brown, contains organic matter (rootlets); non-cohesive, moist, loose. FILL (0.15-0.61 mbgs)- (SP) SAND, fine to medium, some silt; brown to dark brown, contains organic matter; non-cohesive, moist, loose.	X	X		X		X	X	X								
21-205	21-205 SA4	02-Jun-21	2.29-2.9	(Cl/CH) SILTY CLAY to CLAY (2.29-2.74 mbgs), trace sand; grey brown, highly fissured (WEATHERED CRUST); cohesive, w<PL, very stiff.	X	X		X												
	21-205 SA44 (duplicate of 21-205 SA4)	02-Jun-21	2.29-2.9	(SM) gravelly SILTY SAND (2.74-2.90 mbgs); grey brown, possible cobbles and boulders (GLACIAL TILL); non-cohesive, moist to wet, compact.	X	X		X												
	21-205 SA6	02-Jun-21	3.81-4.42	(SM) gravelly SILTY SAND; grey brown, possible cobbles and boulders (GLACIAL TILL); non-cohesive, moist to wet, compact.	X	X		X		X	X	X								
21-206	21-206 SA2	19-May-21	0.76-1.17	FILL - (SM) gravelly SILTY SAND; grey brown, possible cobbles and boulders; non-cohesive, moist, compact to very dense.				X		X	X	X								
	21-206 SA6	19-May-21	3.81-4.42	(SM) gravelly SILTY SAND; grey, possible cobbles and boulders (GLACIAL TILL); non-cohesive, moist to wet, loose to compact.	X	X		X												
21-207	21-207 SA1	04-Jun-21	0-0.61	TOPSOIL (0.00-0.23 mbgs) - (SM) SILTY SAND, trace gravel; dark brown, contains organic matter (rootlets); non-cohesive, moist, loose. FILL (0.23-0.38 mbgs) - (SM) gravelly SILTY SAND, angular; grey; non-cohesive, moist, compact. FILL (0.38-0.61 mbgs) - (SP) SAND, fine to medium, trace silt; brown; non-cohesive, moist, compact.	X	X		X		X	X	X								
21-208	21-208 SA2	01-Jun-21	0.76-1.37	FILL (0.76-0.91 mbgs) - (SP) SAND, fine to medium, trace silt; brown; non-cohesive, moist, loose. (Cl/CH) SILTY CLAY to CLAY (0.91-1.37 mbgs), trace sand; grey brown, highly fissured, contains thin lamination of silty sand and very thin beds of gravelly silty sand (WEATHERED CRUST); cohesive, w~PL to w>PL, very stiff.	X	X		X		X	X	X								

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Sample Location	Sample ID	Sample Date	Sample Depth (mbgs)	Soil Sample Description	PHCs	BTEX	VOCs	PAHs	PCBs	Metals	Hydride Forming Metals (As, Se, Sb)	ORPs (B-HWS, Cr(VI), Hg)	Hg only	Methyl Hg	pH	Energetics	CrVI	Cyanide	Phenolics	Pesticides
21-209	21-209 SA1	10-Jun-21	0-0.61	TOPSOIL (0.00-0.46 mbgs) - (SM) SILTY SAND, some gravel; dark brown, contains organic matter (rootlets); non-cohesive, moist, compact. FILL (0.46-0.61 mbgs) - (SM) gravelly SILTY SAND, some clay; dark brown to grey brown, contains clay layers and organic matter (rootlets); non-cohesive, moist, compact to loose.	X	X		X		X	X	X								
21-210	21-210 SA2	02-Jun-21	0.76-1.37	FILL - (Cl/CH) SILTY CLAY to CLAY, trace to some sand, trace gravel; grey brown, highly fissured, contains silty sand pockets/nodules/layers and organic matter; cohesive, w~PL, firm to stiff.	X	X		X		X	X	X								
21-212	21-212 SA1	10-Jun-21	0-0.61	TOPSOIL (0.00-0.30 mbgs) - (SM) SILTY SAND; dark brown, contains organic matter (rootlets); non-cohesive, moist, loose. FILL (0.30-0.61 mbgs) - (SP) SAND, fine to medium, trace silt; brown to dark brown, contains organic matter; non-cohesive, moist, loose.	X	X		X		X	X	X								
21-213	21-213 SA5	31-May-21	3.05-3.66	FILL - (SM) gravelly SILTY SAND, trace to some clay; brown to grey brown, contains silty clay layers and organic matter (rootlets/wood); non-cohesive, moist to wet, very loose to compact.	X	X	X													
	21-213 SA6	31-May-21	3.81-4.42	FILL - (SW) gravelly SAND, fine to coarse; brown; non-cohesive, wet, very loose.	X	X	X													
21-214	21-214 SA1	27-May-21	0-0.61	TOPSOIL (0.00-0.15 mbgs) - (SM) SILTY SAND, trace gravel; dark brown, contains organic matter (rootlets); non-cohesive, moist, very loose. FILL (0.15-0.61 mbgs) - (SM) gravelly SILTY SAND; dark brown, contains concrete fragments, silty clay layers, organic matter and asphalt fragments; non-cohesive, moist, compact.	X	X		X		X	X	X								
	21-214 SA4	27-May-21	2.29-2.9	FILL -(SW) SAND, fine to coarse, some gravel, some silt; brown, contains silty sand layers and silty clay layers; non-cohesive, moist to wet, compact to very loose.	X	X		X												
	21-214 SA7	27-May-21	4.57-5.18	FILL - (SM) CLAYEY SILTY SAND, some gravel; dark grey brown, with black staining, contains organic matter; non-cohesive, wet, very loose.	X	X		X												
	21-214 SA12	27-May-21	7.62-8.23	(SM) gravelly SILTY SAND; grey, possible cobbles and boulders (GLACIAL TILL); non-cohesive, wet, compact.	X	X		X												
21-215	21-215 SA1	28-May-21	0-0.61	TOPSOIL (0.00-0.38 mbgs) - (SM) SILTY SAND; dark brown, contains organic matter (rootlets); non-cohesive, moist, loose. FILL (0.38-0.61 mbgs) - (SM) SILTY SAND, fine to medium; brown, contains organic matter (rootlets); non-cohesive, moist, loose to compact.	X	X		X		X	X	X								
	21-215 SA3	28-May-21	1.52-2.13	(Cl/CH) (1.52-2.06 mbgs) - SILTY CLAY to CLAY, trace sand; grey brown, highly fissured, contains thin to thick laminations of silty sand (WEATHERED CRUST); cohesive, w>PL, very stiff.	X	X		X		X	X	X								
	21-215 SA33 (duplicate of 21-215 SA3)	28-May-21	1.52-2.13	(SM) below 2.06 mbgs - gravelly SILTY SAND; grey brown, contains cobbles and boulders (GLACIAL TILL); non-cohesive, moist to wet loose.						X	X	X								
21-216	21-216 SA4	05-May-21	2.29-2.9	FILL - (SM) gravelly SILTY SAND, fine to medium brown, contains clay seams; non-cohesive, moist, compact.	X	X				X	X	X								
	21-216 SA7	05-May-21	4.57-5.18	(SM/ML) SILTY SAND to sandy SILT, some gravel; grey brown to grey (GLACIAL TILL); moist to wet, dense to very dense.	X	X		X												

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21-217	21-217 SA1	06-May-21	0-0.61	TOPSOIL - (0-0.21 mbgs) - (SM) SILTY SAND; dark brown, contains rootlets; moist. FILL - (0.21-0.61 mbgs) - (SM) gravelly SILTY SAND; grey brown, contains clay seams; non-cohesive, moist, loose to dense.				X		X	X	X								
	21-217 SA7	06-May-21	4.57-5.18	(SM) gravelly silty sand, grey brown to grey contains cobbles (GLACIAL TILL); non-cohesive, dry to wet, compact to loose.	X	X		X		X	X	X								
	DUP-1 (duplicate of 21-217 SA7)	06-May-21	4.57-5.18		X	X		X		X	X	X								
21-218	21-218 SA1	07-May-21	0-0.61	TOPSOIL (0.00-0.15 mbgs) - (SM) SILTY SAND, some gravel; dark brown, contains organic matter (rootlets); moist. FILL (0.15-0.61 mbgs) - (CL/CI) SILTY CLAY, trace gravel; grey brown, contains organic matter (rootlets); cohesive, w~PL, stiff.	X	X	X	X												
	21-218 SA3	07-May-21	1.52-2.13	FILL - (SM) gravelly SILTY SAND, fine to coarse; grey to brown, contains brick particles and concrete; non-cohesive, dry to moist, very dense to compact.						X	X	X								
	21-218 SA8	07-May-21	5.34-5.95	(SW) SAND, fine to coarse, trace gravel; brown; non-cohesive, moist, very loose.	X	X	X	X												
	21-218 SA9	07-May-21	6.1-6.71	(SW) SAND - (6.1-6.55 mbgs) - fine to coarse, trace gravel; brown; non-cohesive, moist, very loose. (ML/SM) - (6.55-6.71 mbgs) - Sandy SILT to SILTY SAND, some low-medium plasticity fines; brown, contains clay seams; non-cohesive, moist, very loose.							X	X								
21-219	21-219 SA1	06-May-21	0-0.61	TOPSOIL - (0.00-0.15 mbgs) - (SM) SILTY SAND, some gravel; dark brown, contains organic matter (rootlets); moist, loose. FILL - (0.15-0.61 mbgs) - (SM) SILTY SAND, trace gravel; brown; non-cohesive, moist, loose.					X											
	21-219 SA2	06-May-21	0.76-1.37	FILL - (SM) SILTY SAND, trace gravel; brown; non-cohesive, moist, loose.				X		X	X	X								
	21-219 SA7	06-May-21	4.57-5.18	(SW) gravelly SILTY SAND; grey, contains cobbles (GLACIAL TILL); non-cohesive, moist to wet, dense.	X	X	X													
21-221	21-221 SA1	20-May-21	0-0.61	TOPSOIL (0.00-0.20 mbgs) - (SM) SILTY SAND, trace gravel; dark brown, contains organic matter (rootlets); non-cohesive, moist, compact. FILL (0.20-0.61 mbgs) - (SM) gravelly SILTY SAND; dark brown to brown, contains organic matter and brick; non-cohesive, moist, compact.	X	X	X	X	X	X	X	X								
	21-221 SA3	20-May-21	1.52-2.13	(SM) SILTY SAND (1.52-1.98 mbgs), fine to medium; brown; on-cohesive, moist, compact. (CI/CH) SILTY CLAY to CLAY (1.98-2.13 mbgs), trace to some sand; grey brown, highly fissured, contains thin laminations of silty sand (WEATHERED CRUST); cohesive, w>PL, very stiff to firm.	X	X		X	X											
	21-221 SA6	20-May-21	3.81-4.42	(CI/CH) SILTY CLAY to CLAY, trace to some sand; grey brown, highly fissured, contains thin laminations of silty sand (WEATHERED CRUST); cohesive, w>PL, very stiff to firm.					X											
	21-221 SA66 (duplicate of 21-221 SA6)	20-May-21	3.81-4.42						X											

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21-222	21-222 SA1	12-May-21	0-0.61	TOPSOIL (0.00-0.15 mbgs) - (SM) SILTY SAND; brown, contains organic matter (rootlets); non-cohesive, moist, loose. FILL (0.15-0.30 mbgs) - (CL/CI) SILTY CLAY, trace to some sand, some gravel; brown, contains brick fragments; cohesive, w~PL, stiff. FILL (0.30-0.061 mbgs) - (SM) gravelly SILTY SAND; grey brown, possible cobbles and boulders; non-cohesive, moist, compact to loose	X	X	X	X	X	X	X	X								
	21-222 SA3	12-May-21	1.32-2.13	FILL (1.3-1.68 mbgs) - (CL/CI) SILTY CLAY, some sand, some gravel; grey brown; cohesive, w~PL, firm. FILL (1.68-2.13 mbgs)- (SM) gravelly SILTY SAND, fine to coarse; brown to grey brown, concrete fragments, brick fragments, organic matter and wood; non-cohesive, moist, loose to very dense.						X	X	X								
	21-222 SA5	12-May-21	3.05-3.66	FILL - (SM) gravelly SILTY SAND, fine to coarse; brown to grey brown, concrete fragments, brick fragments, organic matter and wood; non-cohesive, moist, loose to very dense.	X	X	X	X												
21-224	21-224 SA3	10-May-21	1.52-2.13	FILL - (SM) gravelly SILTY SAND, fine to coarse; dark brown to brown, contains concrete fragments; non-cohesive, moist, dense to very dense.	X	X	X	X		X	X	X								
	21-224 SA10	10-May-21	6.86-7.47	FILL - (SM) gravelly SILTY SAND, fine to coarse; dark brown to brown, contains concrete fragments; non-cohesive, moist, dense to very dense.	X	X	X	X		X	X	X								
	21-224 SA10 <sup>b</sup> (duplicate of 21-224 SA10)	10-May-21	6.86-7.47		X	X	X	X		X	X	X								

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21-225	21-225 SA4	03-May-21	2.29-2.9	FILL - (Cl/CH) SILTY CLAY, some sand, trace gravel; grey brown; cohesive, w-PL, stiff.	X	X	X	X		X	X	X								
	22-225 SA44 <sup>c</sup> (duplicate of 21-225 SA4)	03-May-21	2.29-2.9		X	X	X	X		X	X	X								
21-226	21-226 SA1	04-May-21	0-0.61	TOPSOIL (0.00-0.23 mbgs) - (SM) SILTY SAND; dark brown; moist. FILL (0.23-0.61 mbgs) - (SM) SILTY SAND, fine to coarse, some gravel, trace clay; brown; non-cohesive, moist, loose to dense.				X		X	X	X								
	21-226 SA3	04-May-21	1.52-1.85	FILL - (SM) SILTY SAND, fine to coarse, some gravel, trace clay; brown; non-cohesive, moist, loose to dense.	X	X	X	X												
SSA1	SSA1 <sup>a</sup>	16-Jun-21	0-0.31	SILTY SAND with gravel; grey, trace organics.	X	X			X											
SSA2	SSA2 <sup>a</sup>	16-Jun-21	0-0.31	SILTY SAND; grey-brown, trace organics.	X	X			X											
SSA3	SSA3 <sup>a</sup>	16-Jun-21	0-0.31	SILTY SAND; brown, trace organics.	X	X			X											
SSA4	SSA4 <sup>a</sup>	25-Jun-21	0-0.61	Fine SAND; some silt, some gravel; brown; non-cohesive, dry to moist.						X	X		X							
SSA5	SSA5 <sup>a</sup>	25-Jun-21	0-0.61	Fine SAND; some silt, some gravel; brown; non-cohesive, dry to moist.										X						
SSA6	SSA6 <sup>a</sup>	25-Jun-21	0-0.61	Fine SAND; some silt, some gravel; brown; non-cohesive, dry to moist.						X	X		X							
SSA7	SSA7 <sup>a</sup>	25-Jun-21	0-0.61	Fine SAND; some silt, some gravel; brown; non-cohesive, dry to moist.										X						
BH5	BH5 SS2	24-Jul-17	0.7-1.3	FILL: Brown silty clay, some sand, gravel and cobbles.						X	X									
BH8	BH8 SS2	26-Jul-17	0.3-0.6	Soft to stiff, brown SILTY CLAY, trace sand.						X	X									
BH9	BH9 SS3	26-Jul-17	0.6-1.2	FILL: Brown silty sand, trace gravel and topsoil.						X	X									
MW16-6	MW16-6 1A	17-Mar-16	0-0.7	SILTY CLAY (FILL); grey, gravel, moist				X		X	X		X		X	X	X	X		
MW16-7	MW16-7-SS2	14-Mar-16	0.6-1.5	SILTY CLAY; brown, soft, dry				X		X	X		X			X	X			
MW16-9	MW16-9 SS1	03-Aug-16	0-0.8	SAND; dark brown, with gravel, dry				X							X				X	
MW16-10	MW16-10 SS2	02-Aug-16	0.8-1.5	SANDY CLAY; light brown, dry, trace gravel at approximately 1.25 m bgs.				X												

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TP16-1	TP16-1-SS2	28-Jul-16	0.8-1.5	SAND (FILL); trace silt, gravel, dry, brick, tile and concrete debris, metal debris at approximately 1.5 m bgs.				X		X	X		X		X		X		X	
	TP16-1-SS2A (Field duplicate of TP16-1-SS2)	28-Jul-16	0.8-1.5	SAND (FILL); trace silt, gravel, dry, brick, tile and concrete debris, metal debris at approximately 1.5 m bgs.						X	X		X				X		X	
	TP16-1-SS3	28-Jul-16	1.5-2.4	SAND (FILL); trace silt, gravel, dry, brick, tile and concrete debris, metal debris at approximately 1.5 m bgs.				X		X	X		X				X			
	TP16-1-SS3A (Field duplicate of TP16-1-SS3)	28-Jul-16	1.5-2.4	SAND (FILL); trace silt, gravel, dry, brick, tile and concrete debris, metal debris at approximately 1.5 m bgs.				X												
	TP16-1-SS7	28-Jul-16	4.7-5.8	SAND (FILL); trace silt, gravel, dry, brick, tile and concrete debris.		X	X	X		X	X		X				X			
TP16-2	TP16-2-SS2	28-Jul-16	0.8-1.5	SAND (FILL); with gravel, dry, brick and concrete debris; metal debris at approximately 0.75 m bgs.				X		X	X				X		X		X	
	TP16-2-SS4	28-Jul-16	2.3-3	SAND (FILL); gravel, dry, brick and concrete debris; trace silt at approximately 2.25 m bgs.		X	X	X		X	X		X		X		X		X	
	TP16-2-SS6	28-Jul-16	4.1-5.2	SAND (FILL); gravel, dry, brick and concrete debris.				X		X	X		X		X		X		X	
TP16-4	TP16-4-SS4	28-Jul-16	2.3-3	SAND (FILL); with sand, trace clay, moist, brick and concrete debris, with black sand.	X	X	X	X	X	X	X		X		X		X			
	TP16-4-SS4A (Field duplicate of TP16-4-SS4)	28-Jul-16	2.3-3	SAND (FILL); with sand, trace clay, moist, brick and concrete debris, with black sand.	X	X	X		X						X					
MW17-05	MW17-05-SS01	26-Jul-17	0-0.91	TOPSOIL (from 0-0.61 mbgs); black-brown, organics, moist. SILT (from 0.61-0.91 mbgs); brown-grey, moist.				X	X	X	X		X		X		X	X	X	X
	MW17-05-SS04	26-Jul-17	2.13-3.05	SILT (from 2.13-2.44 mbgs); brown-grey, moist. SILTY SAND (from 2.44-3.05 mbgs); brown, trace gravel, wet.	X	X	X	X	X	X	X		X		X		X	X	X	X
MW17-06	MW17-06-SS01	26-Jul-17	0-0.91	TOPSOIL (from 0-0.3 mbgs); black-brown, organics, moist. SANDY SILT (from 0.3-0.91 mbgs); brown, trace gravel, moist.				X	X	X	X		X		X		X	X	X	X
MW17-07	MW17-07-SS01	26-Jul-17	0-1.2	TOPSOIL (from 0-0.3 mbgs); black, organics, moist. SILTY SAND (from 0.3-0.91 mbgs); brown, trace gravel, moist to wet.	X	X	X	X	X	X	X		X		X		X	X	X	X
	MW17-07-SS05	26-Jul-17	4.57-6.1	SILTY SAND; brown-grey, trace gravel, moist to wet.	X	X	X	X	X	X	X		X		X		X	X	X	X
MW17-08	MW17-08-SS01	26-Jul-17	0-1.52	TOPSOIL; black, organics, moist BETWEEN 0-0.61 m bgs; SAND; brown, trace silt and gravel, moist between 0.61 to 1.52 m bgs.	X	X	X	X	X	X	X		X		X		X	X	X	X
	MW17-08-SS02	26-Jul-17	1.52-2.44	SILTY SAND; brown, trace gravel moist.	X	X	X	X	X	X	X		X		X		X	X	X	X
	DUP-20170726-A (Field duplicate of MW17-08-SS02)	26-Jul-17	1.52-2.44	SILTY SAND; brown, trace gravel moist.	X	X	X	X	X	X	X		X		X		X	X	X	X

**Notes:**

- a Surficial soil sampled manually using a shovel.
- b Alternatively labeled DUP-2 on CoC.
- c Alternatively labeled DUP-3 on CoC.



**Table 2B - Summary of Groundwater Samples Submitted for Laboratory Analysis  
The Ottawa Hospital**

Monitoring Well	Well Depth (mbgs)	Screen Interval (mbgs)	Soil Description of Screened Interval	Sample ID	Sample Date	Analyses									
						PHCs	PHC F1 only	BTEX	VOCs	PAHs	PCBs	Metals	Hydride Forming Metals (As, Se, Sb)	ORPs (Cr(VI), Hg)	
MW22-401	9.73	4.88 to 7.92	4.88 to 5.18 mbgs: (SW/SM) SAND to SILTY SAND, some low plasticity fines; grey (GLACIAL TILL); slightly cohesive, moist to wet, very loose to loose 5.18 to 7.62 mbgs: (SW/SM) SAND to SILTY SAND, some low plasticity fines, some gravel; grey (GLACIAL TILL); slightly cohesive, wet, loose to dense 7.62 to 7.92 mbgs: (SW) SAND, some gravel, some low plasticity fines; grey (GLACIAL TILL); non-cohesive, moist, compact to very dense	MW22-401	4-Aug-22	X		X		X					
MW22-405	6.09	4.57 to 6.09	Fresh to slightly weathered, thinly to medium bedded, pale grey to black, fine to medium grained, non to slightly porous, medium strong SHALEY LIMESTONE	MW22-405	4-Aug-22	X		X							
MW22-411s	4.57	1.32 to 4.37	1.32 to 2.13 mbgs: (SM) gravelly SILTY SAND; grey brown (GLACIAL TILL); non-cohesive, moist to wet, loose 2.13 to 4.57 mbgs: (SM) gravelly SILTY SAND; grey, possible cobbles and boulders (GLACIAL TILL); non-cohesive, wet, loose to dense	MW22-411S	4-Aug-22	X		X		X		X			
MW22-411d	8.35	5.31 to 8.35	Fresh, thinly to medium bedded, medium grey to brownish grey, fine to medium grained, non-porous, medium strong SHALEY LIMESTONE - Lost core from 4.57 m to 4.60 m - Broken/lost core from 4.69 m to 4.73 m - Broken core from 5.02 m to 5.03 m - Broken core from 5.79 m to 5.5 m - Broken/lost core from 6.21 m to 6.24 m - Broken/lost core from 6.57 m to 6.56 m	MW22-411D	4-Aug-22	X		X		X					
MW22-303	20.22	7.62 to 10.67	(SM) gravelly SILTY SAND to SILTY SAND, some gravel, some clay; grey, contains cobbles and boulders (GLACIAL TILL); non-cohesive, wet, compact to very dense	MW22-303	4-Aug-22	X		X		X		X			
21-213	12.2	9.15 to 12.2	Gravelly SILTY SAND to SAND (GLACIAL TILL); grey, contains cobbles and boulders; n-c, wet, compact to dense to very loose.	21-213	7-Jun-21	X		X	X	X		X	X	X	
21-218	9.45	6.4 to 9.45	FILL (SAND to sandy SILTY CLAY) to gravelly SILTY SAND (GLACIAL TILL); brown to grey; trace gravel, contains cobbles, n-c, moist to wet, very loose to compact.	21-218	25-May-21	X		X	X	X		X	X	X	
				21-218	9-Jun-21								X	X	

Monitoring Well	Well Depth (mbgs)	Screen Interval (mbgs)	Soil Description of Screened Interval	Sample ID	Sample Date	Analyses								
						PHCs	PHC F1 only	BTEX	VOCs	PAHs	PCBs	Metals	Hydride Forming Metals (As, Se, Sb)	ORPs (Cr(VI), Hg)
21-219	4.57	1.52 to 4.57	SILTY CLAY to gravelly SILTY SAND; trace sand; contains cobbles (GLACIAL TILL) grey brown, fissured; w~PL, moist to wet, very stiff to compact.	MW21-219	25-May-21	X		X	X	X	X	X	X	X
				DUP-1	25-May-21	X		X	X	X	X	X	X	X
21-221 S	13.47	10.42 to 13.47	Gravelly SILTY SAND to SAND to SILTY sandy GRAVEL; grey, contains cobbles and boulders (GLACIAL TILL); n-c, wet, very loose to compact to very dense.	21-221S	2-Jun-21	X		X	X	X	X	X	X	X
21-222 D	12.2	10.67 to 12.2	Gravelly SILTY SAND; grey; contains cobbles and boulders (GLACIAL TILL); n-c, wet, dense to loose.	BH21-222D	25-May-21	X		X	X	X		X	X	X
21-222 S	7.62	4.57 to 7.62	FILL; gravelly SILTY SAND to sandy GRAVEL; brown to grey brown, concrete fragments, brick fragments, organic matter, wood; n-c,	BH21-222S	25-May-21	X		X	X	X		X	X	X
				DUP-2	25-May-21	X		X	X	X		X	X	X
21-224	7.62	4.57 to 7.62	FILL; gravelly SILTY SAND fine to coarse; dark brown to brown; contains concrete fragments, n-c, moist, dense to very dense.	21-224	25-May-21	X		X	X	X		X	X	X
21-225	5.18	2.13 to 5.18	FILL to SILTY CLAY; some sand, trace gravel; brown-grey, slightly fissured (WEATHERED CRUST) and (GLACIAL TILL); cohesive; w~PL, stiff.	21-225	24-May-21	X		X	X	X		X	X	X
21-226	5.18	2.13 to 5.18	FILL to SILTY CLAY; trace sand, grey-brown, with black mottling, contains organic matter, highly fissured (WEATHERED CRUST); w<PL, moist to wet, loose to compact.	21-226	25-May-21	X		X	X	X		X	X	X
MW16-1A	10.06	7.32 to 10.06	FILL; SANDY SILT and CLAY; grey; gravel; crushed concrete; brick fragments; moist to wet; black staining at 7.5 mbgs	MW16-1A	25-May-21	X		X	X	X		X	X	X

Monitoring Well	Well Depth (mbgs)	Screen Interval (mbgs)	Soil Description of Screened Interval	Sample ID	Sample Date	Analyses								
						PHCs	PHC F1 only	BTEX	VOCs	PAHs	PCBs	Metals	Hydride Forming Metals (As, Se, Sb)	ORPs (Cr(VI), Hg)
MW16-11	3.35	1.22 to 3.35	FILL; SAND; red-brown; trace clay; wood; dry to moist SILTY SAND; grey; trace sand and gravel; moist to wet SANDY SILT; grey; trace clay; gravel; wet	16-11	25-May-21	X		X	X	X		X	X	X
MW16-13	6.10	3.05 to 6.10	SILTY CLAY; grey-blue; wet	16-13	7-Jun-21	X		X	X	X		X	X	X
Data Quality	NA	NA	NA	Trip Blank	25-May-21		X	X						
	NA	NA	NA	Trip Blank	2-Jun-21	X		X						

**Notes:**

- mbgs metres below ground surface
- n-c non-cohesive
- w water content
- PL Plasticity Limit
- NA not applicable

Table to be read in conjunction with accompanying report

**Table 3 - Groundwater Monitoring  
The Ottawa Hospital**

Monitoring Well	Date	Temperature (°C)	pH	Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (mV)
21-213	07-Jun-21	16.1	7.37	1.24	0.00	98
21-218	25-May-21	20.37	7.57	0.859	0.80	171
	09-Jun-21	15.09	7.47	1.03	0.00	132
21-219	25-May-21	14.45	7.15	1.21	1.05	204
21-221S	02-Jun-21	13.23	7.26	2.33	0.00	-74
21-222D	25-May-21	23.13	7.99	1.41	0.00	-191
21-222S	25-May-21	18.27	12.63	5.43	0.00	-63
21-224	25-May-21	13.08	7.52	4.41	1.32	132
21-225	25-May-21	24.67	7.7	1.49	1.39	127
21-226	25-May-21	16.3	7.2	2.34	1.24	157
16-1A	25-May-21	19.91	6.94	4.6	0.00	133
16-11	25-May-21	27.44	7.22	1.08	0.00	-91
16-13	07-Jun-21	22.81	7.31	1.4	0.13	-48
22-303	05-Aug-22	24.19	9	1.77	12.62	19
22-401	04-Aug-22	22.15	8.36	0.002	14.74	-38
22-405	05-Aug-22	20.88	8.55	1.22	10.66	129
22-411S	04-Aug-22	18.8	9.78	1.01	28.00	66
22-411D	04-Aug-22	23.35	9.16	0.889	11.50	89

**Notes:**

- °C degrees Celsius
- µS/cm milliSeimans per centimetre
- mg/L milligram per litre
- mV millivolts
- Not measured.

Table to be read in conjunction with accompanying report.

**Table 4 - Groundwater Levels and Elevations  
The Ottawa Hospital**

Monitoring Well	Ground Surface Elevation (m asl)	Top of Pipe Elevation (m asl)	Height of Pipe (m)	27-May-21			28-May-21			02-Jun-21			09-Jun-21			04-Aug-22		
				Depth to water (m btop)	Depth to water (m bgs)	Groundwater Elevation (m asl)	Depth to water (m btop)	Depth to water (m bgs)	Groundwater Elevation (m asl)	Depth to water (m btop)	Depth to water (m bgs)	Groundwater Elevation (m asl)	Depth to water (m btop)	Depth to water (m bgs)	Groundwater Elevation (m asl)	Depth to water (m btop)	Depth to water (m bgs)	Groundwater Elevation (m asl)
21-201	82.46	83.33	0.87	-	-	-	-	-	-	-	-	-	-	-	-	7.44	6.57	75.89
21-202	81.20	82.07	0.87	-	-	-	-	-	-	-	-	-	6.03	5.16	76.04	6.25	5.38	75.82
21-204	81.09	82.01	0.92	-	-	-	-	-	-	-	-	-	-	-	-	6.19	5.27	75.82
21-213	76.11	76.94	0.83	-	-	-	-	-	-	-	-	1.54	0.71	75.40	1.97	1.14	74.97	
21-215	72.79	73.68	0.89	-	-	-	-	-	-	-	-	3.28	2.39	70.40	2.99	2.10	70.69	
21-218	78.54	79.41	0.87	6.70	5.83	72.71	6.69	5.82	72.72	-	-	-	6.89	6.02	72.52	6.05	5.18	73.36
21-219	79.40	80.30	0.90	3.70	2.80	76.60	3.70	2.80	76.60	-	-	-	3.83	2.93	76.47	-	-	-
21-221 D	74.59	75.55	0.96	-	-	-	3.29	2.33	72.26	-	-	-	3.37	2.41	72.18	2.34	1.38	73.21
21-221 S	74.59	75.55	0.96	-	-	-	2.32	1.36	73.23	-	-	-	2.40	1.44	73.15	2.38	1.42	73.17
21-222 D	78.83	79.73	0.90	6.55	5.65	73.18	7.52	6.62	72.21	-	-	-	7.69	6.79	72.04	-	-	-
21-222 S	78.83	79.75	0.92	7.34	6.42	72.41	7.33	6.41	72.42	-	-	-	7.44	6.52	72.31	6.44	5.52	73.31
21-224	78.90	79.80	0.90	7.21	6.31	72.59	7.23	6.33	72.57	-	-	-	7.39	6.49	72.41	-	-	-
21-225	75.21	76.13	0.92	4.46	3.54	71.67	4.46	3.54	71.67	-	-	-	4.55	3.63	71.58	-	-	-
21-226	75.31	76.25	0.94	3.77	2.83	72.48	3.77	2.83	72.48	-	-	-	3.94	3.00	72.31	3.08	2.14	73.17
22-112	73.59	74.49	0.89	-	-	-	-	-	-	-	-	-	-	-	-	3.94	3.05	70.55
22-301	84.60	85.63	1.03	-	-	-	-	-	-	-	-	-	-	-	-	5.80	4.77	79.83
22-303	80.57	81.48	0.91	-	-	-	-	-	-	-	-	-	-	-	-	5.76	4.85	75.72
22-308	82.93	83.81	0.87	-	-	-	-	-	-	-	-	-	-	-	-	7.72	6.85	76.09
22-310	80.54	81.40	0.86	-	-	-	-	-	-	-	-	-	-	-	-	5.16	4.30	76.24
22-401	68.56	69.51	0.95	-	-	-	-	-	-	-	-	-	-	-	-	3.66	2.71	65.85
22-405	67.19	68.23	1.05	-	-	-	-	-	-	-	-	-	-	-	-	5.19	4.14	63.04
22-411D	66.72	67.78	1.06	-	-	-	-	-	-	-	-	-	-	-	-	3.73	2.67	64.05
22-411S	66.72	67.76	1.04	-	-	-	-	-	-	-	-	-	-	-	-	3.51	2.47	64.25
MW16-1A	78.05	77.96	-0.09	6.14	6.23	71.82	-	-	-	-	-	-	6.25	6.34	71.71	-	-	-
MW16-11	72.64	72.56	-0.08	2.48	2.56	70.08	-	-	-	-	-	-	2.56	2.64	70.00	-	-	-
MW16-13	77.76	77.73	-0.03	-	-	-	-	-	-	1.78	1.81	75.95	2.16	2.19	75.57	-	-	-

**Notes:**  
 m metres  
 m asl metres above sea level  
 m btop metres below top of pipe  
 m bgs metres below ground surface

Table to be read in conjunction with accompanying report  
 Elevation data in metres above mean sea level relative to a geodetic bench mark.



Table 5A - Soil Analytical Results - 2021-22  
The Ottawa Hospital

Table with columns for Location (21-215 to 21-225), Sample Name, Sample Date, Sample Depth, Parameter, and Unit. Rows include Metals (Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Chromium, Cobalt, Copper, Lead, Molybdenum, Nickel, Selenium, Silver, Thallium, Uranium, Vanadium, Zinc), Other Regulated Parameters (Hexavalent Chromium, Boron, Mercury, Methyl Mercury), PHCs (PHC F1-F4), BTEX (Benzene, Toluene, Ethylbenzene, m,p-Xylenes, o-Xylene, Xylenes, Total), PAHs (Naphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Anthracene, Fluoranthene, Pyrene, Benzofluoranthene, Chrysene, Benzo[a]fluoranthene, Benzo[k]fluoranthene, Benzo[a]pyrene, Indeno[1,2,3-cd]pyrene, Dibenz[a,h]anthracene, Benzo[g,h,i]perylene, 1 and 2 Methylanthracene), VOCs (1,1,1,2-Tetrachloroethane, 1,1,1-Trichloroethane, 1,1,2,2-Tetrachloroethane, 1,1,2-Trichloroethane, 1,1-Dichloroethane, 1,1-Dichloroethylene, 1,2-Dibromoethane, 1,2-Dichlorobenzene, 1,2-Dichloroethane, 1,2-Dichloropropane, 1,3-Dichlorobenzene, 1,3-Dichloropropene, Total, 1,4-Dichlorobenzene, Methyl Ethyl Ketone, Acetone, Bromodichloromethane, Bromoform, Bromomethane, Carbon Tetrachloride, Chlorobenzene, Chloroform, cis-1,2-Dichloroethane, Dibromochloromethane, Dichlorodifluoromethane, Methyl tert-Butyl Ether, Methylene Chloride, n-Hexane, Tetrachloroethylene, trans-1,2-Dichloroethane, Trichloroethene, Trichlorofluoromethane, Vinyl Chloride, Styrene, Methyl Isobutyl Ketone, 1,1,1,2,2-Pentachloroethane), and PCBs (Polychlorinated Biphenyls).









**Notes:**

Value	Parameter concentration exceeds MECP Table 3 Standards.
1	Ontario Reg 153/04 (2011) Table 3: Full Depth Background Site Condition Standards, Residential, Coarse-texture Soil.
µg/g	micrograms per gram
PCBs	Polychlorinated Biphenyls
PHC	Petroleum Hydrocarbon
PHC F1	Petroleum Hydrocarbons - F1 (C6-C10)-BTEX
PHC F2	Petroleum Hydrocarbons - F2 (C10-C16) less Naphthalene
PHC F3	Petroleum Hydrocarbons - F3 (C16-C34) less PAHs
PHC F4	Petroleum Hydrocarbons - F4 (C34-C50)
BTEX	Benzene, toluene, ethylbenzene, xylene mixture
PAHs	Polycyclic aromatic hydrocarbons
VOCs	Volatile Organic Compounds
RDL	Reportable Detection Limit
a	Surficial soil sample collected manually with a shovel.
b	PHC F2 (C10 to C16)
c	PHC F3 (C16 to C34)
<	Indicates parameter was below laboratory equipment detection limit.
>	Indicates parameter detected above equipment analytical range.
-	Chemical not analyzed or criteria not defined.









Table 5B - Historical Soil Analytical Results  
The Ottawa Hospital

Table with columns for Location (TP16-3, TP16-4, MW17-03, MW17-04, MW17-05, MW17-06, MW17-07, MW17-08, MW17-09), Sample Name, Sample Date, Sample Depth, Historical Report, Parameter, Table 3 Site Standards, and Unit. Rows include General Chemistry (pH), Metals (Antimony, Arsenic, Barium, etc.), Other Regulated Parameters (Chromium, Mercury, Cyanide), Petroleum Hydrocarbons, BTEX, Polycyclic Aromatic Hydrocarbons (Naphthalene, Anthracene, etc.), and Non-carcinogenic PAHs.

**Table 5B - Historical Soil Analytical Results  
The Ottawa Hospital**

Location			MW17-10	
Sample Name	MW17-10-SS01	MW17-10-SS03		
Sample Date	2017-07-27	2017-07-27		
Sample Depth (m bgs)	0-0.91	1.52-2.44		
Historical Report	Stantec, 7 September 2017, Ph II	Stantec, 7 September 2017, Ph II		
Parameter	Table 3 Site Standards <sup>1</sup>	Unit		
<b>General Chemistry</b>				
Surface soil pH (1:2 CaCl <sub>2</sub> )	5<pH<9	pH	7.18	-
Subsurface soil pH (1:2 CaCl <sub>2</sub> )	5<pH<11	pH	-	7.88
<b>Metals</b>				
Antimony	7.5	ug/g	< 0.2	< 0.2
Arsenic	18	ug/g	3.6	< 1
Barium	390	ug/g	150	77
Beryllium	4	ug/g	0.44	0.26
Boron (Available)	120	ug/g	0.22	0.052
Cadmium	1.2	ug/g	0.13	< 0.1
Chromium	160	ug/g	29	12
Cobalt	22	ug/g	8.1	6.1
Copper	140	ug/g	21	12
Lead	120	ug/g	9.4	3.6
Magnesium	-	ug/g	-	-
Molybdenum	6.9	ug/g	< 0.50	< 0.50
Nickel	100	ug/g	18	10
Selenium	2.4	ug/g	< 0.50	< 0.50
Silver	20	ug/g	< 0.20	< 0.20
Thallium	1	ug/g	0.2	0.11
Uranium	23	ug/g	0.57	0.42
Vanadium	86	ug/g	40	23
Zinc	340	ug/g	42	19
<b>Other Regulated Parameters</b>				
Hexavalent Chromium	8	ug/g	< 0.2	< 0.2
Mercury	0.27	ug/g	< 0.050	< 0.050
Cyanide (free)	0.051	ug/g	< 0.01	< 0.01
<b>Petroleum Hydrocarbons</b>				
Petroleum Hydrocarbons - F1 (C6-C10)-BTEX	55	ug/g	< 10	< 10
Petroleum Hydrocarbons - F1 (C6-C10)	55	ug/g	< 10	< 10
Petroleum Hydrocarbons - F2 (C10-C16)	98	ug/g	< 10	< 10
Petroleum Hydrocarbons - F3 (C16-C34)	300	ug/g	< 50	< 50
Petroleum Hydrocarbons - F4 (C34-C50)	2800	ug/g	< 50	< 50
Reached Baseline at C50	-	-	YES	YES
<b>BTEX</b>				
Benzene	0.21	ug/g	< 0.006	< 0.006
Toluene	2.3	ug/g	< 0.020	< 0.020
Ethylbenzene	2	ug/g	< 0.01	< 0.01
m,p-Xylenes	-	ug/g	< 0.02	< 0.02
o-Xylene	-	ug/g	< 0.02	< 0.02
Xylenes, Total	3.1	ug/g	< 0.02	< 0.02
<b>Polycyclic Aromatic Hydrocarbons</b>				
<b>Non-carcinogenic PAHs</b>				
Acenaphthene	7.9	ug/g	< 0.0050	< 0.0050
Acenaphthylene	0.15	ug/g	< 0.0050	< 0.0050
Anthracene	0.67	ug/g	< 0.0050	< 0.0050
Fluoranthene	0.69	ug/g	0.0053	< 0.0050
Fluorene	62	ug/g	< 0.0050	< 0.0050
1-Methylnaphthalene	0.99	ug/g	< 0.0050	< 0.0050
2-Methylnaphthalene	0.99	ug/g	< 0.0050	< 0.0050
Methylnaphthalenes	-	ug/g	< 0.0071	< 0.0071
Naphthalene	0.6	ug/g	< 0.0050	< 0.0050
Phenanthrene	6.2	ug/g	< 0.005	< 0.005
Pyrene	78	ug/g	0.0055	< 0.005













**Table 5B - Historical Soil Analytical Results  
The Ottawa Hospital**

Location		MW17-10		
Sample Name		MW17-10-SS01	MW17-10-SS03	
Sample Date		2017-07-27	2017-07-27	
Sample Depth (m bgs)		0-0.91	1.52-2.44	
Historical Report		Stantec, 7 September 2017, Ph II	Stantec, 7 September 2017, Ph II	
Parameter	Table 3 Site Standards <sup>1</sup>	Unit		
<b>Carcinogenic PAHs</b>				
Benzo[a]anthracene	0.5	ug/g	< 0.0050	< 0.0050
Benzo[a]pyrene	0.3	ug/g	< 0.0050	< 0.0050
Benzo[a]pyrene Total Potency Equivalence (TPE)	-	ug/g	0.006	0.006
Benzo[b,j]fluoranthene	0.78	ug/g	0.0065	< 0.0050
Benzo[g,h,i]perylene	6.6	ug/g	< 0.0050	< 0.0050
Benzo[k]fluoranthene	0.78	ug/g	< 0.0050	< 0.0050
Chrysene	7	ug/g	< 0.0050	< 0.0050
Dibenzo[a,h]anthracene	0.1	ug/g	< 0.0050	< 0.0050
Indeno[1,2,3-cd]pyrene	0.38	ug/g	< 0.0050	< 0.0050
<b>VOCs</b>				
Acetone	16	ug/g	< 0.50	< 0.50
Bromodichloromethane	13	ug/g	< 0.050	< 0.050
Bromoform	0.27	ug/g	< 0.050	< 0.050
Bromomethane	0.05	ug/g	< 0.050	< 0.050
Carbon Tetrachloride	0.05	ug/g	< 0.050	< 0.050
Chlorobenzene	2.4	ug/g	< 0.050	< 0.050
Chloroform	0.05	ug/g	< 0.050	< 0.050
Dibromochloromethane	9.4	ug/g	< 0.050	< 0.050
1,2-Dichlorobenzene	3.4	ug/g	< 0.050	< 0.050
1,3-Dichlorobenzene	4.8	ug/g	< 0.050	< 0.050
1,4-Dichlorobenzene	0.083	ug/g	< 0.050	< 0.050
Dichlorodifluoromethane	16	ug/g	< 0.050	< 0.050
1,1-Dichloroethane	3.5	ug/g	< 0.050	< 0.050
1,2-Dichloroethane	0.05	ug/g	< 0.050	< 0.050
1,1-Dichloroethylene	0.05	ug/g	< 0.050	< 0.050
cis-1,2-Dichloroethene	3.4	ug/g	< 0.050	< 0.050
trans-1,2-Dichloroethene	0.084	ug/g	< 0.050	< 0.050
1,2-Dichloropropane	0.05	ug/g	< 0.050	< 0.050
1,3-Dichloropropane, Total	0.05	ug/g	-	-
cis-1,3-Dichloropropene	-	ug/g	< 0.030	< 0.030
trans-1,3-Dichloropropene	-	ug/g	< 0.040	< 0.040
1,2-Dibromoethane	0.05	ug/g	< 0.050	< 0.050
n-Hexane	2.8	ug/g	< 0.050	< 0.050
Methyl Ethyl Ketone	16	ug/g	< 0.50	< 0.50
Methyl Isobutyl Ketone	1.7	ug/g	< 0.50	< 0.50
Methyl tert-Butyl Ether	0.75	ug/g	< 0.050	< 0.050
Methylene Chloride	0.1	ug/g	< 0.050	< 0.050
Styrene	0.7	ug/g	< 0.050	< 0.050
1,1,1,2-Tetrachloroethane	0.058	ug/g	< 0.050	< 0.050
1,1,1,2,2-Tetrachloroethane	0.05	ug/g	< 0.050	< 0.050
Tetrachloroethylene	0.28	ug/g	< 0.050	< 0.050
1,1,1-Trichloroethane	0.38	ug/g	< 0.050	< 0.050
1,1,2-Trichloroethane	0.05	ug/g	< 0.050	< 0.050
Trichloroethene	0.061	ug/g	< 0.010	< 0.010
Trichlorofluoromethane	4	ug/g	< 0.050	< 0.050
Vinyl Chloride	0.02	ug/g	< 0.020	< 0.020
4-Methyl-2-pentanone	1.7	ug/g	< 0.5	< 0.5
<b>PCBs</b>				
Polychlorinated Biphenyls	0.35	ug/g	< 0.015	< 0.015
<b>Glycols</b>				
Diethylene Glycol	-	mg/kg	-	-
Ethylene Glycol	-	mg/kg	-	-
Propylene Glycol	-	mg/kg	-	-
Total Glycols	-	mg/kg	-	-

**Table 5B - Historical Soil Analytical Results  
The Ottawa Hospital**

Location			BH1		BH2		BH3	BH4	BH5	BH6	BH8	BH9	BH10	MW16-1					BH16-2		
Sample Name			BH1 SS3	BH1-SS5	BH2 SS3	BH2-SS5	BH3 SS6	BH4 SS2	BH5 SS2	BH6 SS2	BH8 SS2	BH9 SS3	BH10 SS3	MW16-1-SS1	MW16-1-SS3	MW16-1-SS4	MW16-1-SS5	MW16-1A-SS5 (Field duplicate of MW16-1- SS5)	BH16-2-SS1	BH16-2-SS4	
Sample Date			2017-07-27	2017-07-27	2017-07-27	2017-07-27	2017-07-28	2017-07-24	2017-07-24	2017-07-28	2017-07-26	2017-07-26	2017-07-26	2016-03-14	2016-03-14	2016-03-14	2016-03-14	2016-03-14	2016-03-14	2016-03-14	2016-03-14
Sample Depth (m bgs)			0.7-1.3	1.9-2.5	0.7-1.3	1.9-2.5	2.5-3.1	0.7-1.3	0.7-1.3	0.3-0.6	0.3-0.6	0.6-1.2	0.6-1.2	0-1.5	3-4.6	4.6-6.1	6.1-7.6	6.1-7.6	0-0.9	4.6-6.1	
Historical Report			Paterson, 8 September 2017	Paterson, 8 September 2017	Paterson, 8 September 2017	Paterson, 8 September 2017	Paterson, 8 September 2017	Paterson, 8 September 2017	Paterson, 8 September 2017	Paterson, 8 September 2017	Paterson, 8 September 2017	Paterson, 8 September 2017	Paterson, 8 September 2017	Stantec, 31 March 2016, Ph II	Stantec, 31 March 2016, Ph II	Stantec, 31 March 2016, Ph II	Stantec, 31 March 2016, Ph II	Stantec, 31 March 2016, Ph II	Stantec, 31 March 2016, Ph II	Stantec, 31 March 2016, Ph II	Stantec, 31 March 2016, Ph II
Parameter	Table 3 Site Standards <sup>1</sup>	Unit																			
<b>Pesticides</b>																					
Aldrin	0.05	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chlordane	0.05	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dieldrin	0.05	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endosulfan	0.04	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endrin	0.04	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
gamma-hexachlorocyclohexane	0.056	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heptachlor	0.15	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heptachlor Epoxide	0.05	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methoxychlor	0.13	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DDD, Total	3.3	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DDT, Total	1.4	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DDE, Total	0.26	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hexachloroethane	0.089	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hexachlorobenzene	0.52	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hexachlorobutadiene	0.012	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Energetics</b>																					
2,4-Dinitrotoluene	0.92	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	-	-	-	-	<0.5	-
2,6-Dinitrotoluene	0.92	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	-	-	-	-	<0.5	-
<b>Forensic Phenols</b>																					
2,4,5-Trichlorophenol	4.4	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2,4,6-Trichlorophenol	3.8	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2,4-Dichlorophenol	1.7	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2,4-Dimethylphenol	390	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2,4-Dinitrophenol	38	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2-Chlorophenol	1.6	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pentachlorophenol	0.1	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phenol	9.4	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

**Table 5B - Historical Soil Analytical Results  
The Ottawa Hospital**

Location			MW16-3				BH16-4			MW16-5				MW16-6				MW16-7		
Sample Name	MW16-3-SS1	MW16-3-SS2	MW16-3-SS3	MW16-3-SS4	BH16-4-SS1	BH16-4-SS7 (Field duplicate of BH16-4-SS1)	BH16-4-SS2	BH16-4-SS3	MW16-5-SS1	MW16-5-SS2	MW16-5-SS2A (Field duplicate of MW16-5- SS2)	MW16-5-SS4	MW16-6 1A	MW16-6-SS2	MW16-6-SS3	MW16-6-SS7	MW16-7-SS2	MW16-7-SS4	MW16-2A-SS4 (Field duplicate of MW16-7- SS4)	
Sample Date	2016-03-14	2016-03-14	2016-03-14	2016-03-14	2016-03-14	2016-03-14	2016-03-14	2016-03-14	2016-03-14	2016-03-14	2016-03-14	2016-03-14	2016-03-17	2016-03-14	2016-03-14	2016-03-14	2016-03-14	2016-03-14	2016-03-14	
Sample Depth (m bgs)	0-1.5	1.5-3	3-4.6	4.6-6.1	0-1.5	0-1.5	1.5-3	3-4.6	0-1.5	1.5-3	1.5-3	4.6-6.1	0-0.7	1.5-2.1	2.1-3	6.1-7.3	0.6-1.5	3-3.8	3-3.8	
Historical Report	Stantec, 31 March 2016, Ph 	Stantec, 31 March 2016, Ph 	Stantec, 31 March 2016, Ph 	Stantec, 31 March 2016, Ph 	Stantec, 31 March 2016, Ph 	Stantec, 31 March 2016, Ph 	Stantec, 31 March 2016, Ph 	Stantec, 31 March 2016, Ph 	Stantec, 31 March 2016, Ph 	Stantec, 31 March 2016, Ph 	Stantec, 31 March 2016, Ph 	Stantec, 31 March 2016, Ph 	Stantec, 31 March 2016, Ph 	Stantec, 31 March 2016, Ph 	Stantec, 31 March 2016, Ph 	Stantec, 31 March 2016, Ph 	Stantec, 31 March 2016, Ph 	Stantec, 31 March 2016, Ph 	Stantec, 31 March 2016, Ph 	
Parameter	Table 3 Site Standards <sup>1</sup>	Unit																		
<b>Pesticides</b>																				
Aldrin	0.05	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chlordane	0.05	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dieldrin	0.05	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endosulfan	0.04	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endrin	0.04	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
gamma-hexachlorocyclohexane	0.056	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heptachlor	0.15	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heptachlor Epoxide	0.05	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methoxychlor	0.13	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DDD, Total	3.3	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DDT, Total	1.4	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DDE, Total	0.26	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hexachloroethane	0.089	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hexachlorobenzene	0.52	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hexachlorobutadiene	0.012	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Energetics</b>																				
2,4-Dinitrotoluene	0.92	ug/g	-	-	< 0.5	-	< 0.5	-	-	-	< 0.5	-	-	-	< 0.5	< 0.5	-	-	< 0.5	-
2,6-Dinitrotoluene	0.92	ug/g	-	-	< 0.5	-	< 0.5	-	-	-	< 0.5	-	-	-	< 0.5	< 0.5	-	-	< 0.5	-
<b>Forensic Phenols</b>																				
2,4,5-Trichlorophenol	4.4	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2,4,6-Trichlorophenol	3.8	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2,4-Dichlorophenol	1.7	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2,4-Dimethylphenol	390	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2,4-Dinitrophenol	38	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2-Chlorophenol	1.6	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pentachlorophenol	0.1	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phenol	9.4	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Table 5B - Historical Soil Analytical Results  
The Ottawa Hospital**

Location			MW16-8		MW16-9	MW16-10		MW16-11	MW16-12		MW16-13		MW16-14		TP16-1						
Sample Name	MW16-8 SS1	MW16-8 SS3	MW16-9 SS1	MW16-10 SS2	MW16-10 SS4	MW16-11 SS1	MW16-12 SS2	MW16-12 SS4	MW16-13 SS1	MW16-13 SS3	MW16-14 SS2	MW16-14 SS6	TP16-1-SS2	TP16-1-SS2A (Field duplicate of TP16-1-SS2)	TP16-1 SS2B	TP16-1 SS2C	DUP-2 (Field duplicate of TP16-1-SS2C)	TP16-1-SS3	TP16-1-SS3A (Field duplicate of TP16-1-SS3)	TP16-1-SS4	
Sample Date	2016-08-03	2016-08-03	2016-08-03	2016-08-02	2016-08-02	2016-08-04	2016-08-04	2016-08-04	2016-08-03	2016-08-03	2016-08-03	2016-08-03	2016-07-28	2016-07-28	2016-07-28	2016-07-28	2016-07-28	2016-07-28	2016-07-28	2016-07-28	
Sample Depth (m bgs)	0-1.5	3-3.8	0-0.8	0.8-1.5	2.4-3	0-1.5	0.8-1.5	3-4.6	0-1.5	3-4.6	1.5-3	6.1-6.9	0.8-1.5	0.8-1.5	0.8-1.5	0.8-1.5	0.8-1.5	1.5-2.4	1.5-2.4	2.4-3	
Historical Report	Stantec, 20 March 2017, Ph III	Stantec, 20 March 2017, Ph III	Stantec, 20 March 2017, Ph III	Stantec, 20 March 2017, Ph III	Stantec, 20 March 2017, Ph III	Stantec, 20 March 2017, Ph III	Stantec, 20 March 2017, Ph III	Stantec, 20 March 2017, Ph III	Stantec, 20 March 2017, Ph III	Stantec, 20 March 2017, Ph III	Stantec, 20 March 2017, Ph III	Stantec, 20 March 2017, Ph III	Stantec, 20 March 2017, Ph III	Stantec, 20 March 2017, Ph III	Stantec, 20 March 2017, Ph III	Stantec, 20 March 2017, Ph III	Stantec, 20 March 2017, Ph III	Stantec, 20 March 2017, Ph III	Stantec, 20 March 2017, Ph III	Stantec, 20 March 2017, Ph III	
Parameter	Table 3 Site Standards <sup>1</sup>	Unit																			
<b>Pesticides</b>																					
Aldrin	0.05	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chlordane	0.05	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dieldrin	0.05	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endosulfan	0.04	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endrin	0.04	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
gamma-hexachlorocyclohexane	0.056	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heptachlor	0.15	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heptachlor Epoxide	0.05	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methoxychlor	0.13	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DDD, Total	3.3	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DDT, Total	1.4	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DDE, Total	0.26	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hexachloroethane	0.089	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hexachlorobenzene	0.52	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hexachlorobutadiene	0.012	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Energetics</b>																					
2,4-Dinitrotoluene	0.92	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2,6-Dinitrotoluene	0.92	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Forensic Phenols</b>																					
2,4,5-Trichlorophenol	4.4	ug/g	-	< 0.05	< 0.05	-	-	-	-	-	-	-	-	-	-	< 0.05	< 0.5	< 0.5	< 0.5	-	< 0.5
2,4,6-Trichlorophenol	3.8	ug/g	-	< 0.05	< 0.05	-	-	-	-	-	-	-	-	-	-	< 0.05	< 0.5	< 0.5	< 0.5	-	< 0.5
2,4-Dichlorophenol	1.7	ug/g	-	< 0.05	< 0.05	-	-	-	-	-	-	-	-	-	-	< 0.05	< 0.5	< 0.5	< 0.5	-	< 0.5
2,4-Dimethylphenol	390	ug/g	-	< 0.1	< 0.1	-	-	-	-	-	-	-	-	-	-	< 0.1	< 1	< 1	< 1	-	< 1
2,4-Dinitrophenol	38	ug/g	-	< 0.1	< 0.1	-	-	-	-	-	-	-	-	-	-	< 0.1	< 1	< 1	< 1	-	< 1
2-Chlorophenol	1.6	ug/g	-	< 0.05	< 0.05	-	-	-	-	-	-	-	-	-	-	< 0.05	< 0.5	< 0.5	< 0.5	-	< 0.5
Pentachlorophenol	0.1	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phenol	9.4	ug/g	-	< 0.1	< 0.1	-	-	-	-	-	-	-	-	-	-	< 0.1	< 1	< 1	< 1	-	< 1

**Table 5B - Historical Soil Analytical Results  
The Ottawa Hospital**

Location			TP16-1					TP16-2												
Sample Name	TP16-1-SS6	TP16-1 SS6C	DUP-1A (Field duplicate of TP16-1- SS6C)	TP16-1-SS7	TP16-1 SS7AB	TP16-2-SS1A	TP16-2-SS2	TP16-2-SS2C	TP16-2-SS3	TP16-2-SS3C	TP16-2-SS4	TP16-2-SS4A	TP16-2-SS4B	TP16-2-SS4C	TP16-2-SS5	TP16-2-SS6	TP16-2 SS6AB	TP16-2-SS6B	TP16-2 TILE+BRICK	
Sample Date	2016-07-28	2016-07-28	2016-07-28	2016-07-28	2016-07-28	2016-07-28	2016-07-28	2016-07-28	2016-07-28	2016-07-28	2016-07-28	2016-07-28	2016-07-28	2016-07-28	2016-07-28	2016-07-28	2016-07-28	2016-07-28	2016-07-28	
Sample Depth (m bgs)	3.8-4.7	3.8-4.7	3.8-4.7	4.7-5.8	4.7-5.8	0-0.8	0.8-1.5	0.8-1.5	1.5-2.3	1.5-2.3	2.3-3	2.3-3	2.3-3	2.3-3	3-3.5	4.1-5.2	4.1-5.2	4.1-5.2	4.1-5.2	
Historical Report	Stantec, 20 March 2017, Ph III	Stantec, 20 March 2017, Ph III	Stantec, 20 March 2017, Ph III	Stantec, 20 March 2017, Ph III	Stantec, 20 March 2017, Ph III	Stantec, 20 March 2017, Ph III	Stantec, 20 March 2017, Ph III	Stantec, 20 March 2017, Ph III	Stantec, 20 March 2017, Ph III	Stantec, 20 March 2017, Ph III	Stantec, 20 March 2017, Ph III	Stantec, 20 March 2017, Ph III	Stantec, 20 March 2017, Ph III	Stantec, 20 March 2017, Ph III	Stantec, 20 March 2017, Ph III	Stantec, 20 March 2017, Ph III	Stantec, 20 March 2017, Ph III	Stantec, 20 March 2017, Ph III	Stantec, 20 March 2017, Ph III	
Parameter	Table 3 Site Standards <sup>1</sup>	Unit																		
<b>Pesticides</b>																				
Aldrin	0.05	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chlordane	0.05	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dieldrin	0.05	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endosulfan	0.04	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endrin	0.04	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
gamma-hexachlorocyclohexane	0.056	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heptachlor	0.15	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heptachlor Epoxide	0.05	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methoxychlor	0.13	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DDD, Total	3.3	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DDT, Total	1.4	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DDE, Total	0.26	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hexachloroethane	0.089	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hexachlorobenzene	0.52	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hexachlorobutadiene	0.012	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Energetics</b>																				
2,4-Dinitrotoluene	0.92	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2,6-Dinitrotoluene	0.92	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Forensic Phenols</b>																				
2,4,5-Trichlorophenol	4.4	ug/g	-	< 0.5	< 0.5	-	< 0.5	< 0.1	-	< 0.5	-	< 0.5	-	< 0.05	< 0.5	< 0.5	-	< 0.05	< 0.1	< 0.05
2,4,6-Trichlorophenol	3.8	ug/g	-	< 0.5	< 0.5	-	< 0.5	< 0.1	-	< 0.5	-	< 0.5	-	< 0.05	< 0.5	< 0.5	-	< 0.05	< 0.1	< 0.05
2,4-Dichlorophenol	1.7	ug/g	-	< 0.5	< 0.5	-	< 0.5	< 0.1	-	< 0.5	-	< 0.5	-	< 0.05	< 0.5	< 0.5	-	< 0.05	< 0.1	< 0.05
2,4-Dimethylphenol	390	ug/g	-	< 1	< 1	-	< 1	< 0.2	-	< 1	-	< 1	-	< 0.1	< 0.1	< 1	-	< 0.1	< 0.2	< 0.1
2,4-Dinitrophenol	38	ug/g	-	< 1	< 1	-	< 1	< 0.2	-	< 1	-	< 1	-	< 0.1	< 0.1	< 1	-	< 0.1	< 0.2	< 0.1
2-Chlorophenol	1.6	ug/g	-	< 0.5	< 0.5	-	< 0.5	< 0.1	-	< 0.5	-	< 0.5	-	< 0.05	< 0.5	< 0.5	-	< 0.05	< 0.1	< 0.05
Pentachlorophenol	0.1	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phenol	9.4	ug/g	-	< 1	< 1	-	< 1	< 0.2	-	< 1	-	< 1	-	< 0.1	< 0.1	< 1	-	< 0.1	< 0.2	< 0.1

Table 5B - Historical Soil Analytical Results  
The Ottawa Hospital

Location	TP16-3	TP16-4	MW17-03	MW17-04	MW17-05	MW17-06	MW17-07	MW17-08	MW17-09												
Sample Name	TP16-3-SS4	TP16-4-SS4 (Field duplicate of TP16-4-SS4)	MW17-03-SS01	MW17-03-SS02	MW17-04-SS01	MW17-04-SS03	MW17-05-SS01	MW17-05-SS02	MW17-05-SS04	MW17-06-SS01	MW17-06-SS02	MW17-06-SS03	MW17-07-SS01	MW17-07-SS05	MW17-08-SS01	MW17-08-SS02	DUP-20170726-A (Field duplicate of MW17-08-SS02)	MW17-09-SS01	MW17-09-SS04		
Sample Date	2016-07-28	2016-07-28	2016-07-28	2017-07-27	2017-07-27	2017-07-27	2017-07-27	2017-07-26	2017-07-26	2017-07-26	2017-07-26	2017-07-26	2017-07-26	2017-07-26	2017-07-26	2017-07-26	2017-07-26	2017-07-27	2017-07-27		
Sample Depth (m bgs)	2.3-2.9	2.3-3	2.3-3	0-1.52	1.52-3.05	0-0.91	1.52-2.74	0-0.91	0.91-1.52	2.13-3.05	0-0.91	0.91-1.52	1.52-3.05	0-1.52	4.57-6.1	0-1.52	1.52-2.44	1.52-2.44	0-1.52	3.05-3.65	
Historical Report	Stantec, 20 March 2017, Ph III	Stantec, 20 March 2017, Ph III	Stantec, 20 March 2017, Ph III	Stantec, 7 September 2017, Ph II	Stantec, 7 September 2017, Ph II	Stantec, 7 September 2017, Ph II	Stantec, 7 September 2017, Ph II	Stantec, 7 September 2017, Ph II	Stantec, 7 September 2017, Ph II	Stantec, 7 September 2017, Ph II	Stantec, 7 September 2017, Ph II	Stantec, 7 September 2017, Ph II	Stantec, 7 September 2017, Ph II	Stantec, 7 September 2017, Ph II	Stantec, 7 September 2017, Ph II	Stantec, 7 September 2017, Ph II	Stantec, 7 September 2017, Ph II	Stantec, 7 September 2017, Ph II	Stantec, 7 September 2017, Ph II	Stantec, 7 September 2017, Ph II	
Parameter	Table 3 Site Standards <sup>1</sup>	Unit																			
<b>Pesticides</b>																					
Aldrin	0.05	ug/g	-	-	-	< 0.01	< 0.002	-	-	< 0.002	-	< 0.002	< 0.002	-	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Chlordane	0.05	ug/g	-	-	-	< 0.01	< 0.002	-	-	< 0.002	-	< 0.002	< 0.002	-	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Dieldrin	0.05	ug/g	-	-	-	< 0.01	< 0.002	-	-	< 0.002	-	< 0.002	< 0.002	-	< 0.002	0.0021	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Endosulfan	0.04	ug/g	-	-	-	< 0.01	< 0.002	-	-	< 0.002	-	< 0.002	< 0.002	-	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Endrin	0.04	ug/g	-	-	-	< 0.01	< 0.002	-	-	< 0.002	-	< 0.002	< 0.002	-	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
gamma-hexachlorocyclohexane	0.056	ug/g	-	-	-	< 0.01	< 0.002	-	-	< 0.002	-	< 0.002	< 0.002	-	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Heptachlor	0.15	ug/g	-	-	-	< 0.01	< 0.002	-	-	< 0.002	-	< 0.002	< 0.002	-	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Heptachlor Epoxide	0.05	ug/g	-	-	-	< 0.01	< 0.002	-	-	< 0.002	-	< 0.002	< 0.002	-	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Methoxychlor	0.13	ug/g	-	-	-	< 0.025	< 0.005	-	-	< 0.005	-	< 0.005	< 0.005	-	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
DDD, Total	3.3	ug/g	-	-	-	< 0.01	< 0.002	-	-	< 0.002	-	< 0.002	< 0.002	-	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
DDT, Total	1.4	ug/g	-	-	-	< 0.01	< 0.002	-	-	< 0.002	-	< 0.002	< 0.002	-	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
DDE, Total	0.26	ug/g	-	-	-	< 0.01	< 0.002	-	-	< 0.002	-	< 0.002	< 0.002	-	< 0.002	0.0024	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Hexachloroethane	0.089	ug/g	-	-	-	< 0.01	< 0.002	-	-	< 0.002	-	< 0.002	< 0.002	-	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Hexachlorobenzene	0.52	ug/g	-	-	-	< 0.01	< 0.002	-	-	< 0.002	-	< 0.002	< 0.002	-	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Hexachlorobutadiene	0.012	ug/g	-	-	-	< 0.01	< 0.002	-	-	< 0.002	-	< 0.002	< 0.002	-	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
<b>Energetics</b>																					
2,4-Dinitrotoluene	0.92	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2,6-Dinitrotoluene	0.92	ug/g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Forensic Phenols</b>																					
2,4,5-Trichlorophenol	4.4	ug/g	-	-	-	< 0.2	< 0.05	< 0.05	< 0.05	< 0.05	-	< 0.05	< 0.05	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,4,6-Trichlorophenol	3.8	ug/g	-	-	-	< 0.2	< 0.05	< 0.05	< 0.05	< 0.05	-	< 0.05	< 0.05	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,4-Dichlorophenol	1.7	ug/g	-	-	-	< 0.2	< 0.05	< 0.05	< 0.05	< 0.05	-	< 0.05	< 0.05	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,4-Dimethylphenol	390	ug/g	-	-	-	< 0.4	< 0.1	< 0.1	< 0.1	< 0.1	-	< 0.1	< 0.1	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,4-Dinitrophenol	38	ug/g	-	-	-	< 0.4	< 0.1	< 0.1	< 0.1	< 0.1	-	< 0.1	< 0.1	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2-Chlorophenol	1.6	ug/g	-	-	-	< 0.2	< 0.05	< 0.05	< 0.05	< 0.05	-	< 0.05	< 0.05	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Pentachlorophenol	0.1	ug/g	-	-	-	< 0.2	< 0.05	< 0.05	< 0.05	< 0.05	-	< 0.05	< 0.05	-	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenol	9.4	ug/g	-	-	-	< 0.4	< 0.1	< 0.1	< 0.1	< 0.1	-	< 0.1	< 0.1	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1

**Table 5B - Historical Soil Analytical Results  
The Ottawa Hospital**

Location		MW17-10		
Sample Name		MW17-10-SS01	MW17-10-SS03	
Sample Date		2017-07-27	2017-07-27	
Sample Depth (m bgs)		0-0.91	1.52-2.44	
Historical Report		Stantec, 7 September 2017, Ph II	Stantec, 7 September 2017, Ph II	
Parameter	Table 3 Site Standards <sup>1</sup>	Unit		
<b>Pesticides</b>				
Aldrin	0.05	ug/g	< 0.002	< 0.002
Chlordane	0.05	ug/g	< 0.002	< 0.002
Dieldrin	0.05	ug/g	< 0.002	< 0.002
Endosulfan	0.04	ug/g	< 0.002	< 0.002
Endrin	0.04	ug/g	< 0.002	< 0.002
gamma-hexachlorocyclohexane	0.056	ug/g	< 0.002	< 0.002
Heptachlor	0.15	ug/g	< 0.002	< 0.002
Heptachlor Epoxide	0.05	ug/g	< 0.002	< 0.002
Methoxychlor	0.13	ug/g	< 0.005	< 0.005
DDD, Total	3.3	ug/g	< 0.002	< 0.002
DDT, Total	1.4	ug/g	0.0076	< 0.002
DDE, Total	0.26	ug/g	0.012	< 0.002
Hexachloroethane	0.089	ug/g	< 0.002	< 0.002
Hexachlorobenzene	0.52	ug/g	< 0.002	< 0.002
Hexachlorobutadiene	0.012	ug/g	< 0.002	< 0.002
<b>Energetics</b>				
2,4-Dinitrotoluene	0.92	ug/g	-	-
2,6-Dinitrotoluene	0.92	ug/g	-	-
<b>Forensic Phenols</b>				
2,4,5-Trichlorophenol	4.4	ug/g	< 0.05	< 0.05
2,4,6-Trichlorophenol	3.8	ug/g	< 0.05	< 0.05
2,4-Dichlorophenol	1.7	ug/g	< 0.05	< 0.05
2,4-Dimethylphenol	390	ug/g	< 0.1	< 0.1
2,4-Dinitrophenol	38	ug/g	< 0.1	< 0.1
2-Chlorophenol	1.6	ug/g	< 0.05	< 0.05
Pentachlorophenol	0.1	ug/g	< 0.05	< 0.05
Phenol	9.4	ug/g	< 0.1	< 0.1

**Table 5B - Historical Soil Analytical Results  
The Ottawa Hospital**

**Notes:**

Value	
1	Parameter concentration exceeds MECP Table 3 Standards.
µg/g	Ontario Reg 153/04 (2011) Table 3: Full Depth Background Site Condition Standards, Residential, Coarse-texture Soil. micrograms per gram
PCBs	Polychlorinated Biphenyls
PHC	Petroleum Hydrocarbon
BTEX	Benzene, toluene, ethylbenzene, xylene mixture
PAHs	Polycyclic aromatic hydrocarbons
VOCs	Volatile Organic Compounds
RDL	Reportable Detection Limit
a	Sludge sampling from high voltage electrical manholes.
<	Indicates parameter was below laboratory equipment detection limit.
>	Indicates parameter detected above equipment analytical range.
-	Chemical not analyzed or criteria not defined.
Paterson, 8 September 2017	Environmental Investigation of Subsurface Conditions, Proposed New Hospital Campus, Former Sir John Carling Building Complex, Central Experimental Farm, Ottawa ON, dated September 2017, prepared by Paterson Group Inc. for Cleland Jardine Engineering
Stantec, 31 March 2016, Ph II	Phase II Environmental Site Assessment, Former Sir John Carling Building, 930 Carling Avenue, Ottawa ON (DFRP# 08625), dated March 2016, prepared by Stantec Consulting Ltd. for PSPC.
Stantec, 20 March 2017, Ph III	Phase III Environmental Site Assessment, Former Sir John Carling Building, 930 Carling Avenue, Ottawa ON (DFRP# 08625), dated March 2017, prepared by Stantec Consulting Ltd. for PSPC.
Stantec, 7 September 2017, Ph II	Phase II Environmental Site Assessment, New Ottawa Hospital Civic Campus, Ottawa ON, dated September 2017, prepared by Stantec Consulting Ltd. for PSPC.



Table 6A - Groundwater Analytical Results - 2021-22  
The Ottawa Hospital

Table with columns: Location, Sample Name, Sample Date, Parameter, Table 3 Site Standards, Unit, and various monitoring wells (21-213, 21-218, 21-219, 21-221S, 21-222D, 21-222S, 21-224, 21-225, 21-226, MW16-1A, MW16-11, MW16-13, Data Quality, 22-303, 22-401, 22-405, MW22-411S, MW22-411D, Data Quality). Rows include Volatile Organic Compounds, Organochlorinated, and Pesticides.

**Table 6A - Groundwater Analytical Results - 2021-22**  
**The Ottawa Hospital**

**Notes:**

Value	
Value	Parameter concentration exceeds MECP Table 3 Standards.
1	MECP Table 3 Standard exceeds RDL. O.Reg 153 (2011) Table 3 Standards for all types of property use for groundwater in coarse textured soil in full depth generic site condition in a non-potable ground water condition
µg/L	micrograms per Litre
PCBs	Polychlorinated biphenyls
PHC	Petroleum Hydrocarbon
PHC F1	Petroleum Hydrocarbons - F1 (C6-C10)-BTEX
PHC F2	Petroleum Hydrocarbons - F2 (C10-C16) less Naphthalene
PHC F3	Petroleum Hydrocarbons - F3 (C16-C34) less PAHs
PHC F4	Petroleum Hydrocarbons - F4 (C34-C50)
BTEX	Benzene, toluene, ethylbenzene, xylene mixture
RDL	Reportable Detection Limit
<	Indicates parameter was below laboratory equipment detection limit.
>	Indicates parameter detected above equipment analytical range.
-	Chemical not analyzed or criteria not defined.







**Table 6B - Historical Groundwater Analytical Results  
The Ottawa Hospital**

Location			Data Quality						
Sample Name			TRIP BLANK	TRIP BLANK	TRIP BLANK	FIELD BLANK	FIELD BLANK	FIELD BLANK A	FIELD BLANK-B
Sample Date			2016-03-18	2017-07-30	2017-08-03	2016-03-18	2016-08-12	2017-07-30	2017-08-03
Historical Report			Stantec, 31 March 2016, Ph II	Stantec, 7 September 2017, Ph II	Stantec, 7 September 2017, Ph II	Stantec, 31 March 2016, Ph II	Stantec, 20 March 2017, Ph III	Stantec, 7 September 2017, Ph II	Stantec, 7 September 2017, Ph II
Parameter	Table 3 Site Standards <sup>1</sup>	Unit							
<b>Metals</b>									
Antimony	20000	µg/L	-	-	-	-	-	-	-
Arsenic	1900	µg/L	-	-	-	-	-	-	-
Barium	29000	µg/L	-	-	-	-	-	-	-
Beryllium	67	µg/L	-	-	-	-	-	-	-
Boron	45000	µg/L	-	-	-	-	-	-	-
Cadmium	2.7	µg/L	-	-	-	-	-	-	-
Chromium	810	µg/L	-	-	-	-	-	-	-
Cobalt	66	µg/L	-	-	-	-	-	-	-
Copper	87	µg/L	-	-	-	-	-	-	-
Lead	25	µg/L	-	-	-	-	-	-	-
Lithium	-	µg/L	-	-	-	-	-	-	-
Magnesium	-	µg/L	-	-	-	-	-	-	-
Manganese	-	µg/L	-	-	-	-	-	-	-
Molybdenum	9200	µg/L	-	-	-	-	-	-	-
Nickel	490	µg/L	-	-	-	-	-	-	-
Selenium	63	µg/L	-	-	-	-	-	-	-
Silver	1.5	µg/L	-	-	-	-	-	-	-
Thallium	510	µg/L	-	-	-	-	-	-	-
Uranium	420	µg/L	-	-	-	-	-	-	-
Vanadium	250	µg/L	-	-	-	-	-	-	-
Zinc	1100	µg/L	-	-	-	-	-	-	-
<b>Other Regulated Parameters</b>									
Mercury	0.29	µg/L	-	-	-	-	-	-	-
Hexavalent Chromium	140	µg/L	-	-	-	-	-	-	-
Cyanide (free)	0.066	mg/L	-	-	-	-	-	-	-
Cyanide (Weak Acid Dissociable)	0.066	mg/L	-	-	-	-	-	-	-
<b>Energetics</b>									
2,4-Dinitrotoluene	2900	µg/L	-	-	-	-	-	-	-
2,6-Dinitrotoluene	2900	µg/L	-	-	-	-	-	-	-
<b>Pesticides</b>									
Aldrin	8.5	µg/L	-	-	-	-	-	-	-
Chlordane	28	µg/L	-	-	-	-	-	-	-
Dieldrin	0.75	µg/L	-	-	-	-	-	-	-
Endosulfan	1.5	µg/L	-	-	-	-	-	-	-
Endrin	0.48	µg/L	-	-	-	-	-	-	-
gamma-hexachlorocyclohexane	1.2	µg/L	-	-	-	-	-	-	-
Heptachlor	2.5	µg/L	-	-	-	-	-	-	-
Heptachlor Epoxide	0.048	µg/L	-	-	-	-	-	-	-
Methoxychlor	6.5	µg/L	-	-	-	-	-	-	-
DDD, Total	45	µg/L	-	-	-	-	-	-	-
DDT, Total	2.8	µg/L	-	-	-	-	-	-	-
DDE, Total	20	µg/L	-	-	-	-	-	-	-
Hexachlorobenzene	3.1	µg/L	-	-	-	-	-	-	-
Hexachlorobutadiene	0.44	µg/L	-	-	-	-	-	-	-





**Table 6B - Historical Groundwater Analytical Results  
The Ottawa Hospital**

Location			Data Quality						
Sample Name	TRIP BLANK	TRIP BLANK	TRIP BLANK	FIELD BLANK	FIELD BLANK	FIELD BLANK A	FIELD BLANK-B		
Sample Date	2016-03-18	2017-07-30	2017-08-03	2016-03-18	2016-08-12	2017-07-30	2017-08-03		
Historical Report	Stantec, 31 March 2016, Ph II	Stantec, 7 September 2017, Ph II	Stantec, 7 September 2017, Ph II	Stantec, 31 March 2016, Ph II	Stantec, 20 March 2017, Ph III	Stantec, 7 September 2017, Ph II	Stantec, 7 September 2017, Ph II		
Parameter	Table 3 Site Standards <sup>1</sup>	Unit							
<b>Petroleum Hydrocarbons</b>									
Petroleum Hydrocarbons - F1 (C6-C10)-BTEX	750	µg/L	-	-	-	-	-		
Petroleum Hydrocarbons - F1 (C6-C10)	750	µg/L	-	-	-	-	-		
Petroleum Hydrocarbons - F2 (C10-C16)	150	µg/L	-	-	-	-	-		
Petroleum Hydrocarbons - F3 (C16-C34)	500	µg/L	-	-	-	-	-		
Petroleum Hydrocarbons - F4 (C34-C50)	500	µg/L	-	-	-	-	-		
Reached Baseline at C50	-	-	-	-	-	-	-		
<b>BTEX</b>									
Benzene	44	µg/L	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		
Toluene	18000	µg/L	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		
Ethylbenzene	2300	µg/L	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		
o-Xylene	-	µg/L	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		
m,p-Xylenes	-	µg/L	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		
Xylenes, Total	4200	µg/L	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		
<b>Glycols</b>									
Diethylene Glycol	-	mg/L	-	-	-	-	-		
Ethylene Glycol	-	mg/L	-	-	-	-	-		
Propylene Glycol	-	mg/L	-	-	-	-	-		
Total Glycols	-	mg/L	-	-	-	-	-		
<b>Polycyclic Aromatic Hydrocarbons</b>									
<b>Non-carcinogenic PAHs</b>									
Acenaphthene	600	µg/L	-	-	-	-	-		
Acenaphthylene	1.8	µg/L	-	-	-	-	-		
Anthracene	2.4	µg/L	-	-	-	-	-		
Fluoranthene	130	µg/L	-	-	-	-	-		
Fluorene	400	µg/L	-	-	-	-	-		
1-Methylnaphthalene	1800	µg/L	-	-	-	-	-		
2-Methylnaphthalene	1800	µg/L	-	-	-	-	-		
Methylnaphthalenes	-	µg/L	-	-	-	-	-		
Naphthalene	1400	µg/L	-	-	-	-	-		
Phenanthrene	580	µg/L	-	-	-	-	-		
Pyrene	68	µg/L	-	-	-	-	-		
4-Methyl-2-pentanone	140000	µg/L	< 5	< 5	< 5	< 5	< 5		
<b>Carcinogenic PAHs</b>									
Benzo[a]anthracene	4.7	µg/L	-	-	-	-	-		
Benzo[a]pyrene	0.81	µg/L	-	-	-	-	-		
Benzo[b]fluoranthene	0.75	µg/L	-	-	-	-	-		
Benzo [b,j] fluoranthene	0.75	µg/L	-	-	-	-	-		
Benzo[g,h,i]perylene	0.2	µg/L	-	-	-	-	-		
Benzo[k]fluoranthene	0.4	µg/L	-	-	-	-	-		
Chrysene	1	µg/L	-	-	-	-	-		
Dibenzo[a,h]anthracene	0.52	µg/L	-	-	-	-	-		
Indeno[1,2,3-cd]pyrene	0.2	µg/L	-	-	-	-	-		







**Table 6B - Historical Groundwater Analytical Results  
The Ottawa Hospital**

Location			Data Quality						
Sample Name			TRIP BLANK	TRIP BLANK	TRIP BLANK	FIELD BLANK	FIELD BLANK	FIELD BLANK A	FIELD BLANK-B
Sample Date			2016-03-18	2017-07-30	2017-08-03	2016-03-18	2016-08-12	2017-07-30	2017-08-03
Historical Report			Stantec, 31 March 2016, Ph II	Stantec, 7 September 2017, Ph II	Stantec, 7 September 2017, Ph II	Stantec, 31 March 2016, Ph II	Stantec, 20 March 2017, Ph III	Stantec, 7 September 2017, Ph II	Stantec, 7 September 2017, Ph II
Parameter	Table 3 Site Standards <sup>1</sup>	Unit							
<b>VOCs</b>									
1,1,1,2-Tetrachloroethane	3.3	µg/L	< 0.1	< 0.2	< 0.2	< 0.1	< 0.1	< 0.2	< 0.2
1,1,1-Trichloroethane	640	µg/L	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
1,1,2,2-Tetrachloroethane	3.2	µg/L	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,1,2-Trichloroethane	4.7	µg/L	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,1-Dichloroethane	320	µg/L	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
1,1-Dichloroethane	1.6	µg/L	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
1,2-Dibromoethane	0.25	µg/L	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dichlorobenzene	4600	µg/L	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dichloroethane	1.6	µg/L	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dichloropropane	16	µg/L	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
1,3-Dichlorobenzene	9600	µg/L	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,3-Dichloropropene, Total	5.2	µg/L	< 0.28	-	-	< 0.28	< 0.28	-	-
1,4-Dichlorobenzene	8	µg/L	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Methyl Ethyl Ketone	470000	µg/L	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Acetone	130000	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Bromodichloromethane	85000	µg/L	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Bromoform	380	µg/L	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Bromomethane	5.6	µg/L	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Carbon Tetrachloride	0.79	µg/L	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Chlorobenzene	630	µg/L	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Chloroform	2.4	µg/L	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
cis-1,2-Dichloroethene	1.6	µg/L	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
cis-1,3-Dichloropropene	-	µg/L	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Dibromochloromethane	82000	µg/L	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Dichlorodifluoromethane	4400	µg/L	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Hexachloroethane	94	µg/L	-	-	-	-	-	-	-
Methyl tert-Butyl Ether	190	µg/L	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Methylene Chloride	610	µg/L	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
n-Hexane	51	µg/L	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethylene	1.6	µg/L	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
trans-1,2-Dichloroethene	1.6	µg/L	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
trans-1,3-Dichloropropene	-	µg/L	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Trichloroethene	1.6	µg/L	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Trichlorofluoromethane	2500	µg/L	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vinyl Chloride	0.5	µg/L	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Styrene	1300	µg/L	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Methyl Isobutyl Ketone	140000	µg/L	< 5	< 5	< 5	< 5	< 5	< 5	< 5
<b>PCBs</b>									
Polychlorinated Biphenyls	7.8	µg/L	-	-	-	-	-	-	-
<b>Forensic Phenolics</b>									
2,4,5-Trichlorophenol	1600	µg/L	-	-	-	-	-	-	-
2,4,6-Trichlorophenol	230	µg/L	-	-	-	-	-	-	-
2,4-Dichlorophenol	4600	µg/L	-	-	-	-	-	-	-
2,4-Dimethylphenol	39000	µg/L	-	-	-	-	-	-	-
2,4-Dinitrophenol	11000	µg/L	-	-	-	-	-	-	-
2-Chlorophenol	3300	µg/L	-	-	-	-	-	-	-
Pentachlorophenol	62	µg/L	-	-	-	-	-	-	-
Phenol	12000	µg/L	-	-	-	-	-	-	-

**Table 6B - Historical Groundwater Analytical Results  
The Ottawa Hospital**

**Notes:**

Value	
1	Parameter concentration exceeds MECP Table 3 Standards. O.Reg 153 (2011) Table 3 Standards for all types of property use for groundwater in coarse textured soil in full depth generic site condition in a non-potable ground water condition
TEF	Toxicity equivalence factor
µg/L	micrograms per Litre
mg/L	milligrams per Litre
pg/L	picograms per Litre
PAHs	Polycyclic aromatic hydrocarbons
PCBs	Polychlorinated biphenyls
PHC	Petroleum Hydrocarbon
VOCs	Volatile Organic Compounds
Paterson, 8 September 2017	Environmental Investigation of Subsurface Conditions, Proposed New Hospital Campus, Former Sir John Carling Building Complex, Central Experimental Farm, Ottawa ON, dated September 2017, prepared by Paterson Group Inc. for Cleland Jardine Engineering
Stantec, 31 March 2016, Ph II	Phase II Environmental Site Assessment, Former Sir John Carling Building, 930 Carling Avenue, Ottawa ON (DFRP# 08625), dated March 2016, prepared by Stantec Consulting Ltd. for PSPC.
Stantec, 20 March 2017, Ph III	Phase III Environmental Site Assessment, Former Sir John Carling Building, 930 Carling Avenue, Ottawa ON (DFRP# 08625), dated March 2017, prepared by Stantec Consulting Ltd. for PSPC.
Stantec, 7 September 2017, Ph II	Phase II Environmental Site Assessment, New Ottawa Hospital Civic Campus, Ottawa ON, dated September 2017, prepared by Stantec Consulting Ltd. for PSPC.



**Table 7A - Relative Percent Difference - Soil  
The Ottawa Hospital**

Location			21-221				21-224				21-225							
Sample Name			21-221 SA6	21-221 SA66 (Field duplicate of 21-221 SA6)			BH21-224 SA10		BH21-224 SA100 (Field duplicate of BH21-224 SA10)		BH21-225 SA4		BH21-225 SA44 (Field duplicate of BH21-225 SA4)					
Sample Date			2021-05-20	2021-05-20			2021-05-10		2021-05-10		2021-05-03		2021-05-03					
Sample Depth (m bgs)			3.81-4.42	3.81-4.42			6.86-7.47		6.86-7.47		2.29-2.9		2.29-2.9					
Parameter	Unit	RDL	Average Concentration				RPD (%)				Average Concentration				RPD (%)			
<b>General Chemistry</b>																		
Moisture, Percent	%	0.1	32.8	29.3	31.05	11	16.5	17.3	16.9	5	19.7	22.6	21.15	14				
<b>Metals</b>																		
Antimony	µg/g	0.8	-	-	NA	-	< 0.8	< 0.8	NA	-	< 0.8	< 0.8	NA	-				
Arsenic	µg/g	1	-	-	NA	-	2	2	2	-	2	2	223.5	11				
Barium	µg/g	2	-	-	NA	-	42	46.1	44.05	9	211	236	223.5	11				
Beryllium	µg/g	0.4	-	-	NA	-	< 0.4	< 0.4	NA	-	0.6	0.7	0.65	-				
Boron	µg/g	5	-	-	NA	-	6	5	5.5	-	6	6	6	-				
Cadmium	µg/g	0.5	-	-	NA	-	< 0.5	< 0.5	NA	-	< 0.5	< 0.5	NA	-				
Chromium	µg/g	5	-	-	NA	-	13	13	13	-	52	55	53.5	6				
Cobalt	µg/g	0.5	-	-	NA	-	4	4.4	4.2	10	12.3	13.6	12.95	10				
Copper	µg/g	1	-	-	NA	-	16.1	15.9	16	1	25.9	28.3	27.1	9				
Lead	µg/g	1	-	-	NA	-	16	20	18	22	8	7	7.5	13				
Molybdenum	µg/g	0.5	-	-	NA	-	0.7	< 0.5	NA	-	< 0.5	< 0.5	NA	-				
Nickel	µg/g	1	-	-	NA	-	7	8	7.5	13	27	30	28.5	11				
Selenium	µg/g	0.8	-	-	NA	-	< 0.8	< 0.8	NA	-	< 0.8	< 0.8	NA	-				
Silver	µg/g	0.5	-	-	NA	-	< 0.5	< 0.5	NA	-	< 0.5	< 0.5	NA	-				
Thallium	µg/g	0.5	-	-	NA	-	< 0.5	< 0.5	NA	-	< 0.5	< 0.5	NA	-				
Uranium	µg/g	0.5	-	-	NA	-	< 0.50	< 0.50	NA	-	0.64	0.59	0.615	-				
Vanadium	µg/g	0.4	-	-	NA	-	21.2	16.8	19	23	58.9	59.8	59.35	2				
Zinc	µg/g	5	-	-	NA	-	39	31	35	23	75	84	79.5	11				
<b>Other Regulated Parameters</b>																		
Hexavalent Chromium	µg/g	0.2	-	-	NA	-	< 0.2	< 0.2	NA	-	< 0.2	< 0.2	NA	-				
Boron, Hot Water Soluble	µg/g	0.1	-	-	NA	-	0.25	0.15	0.2	-	0.5	0.49	0.495	-				
Mercury	µg/g	0.1	-	-	NA	-	< 0.10	< 0.10	NA	-	< 0.10	< 0.10	NA	-				
Methyl Mercury	µg/g	0.004	-	-	NA	-	-	-	NA	-	-	-	NA	-				
<b>PCBs</b>																		
Polychlorinated Biphenyls	µg/g	0.1	< 0.1	< 0.1	NA	-	-	-	NA	-	-	-	NA	-				
<b>PHCs</b>																		
PHC F1	µg/g	5	-	-	NA	-	< 5	< 5	NA	-	< 5	< 5	NA	-				
PHC F2	µg/g	10	-	-	NA	-	< 10	< 10	NA	-	< 10	< 10	NA	-				
PHC F3	µg/g	50	-	-	NA	-	< 50	< 50	NA	-	< 50	< 50	NA	-				
PHC F4	µg/g	50	-	-	NA	-	< 50	< 50	NA	-	< 50	< 50	NA	-				
<b>BTEX</b>																		
Benzene	µg/g	0.02	-	-	NA	-	< 0.02	< 0.02	NA	-	< 0.02	< 0.02	NA	-				
Toluene	µg/g	0.05	-	-	NA	-	< 0.05	< 0.05	NA	-	< 0.05	< 0.05	NA	-				
Ethylbenzene	µg/g	0.05	-	-	NA	-	< 0.05	< 0.05	NA	-	< 0.05	< 0.05	NA	-				
o-Xylene	µg/g	0.05	-	-	NA	-	< 0.05	< 0.05	NA	-	< 0.05	< 0.05	NA	-				
m,p-Xylenes	µg/g	0.05	-	-	NA	-	< 0.05	< 0.05	NA	-	< 0.05	< 0.05	NA	-				
Xylenes, Total	µg/g	0.05	-	-	NA	-	< 0.05	< 0.05	NA	-	< 0.05	< 0.05	NA	-				
<b>PAHs</b>																		
Acenaphthene	µg/g	0.05	-	-	NA	-	< 0.05	< 0.05	NA	-	< 0.05	< 0.05	NA	-				
Acenaphthylene	µg/g	0.05	-	-	NA	-	< 0.05	< 0.05	NA	-	< 0.05	< 0.05	NA	-				
Anthracene	µg/g	0.05	-	-	NA	-	< 0.05	< 0.05	NA	-	< 0.05	< 0.05	NA	-				
Benzo[a]anthracene	µg/g	0.05	-	-	NA	-	< 0.05	< 0.05	NA	-	< 0.05	< 0.05	NA	-				
Benzo[a]pyrene	µg/g	0.05	-	-	NA	-	< 0.05	< 0.05	NA	-	< 0.05	< 0.05	NA	-				
Benzo[b]fluoranthene	µg/g	0.05	-	-	NA	-	< 0.05	< 0.05	NA	-	< 0.05	< 0.05	NA	-				
Benzo[g,h,i]perylene	µg/g	0.05	-	-	NA	-	< 0.05	< 0.05	NA	-	< 0.05	< 0.05	NA	-				
Benzo[k]fluoranthene	µg/g	0.05	-	-	NA	-	< 0.05	< 0.05	NA	-	< 0.05	< 0.05	NA	-				
Chrysene	µg/g	0.05	-	-	NA	-	< 0.05	< 0.05	NA	-	< 0.05	< 0.05	NA	-				
Dibenzo[a,h]anthracene	µg/g	0.05	-	-	NA	-	< 0.05	< 0.05	NA	-	< 0.05	< 0.05	NA	-				
1 and 2 Methylnaphthalene	µg/g	0.05	-	-	NA	-	< 0.05	< 0.05	NA	-	< 0.05	< 0.05	NA	-				
Fluoranthene	µg/g	0.05	-	-	NA	-	< 0.05	< 0.05	NA	-	< 0.05	< 0.05	NA	-				
Fluorene	µg/g	0.05	-	-	NA	-	< 0.05	< 0.05	NA	-	< 0.05	< 0.05	NA	-				
Indeno[1,2,3-cd]pyrene	µg/g	0.05	-	-	NA	-	< 0.05	< 0.05	NA	-	< 0.05	< 0.05	NA	-				
Naphthalene	µg/g	0.05	-	-	NA	-	< 0.05	< 0.05	NA	-	< 0.05	< 0.05	NA	-				
Phenanthrene	µg/g	0.05	-	-	NA	-	< 0.05	< 0.05	NA	-	< 0.05	< 0.05	NA	-				
Pyrene	µg/g	0.05	-	-	NA	-	< 0.05	< 0.05	NA	-	< 0.05	< 0.05	NA	-				

**Table 7A - Relative Percent Difference - Soil  
The Ottawa Hospital**

Location			22-111						22-411				21-205				21-215				21-217			
Sample Name			22-111 SA01B	22-11 DUP01 (Field Duplicate of 22-111 SA01B)					411 SA2	411 SA22 (Field Duplicate of 22-411 SA2)			21-205 SA4	21-205 SA44 (Field duplicate of 21-205 SA4)			21-215 SA3	21-215 SA33 (Field duplicate of 21-215 SA3)			BH21-217 SA7	BH21-217 SA77 (Field duplicate of BH21-217 SA7)		
Sample Date			2022-03-29	2022-03-29					2022-03-02	2022-03-02			2021-06-02	2021-06-02			2021-05-28	2021-05-28			2021-05-06	2021-05-05		
Sample Depth (m bgs)			0.08 - 0.61	0.08 - 0.61					0.76 - 1.37	0.76 - 1.37			2.29-2.9	2.29-2.9			1.52-2.13	1.52-2.13			4.57-5.18	4.57-5.18		
Parameter	Unit	RDL	Laboratory Acceptance Criteria	Field Duplicate Acceptance Criteria			Average Concentration	RPD (%)			Average Concentration	RPD (%)			Average Concentration	RPD (%)			Average Concentration	RPD (%)			Average Concentration	RPD (%)
<b>VOCs</b>																								
1,1,1,2-Tetrachloroethane	µg/g	0.04	≤50%	≤100%	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-
1,1,1-Trichloroethane	µg/g	0.05	≤50%	≤100%	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-
1,1,2,2-Tetrachloroethane	µg/g	0.05	≤50%	≤100%	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-
1,1,2-Trichloroethane	µg/g	0.04	≤50%	≤100%	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-
1,1-Dichloroethane	µg/g	0.02	≤50%	≤100%	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-
1,1-Dichloroethylene	µg/g	0.05	≤50%	≤100%	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-
1,2-Dibromoethane	µg/g	0.04	≤50%	≤100%	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-
1,2-Dichlorobenzene	µg/g	0.05	≤50%	≤100%	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-
1,2-Dichloroethane	µg/g	0.03	≤50%	≤100%	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-
1,2-Dichloropropane	µg/g	0.03	≤50%	≤100%	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-
1,3-Dichlorobenzene	µg/g	0.05	≤50%	≤100%	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-
1,3-Dichloropropene, Total	µg/g	0.04	≤50%	≤100%	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-
1,4-Dichlorobenzene	µg/g	0.05	≤50%	≤100%	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-
Methyl Ethyl Ketone	µg/g	0.5	≤50%	≤100%	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-
Acetone	µg/g	0.5	≤50%	≤100%	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-
Bromodichloromethane	µg/g	0.05	≤50%	≤100%	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-
Bromoform	µg/g	0.05	≤50%	≤100%	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-
Bromomethane	µg/g	0.05	≤50%	≤100%	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-
Carbon Tetrachloride	µg/g	0.05	≤50%	≤100%	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-
Chlorobenzene	µg/g	0.05	≤50%	≤100%	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-
Chloroform	µg/g	0.04	≤50%	≤100%	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-
cis-1,2-Dichloroethene	µg/g	0.02	≤50%	≤100%	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-
Dibromochloromethane	µg/g	0.05	≤50%	≤100%	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-
Dichlorodifluoromethane	µg/g	0.05	≤50%	≤100%	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-
Methyl tert-Butyl Ether	µg/g	0.05	≤50%	≤100%	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-
Methylene Chloride	µg/g	0.05	≤50%	≤100%	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-
n-Hexane	µg/g	0.05	≤50%	≤100%	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-
Tetrachloroethylene	µg/g	0.05	≤50%	≤100%	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-
trans-1,2-Dichloroethene	µg/g	0.05	≤50%	≤100%	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-
Trichloroethene	µg/g	0.03	≤50%	≤100%	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-
Trichlorofluoromethane	µg/g	0.05	≤50%	≤100%	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-
Vinyl Chloride	µg/g	0.02	≤50%	≤100%	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-
Styrene	µg/g	0.05	≤50%	≤100%	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-
Methyl Isobutyl Ketone	µg/g	0.5	≤50%	≤100%	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-
4-Methyl-2-pentanone	µg/g	0.5	≤50%	≤100%	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-	-	-	NA	-

**Notes:**  
 Value Parameter concentration is greater than 5\*RDL.  
 Value RPD>Laboratory Acceptance Criteria  
 Value RPD>Field Duplicate Criteria

**Table 7A - Relative Percent Difference - Soil  
The Ottawa Hospital**

Location			21-221				21-224				21-225							
Sample Name			21-221 SA6	21-221 SA66 (Field duplicate of 21-221 SA6)			BH21-224 SA10		BH21-224 SA100 (Field duplicate of BH21-224 SA10)		BH21-225 SA4		BH21-225 SA44 (Field duplicate of BH21-225 SA4)					
Sample Date			2021-05-20	2021-05-20			2021-05-10		2021-05-10		2021-05-03		2021-05-03					
Sample Depth (m bgs)			3.81-4.42	3.81-4.42			6.86-7.47		6.86-7.47		2.29-2.9		2.29-2.9					
Parameter	Unit	RDL	Average Concentration				RPD (%)				Average Concentration				RPD (%)			
<b>VOCs</b>																		
1,1,1,2-Tetrachloroethane	µg/g	0.04	-	-	-	NA	-	< 0.04	< 0.04	NA	-	< 0.04	< 0.04	NA	-			
1,1,1-Trichloroethane	µg/g	0.05	-	-	-	NA	-	< 0.05	< 0.05	NA	-	< 0.05	< 0.05	NA	-			
1,1,2,2-Tetrachloroethane	µg/g	0.05	-	-	-	NA	-	< 0.05	< 0.05	NA	-	< 0.05	< 0.05	NA	-			
1,1,2-Trichloroethane	µg/g	0.04	-	-	-	NA	-	< 0.04	< 0.04	NA	-	< 0.04	< 0.04	NA	-			
1,1-Dichloroethane	µg/g	0.02	-	-	-	NA	-	< 0.02	< 0.02	NA	-	< 0.02	< 0.02	NA	-			
1,1-Dichloroethylene	µg/g	0.05	-	-	-	NA	-	< 0.05	< 0.05	NA	-	< 0.05	< 0.05	NA	-			
1,2-Dibromoethane	µg/g	0.04	-	-	-	NA	-	< 0.04	< 0.04	NA	-	< 0.04	< 0.04	NA	-			
1,2-Dichlorobenzene	µg/g	0.05	-	-	-	NA	-	< 0.05	< 0.05	NA	-	< 0.05	< 0.05	NA	-			
1,2-Dichloroethane	µg/g	0.03	-	-	-	NA	-	< 0.03	< 0.03	NA	-	< 0.03	< 0.03	NA	-			
1,2-Dichloropropane	µg/g	0.03	-	-	-	NA	-	< 0.03	< 0.03	NA	-	< 0.03	< 0.03	NA	-			
1,3-Dichlorobenzene	µg/g	0.05	-	-	-	NA	-	< 0.05	< 0.05	NA	-	< 0.05	< 0.05	NA	-			
1,3-Dichloropropene, Total	µg/g	0.04	-	-	-	NA	-	< 0.04	< 0.04	NA	-	< 0.04	< 0.04	NA	-			
1,4-Dichlorobenzene	µg/g	0.05	-	-	-	NA	-	< 0.05	< 0.05	NA	-	< 0.05	< 0.05	NA	-			
Methyl Ethyl Ketone	µg/g	0.5	-	-	-	NA	-	< 0.50	< 0.50	NA	-	< 0.50	< 0.50	NA	-			
Acetone	µg/g	0.5	-	-	-	NA	-	< 0.50	< 0.50	NA	-	< 0.50	< 0.50	NA	-			
Bromodichloromethane	µg/g	0.05	-	-	-	NA	-	< 0.05	< 0.05	NA	-	< 0.05	< 0.05	NA	-			
Bromoform	µg/g	0.05	-	-	-	NA	-	< 0.05	< 0.05	NA	-	< 0.05	< 0.05	NA	-			
Bromomethane	µg/g	0.05	-	-	-	NA	-	< 0.05	< 0.05	NA	-	< 0.05	< 0.05	NA	-			
Carbon Tetrachloride	µg/g	0.05	-	-	-	NA	-	< 0.05	< 0.05	NA	-	< 0.05	< 0.05	NA	-			
Chlorobenzene	µg/g	0.05	-	-	-	NA	-	< 0.05	< 0.05	NA	-	< 0.05	< 0.05	NA	-			
Chloroform	µg/g	0.04	-	-	-	NA	-	< 0.04	< 0.04	NA	-	< 0.04	< 0.04	NA	-			
cis-1,2-Dichloroethene	µg/g	0.02	-	-	-	NA	-	< 0.02	< 0.02	NA	-	< 0.02	< 0.02	NA	-			
Dibromochloromethane	µg/g	0.05	-	-	-	NA	-	< 0.05	< 0.05	NA	-	< 0.05	< 0.05	NA	-			
Dichlorodifluoromethane	µg/g	0.05	-	-	-	NA	-	< 0.05	< 0.05	NA	-	< 0.05	< 0.05	NA	-			
Methyl tert-Butyl Ether	µg/g	0.05	-	-	-	NA	-	< 0.05	< 0.05	NA	-	< 0.05	< 0.05	NA	-			
Methylene Chloride	µg/g	0.05	-	-	-	NA	-	< 0.05	< 0.05	NA	-	< 0.05	< 0.05	NA	-			
n-Hexane	µg/g	0.05	-	-	-	NA	-	< 0.05	< 0.05	NA	-	< 0.05	< 0.05	NA	-			
Tetrachloroethylene	µg/g	0.05	-	-	-	NA	-	< 0.05	< 0.05	NA	-	< 0.05	< 0.05	NA	-			
trans-1,2-Dichloroethene	µg/g	0.05	-	-	-	NA	-	< 0.05	< 0.05	NA	-	< 0.05	< 0.05	NA	-			
Trichloroethene	µg/g	0.03	-	-	-	NA	-	< 0.03	< 0.03	NA	-	< 0.03	< 0.03	NA	-			
Trichlorofluoromethane	µg/g	0.05	-	-	-	NA	-	< 0.05	< 0.05	NA	-	< 0.05	< 0.05	NA	-			
Vinyl Chloride	µg/g	0.02	-	-	-	NA	-	< 0.02	< 0.02	NA	-	< 0.02	< 0.02	NA	-			
Styrene	µg/g	0.05	-	-	-	NA	-	< 0.05	< 0.05	NA	-	< 0.05	< 0.05	NA	-			
Methyl Isobutyl Ketone	µg/g	0.5	-	-	-	NA	-	< 0.50	< 0.50	NA	-	< 0.50	< 0.50	NA	-			
4-Methyl-2-pentanone	µg/g	0.5	-	-	-	NA	-	< 0.50	< 0.50	NA	-	< 0.50	< 0.50	NA	-			

**Notes:**

Value
Value
Value

Parameter concentration is greater than 5\*RDL.  
 RPD>Laboratory Acceptance Criteria  
 RPD>Field Duplicate Criteria

**Table 7B - Relative Percent Difference - Groundwater**  
**The Ottawa Hospital**

Location					MW22-411D				21-219				21-222S			
Sample Name					MW22-411D	DUP-1 (Field Duplicate of MW22-411D)			MW21-219	DUP-1 (Field Duplicate of MW21-219)			BH21-222S	DUP-2 (Field Duplicate of BH21-222S)		
Sample Date					2022-08-04	2022-08-04			2021-05-25	2021-05-25			2021-05-25	2021-05-25		
Parameter	Unit	RDL	Laboratory Acceptance Criteria	Field Duplicate Acceptance Criteria			Average Concentration	RPD (%)			Average Concentration	RPD (%)			Average Concentration	RPD (%)
<b>Metals</b>																
Antimony	µg/L	1	≤20%	≤40%	-	-	NA	-	< 1.0	< 1.0	NA	-	< 1.0	< 1.0	NA	-
Arsenic	µg/L	1	≤20%	≤40%	-	-	NA	-	< 1.0	< 1.0	NA	-	< 1.0	< 1.0	NA	-
Barium	µg/L	2	≤20%	≤40%	-	-	NA	-	86.5	94.1	90.3	8	275	288	281.5	5
Beryllium	µg/L	0.5	≤20%	≤40%	-	-	NA	-	0.6	< 0.5	NA	-	< 0.5	< 0.5	NA	-
Boron	µg/L	10	≤20%	≤40%	-	-	NA	-	46.6	47.2	46.9	-	< 10.0	< 10.0	NA	-
Cadmium	µg/L	0.2	≤20%	≤40%	-	-	NA	-	< 0.20	< 0.20	NA	-	< 0.20	< 0.20	NA	-
Chromium	µg/L	2	≤20%	≤40%	-	-	NA	-	< 2.0	< 2.0	NA	-	2	< 2.0	NA	-
Cobalt	µg/L	0.5	≤20%	≤40%	-	-	NA	-	0.91	1.31	1.11	-	1.67	2.3	1.985	-
Copper	µg/L	1	≤20%	≤40%	-	-	NA	-	2	1.2	1.6	-	34.8	30.5	32.65	13
Lead	µg/L	0.5	≤20%	≤40%	-	-	NA	-	< 0.50	< 0.50	NA	-	1.15	1.05	1.1	-
Molybdenum	µg/L	0.5	≤20%	≤40%	-	-	NA	-	14.8	17.4	16.1	16	15.3	12.5	13.9	20
Nickel	µg/L	3	≤20%	≤40%	-	-	NA	-	3.1	4.3	3.7	-	11.8	9.5	10.65	-
Selenium	µg/L	1	≤20%	≤40%	-	-	NA	-	< 1.0	1.7	NA	-	< 1.0	1.4	NA	-
Silver	µg/L	0.2	≤20%	≤40%	-	-	NA	-	< 0.20	< 0.20	NA	-	< 0.20	< 0.20	NA	-
Thallium	µg/L	0.3	≤20%	≤40%	-	-	NA	-	< 0.30	< 0.30	NA	-	< 0.30	< 0.30	NA	-
Uranium	µg/L	0.5	≤20%	≤40%	-	-	NA	-	1.73	1.97	1.85	-	< 0.50	< 0.50	NA	-
Vanadium	µg/L	0.4	≤20%	≤40%	-	-	NA	-	0.62	1	0.81	-	0.41	0.5	0.455	-
Zinc	µg/L	5	≤20%	≤40%	-	-	NA	-	< 5.0	7.1	NA	-	6.3	5.9	6.1	-
<b>Polychlorinated Biphenyls</b>																
Aroclors (PCBs), Total	µg/L	0.1	≤30%	≤60%	-	-	NA	-	< 0.1	< 0.1	NA	-	-	-	NA	-
<b>Other Regulated Parameters</b>																
Hexavalent Chromium	µg/L	2	≤20%	≤40%	-	-	NA	-	< 2	< 2	NA	-	< 2	< 2	NA	-
Mercury	µg/L	0.02	≤20%	≤40%	-	-	NA	-	< 0.02	< 0.02	NA	-	< 0.02	< 0.02	NA	-
<b>Petroleum Hydrocarbons</b>																
PHC F1	µg/L	25	≤30%	≤60%	<25	<25	NA	-	< 25	< 25	NA	-	< 25	< 25	NA	-
PHC F2	µg/L	100	≤30%	≤60%	<100	<100	NA	-	< 100	< 100	NA	-	< 100	< 100	NA	-
PHC F3	µg/L	100	≤30%	≤60%	<200	<200	NA	-	< 100	< 100	NA	-	< 100	< 100	NA	-
PHC F4	µg/L	100	≤30%	≤60%	<200	<200	NA	-	< 100	< 100	NA	-	< 100	< 100	NA	-
<b>BTEX</b>																
Benzene	µg/L	0.2	≤30%	≤60%	<0.20	<0.20	NA	-	< 0.20	< 0.20	NA	-	< 0.40	< 0.40	NA	-
Toluene	µg/L	0.2	≤30%	≤60%	<0.20	<0.20	NA	-	< 0.20	< 0.20	NA	-	0.93	< 0.40	0.665	-
Ethylbenzene	µg/L	0.1	≤30%	≤60%	<0.20	<0.20	NA	-	< 0.10	< 0.10	NA	-	< 0.20	< 0.20	NA	-
o-Xylene	µg/L	0.1	≤30%	≤60%	<0.20	<0.20	NA	-	< 0.10	< 0.10	NA	-	< 0.20	< 0.20	NA	-
m,p-Xylenes	µg/L	0.2	≤30%	≤60%	<0.40	<0.40	NA	-	< 0.20	< 0.20	NA	-	< 0.40	< 0.40	NA	-
Xylenes, Total	µg/L	0.2	≤30%	≤60%	<0.40	<0.40	NA	-	< 0.20	< 0.20	NA	-	< 0.40	< 0.40	NA	-
<b>Polycyclic Aromatic Hydrocarbons</b>																
Acenaphthene	µg/L	0.2	≤30%	≤60%	<0.050	<0.050	NA	-	< 0.20	< 0.20	NA	-	< 0.20	< 0.20	NA	-
Acenaphthylene	µg/L	0.2	≤30%	≤60%	<0.050	<0.050	NA	-	< 0.20	< 0.20	NA	-	< 0.20	< 0.20	NA	-
Anthracene	µg/L	0.1	≤30%	≤60%	<0.050	<0.050	NA	-	< 0.10	< 0.10	NA	-	< 0.10	< 0.10	NA	-
Benzo[a]anthracene	µg/L	0.2	≤30%	≤60%	<0.050	<0.050	NA	-	< 0.20	< 0.20	NA	-	< 0.20	< 0.20	NA	-
Benzo[a]pyrene	µg/L	0.01	≤30%	≤60%	<0.0090	<0.0090	NA	-	< 0.01	< 0.01	NA	-	< 0.01	< 0.01	NA	-
Benzo[b]fluoranthene	µg/L	0.1	≤30%	≤60%	<0.050	<0.050	NA	-	< 0.10	< 0.10	NA	-	< 0.10	< 0.10	NA	-
Benzo[g,h,i]perylene	µg/L	0.2	≤30%	≤60%	<0.050	<0.050	NA	-	< 0.20	< 0.20	NA	-	< 0.20	< 0.20	NA	-
Benzo[k]fluoranthene	µg/L	0.1	≤30%	≤60%	<0.050	<0.050	NA	-	< 0.10	< 0.10	NA	-	< 0.10	< 0.10	NA	-
Chrysene	µg/L	0.1	≤30%	≤60%	<0.050	<0.050	NA	-	< 0.10	< 0.10	NA	-	< 0.10	< 0.10	NA	-
Dibenzo[a,h]anthracene	µg/L	0.2	≤30%	≤60%	<0.050	<0.050	NA	-	< 0.20	< 0.20	NA	-	< 0.20	< 0.20	NA	-
Fluoranthene	µg/L	0.2	≤30%	≤60%	<0.050	<0.050	NA	-	< 0.20	< 0.20	NA	-	< 0.20	< 0.20	NA	-
Fluorene	µg/L	0.2	≤30%	≤60%	<0.050	<0.050	NA	-	< 0.20	< 0.20	NA	-	< 0.20	< 0.20	NA	-
Indeno[1,2,3-cd]pyrene	µg/L	0.2	≤30%	≤60%	<0.050	<0.050	NA	-	< 0.20	< 0.20	NA	-	< 0.20	< 0.20	NA	-
Naphthalene	µg/L	0.2	≤30%	≤60%	<0.050	<0.050	NA	-	< 0.20	< 0.20	NA	-	0.22	< 0.20	NA	-
Phenanthrene	µg/L	0.1	≤30%	≤60%	<0.030	<0.030	NA	-	< 0.10	< 0.10	NA	-	< 0.10	< 0.10	NA	-
Pyrene	µg/L	0.2	≤30%	≤60%	<0.050	<0.050	NA	-	< 0.20	< 0.20	NA	-	< 0.20	< 0.20	NA	-
1- & 2-Methylnaphthalene	µg/L	0.2	≤30%	≤60%	<0.071	<0.071	NA	-	< 0.20	< 0.20	NA	-	< 0.20	< 0.20	NA	-
4-Methyl-2-pentanone	µg/L	0.5	≤30%	≤60%	-	-	NA	-	< 1.0	< 1.0	NA	-	< 2.0	< 2.0	NA	-

**Table 7B - Relative Percent Difference - Groundwater  
The Ottawa Hospital**

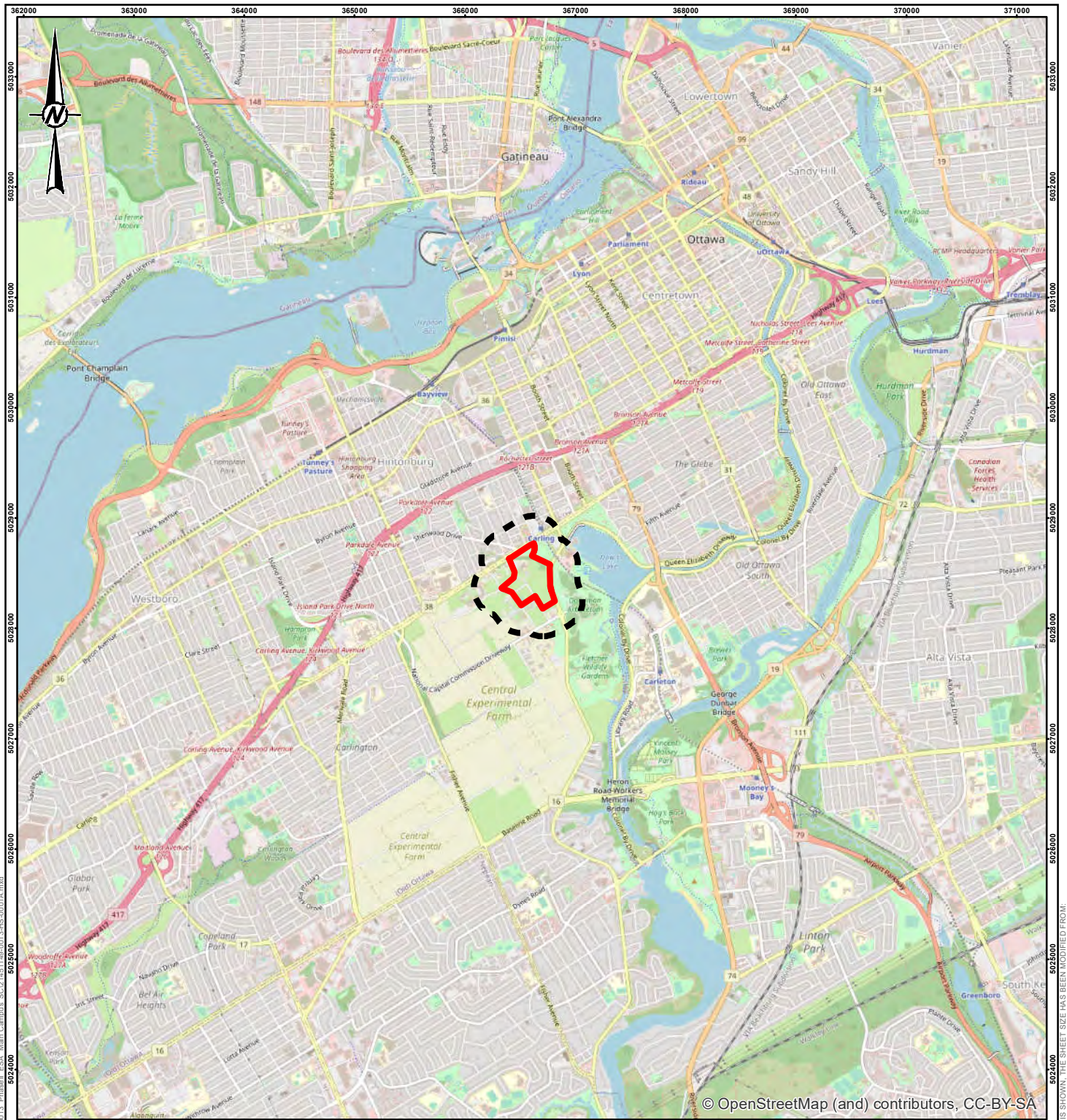
Location					MW22-411D				21-219				21-222S			
Sample Name					MW22-411D	DUP-1 (Field Duplicate of MW22-411D)			MW21-219	DUP-1 (Field Duplicate of MW21-219)			BH21-222S	DUP-2 (Field Duplicate of BH21-222S)		
Sample Date					2022-08-04	2022-08-04			2021-05-25	2021-05-25			2021-05-25	2021-05-25		
Parameter	Unit	RDL	Laboratory Acceptance Criteria	Field Duplicate Acceptance Criteria			Average Concentration	RPD (%)			Average Concentration	RPD (%)			Average Concentration	RPD (%)
<b>Volatile Organic Compounds</b>																
1,1,1,2-Tetrachloroethane	µg/L	0.1	≤30%	≤60%	-	-	NA	-	< 0.10	< 0.10	NA	-	< 0.20	< 0.20	NA	-
1,1,1-Trichloroethane	µg/L	0.3	≤30%	≤60%	-	-	NA	-	< 0.30	< 0.30	NA	-	< 0.60	< 0.60	NA	-
1,1,2,2-Tetrachloroethane	µg/L	0.1	≤30%	≤60%	-	-	NA	-	< 0.10	< 0.10	NA	-	< 0.20	< 0.20	NA	-
1,1,2-Trichloroethane	µg/L	0.2	≤30%	≤60%	-	-	NA	-	< 0.20	< 0.20	NA	-	< 0.40	< 0.40	NA	-
1,1-Dichloroethane	µg/L	0.3	≤30%	≤60%	-	-	NA	-	< 0.30	< 0.30	NA	-	< 0.60	< 0.60	NA	-
1,1-Dichloroethylene	µg/L	0.3	≤30%	≤60%	-	-	NA	-	< 0.30	< 0.30	NA	-	< 0.60	< 0.60	NA	-
1,2-Dibromoethane	µg/L	0.04	≤30%	≤60%	-	-	NA	-	< 0.10	< 0.10	NA	-	< 0.20	< 0.20	NA	-
1,2-Dichlorobenzene	µg/L	0.1	≤30%	≤60%	-	-	NA	-	< 0.10	< 0.10	NA	-	< 0.20	< 0.20	NA	-
1,2-Dichloroethane	µg/L	0.2	≤30%	≤60%	-	-	NA	-	< 0.20	< 0.20	NA	-	< 0.40	< 0.40	NA	-
1,2-Dichloropropane	µg/L	0.2	≤30%	≤60%	-	-	NA	-	< 0.20	< 0.20	NA	-	< 0.40	< 0.40	NA	-
1,3-Dichlorobenzene	µg/L	0.1	≤30%	≤60%	-	-	NA	-	< 0.10	< 0.10	NA	-	< 0.20	< 0.20	NA	-
1,3-Dichloropropene, Total	µg/L	0.3	≤30%	≤60%	-	-	NA	-	< 0.30	< 0.30	NA	-	< 0.60	< 0.60	NA	-
1,4-Dichlorobenzene	µg/L	0.1	≤30%	≤60%	-	-	NA	-	< 0.10	< 0.10	NA	-	< 0.20	< 0.20	NA	-
Methyl Ethyl Ketone	µg/L	1	≤30%	≤60%	-	-	NA	-	< 1.0	< 1.0	NA	-	< 2.0	< 2.0	NA	-
Acetone	µg/L	1	≤30%	≤60%	-	-	NA	-	< 1.0	< 1.0	NA	-	< 2.0	< 2.0	NA	-
Bromodichloromethane	µg/L	0.2	≤30%	≤60%	-	-	NA	-	< 0.20	< 0.20	NA	-	< 0.40	< 0.40	NA	-
Bromoform	µg/L	0.1	≤30%	≤60%	-	-	NA	-	< 0.10	< 0.10	NA	-	< 0.20	< 0.20	NA	-
Bromomethane	µg/L	0.2	≤30%	≤60%	-	-	NA	-	< 0.20	< 0.20	NA	-	< 0.40	< 0.40	NA	-
Carbon Tetrachloride	µg/L	0.2	≤30%	≤60%	-	-	NA	-	< 0.20	< 0.20	NA	-	< 0.40	< 0.40	NA	-
Chlorobenzene	µg/L	0.1	≤30%	≤60%	-	-	NA	-	< 0.10	< 0.10	NA	-	< 0.20	< 0.20	NA	-
Chloroform	µg/L	0.2	≤30%	≤60%	-	-	NA	-	1.96	1.89	1.925	4	< 0.40	< 0.40	NA	-
cis-1,2-Dichloroethene	µg/L	0.2	≤30%	≤60%	-	-	NA	-	< 0.20	< 0.20	NA	-	< 0.40	< 0.40	NA	-
Dibromochloromethane	µg/L	0.1	≤30%	≤60%	-	-	NA	-	< 0.10	< 0.10	NA	-	< 0.20	< 0.20	NA	-
Dichlorodifluoromethane	µg/L	0.2	≤30%	≤60%	-	-	NA	-	< 0.20	< 0.20	NA	-	< 0.40	< 0.40	NA	-
Methyl tert-Butyl Ether	µg/L	0.2	≤30%	≤60%	-	-	NA	-	< 0.20	< 0.20	NA	-	< 0.40	< 0.40	NA	-
Methylene Chloride	µg/L	0.3	≤30%	≤60%	-	-	NA	-	< 0.30	< 0.30	NA	-	< 0.60	< 0.60	NA	-
n-Hexane	µg/L	0.2	≤30%	≤60%	-	-	NA	-	< 0.20	< 0.20	NA	-	< 0.40	< 0.40	NA	-
Tetrachloroethylene	µg/L	0.2	≤30%	≤60%	-	-	NA	-	< 0.20	< 0.20	NA	-	< 0.40	< 0.40	NA	-
trans-1,2-Dichloroethene	µg/L	0.2	≤30%	≤60%	-	-	NA	-	< 0.20	< 0.20	NA	-	< 0.40	< 0.40	NA	-
Trichloroethene	µg/L	0.2	≤30%	≤60%	-	-	NA	-	< 0.20	< 0.20	NA	-	< 0.40	< 0.40	NA	-
Trichlorofluoromethane	µg/L	0.4	≤30%	≤60%	-	-	NA	-	< 0.40	< 0.40	NA	-	4.26	4.68	4.47	9
Vinyl Chloride	µg/L	0.17	≤30%	≤60%	-	-	NA	-	< 0.17	< 0.17	NA	-	< 0.34	< 0.34	NA	-
Styrene	µg/L	0.1	≤30%	≤60%	-	-	NA	-	< 0.10	< 0.10	NA	-	< 0.20	< 0.20	NA	-
Methyl Isobutyl Ketone	µg/L	1	≤30%	≤60%	-	-	NA	-	< 1.0	< 1.0	NA	-	< 2.0	< 2.0	NA	-

**Notes:**  

Value	Parameter concentration is greater than 5*RDL.
Value	RPD>Laboratory Acceptance Criteria
Value	RPD>Field Duplicate Criteria





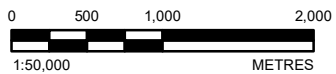
## Figures



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**LEGEND**

-  PHASE TWO SITE BOUNDARY AND RSC PROPERTY
-  PHASE ONE STUDY AREA




**NOTE(S)**  
1. ALL LOCATIONS ARE APPROXIMATE

**REFERENCE(S)**  
1. PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83  
COORDINATE SYSTEM: MTM ZONE 9 VERTICAL DATUM: CGVD28

CLIENT  
**PARSONS INC.**

PROJECT  
**PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
NEW CIVIC DEVELOPMENT FOR THE OTTAWA HOSPITAL**

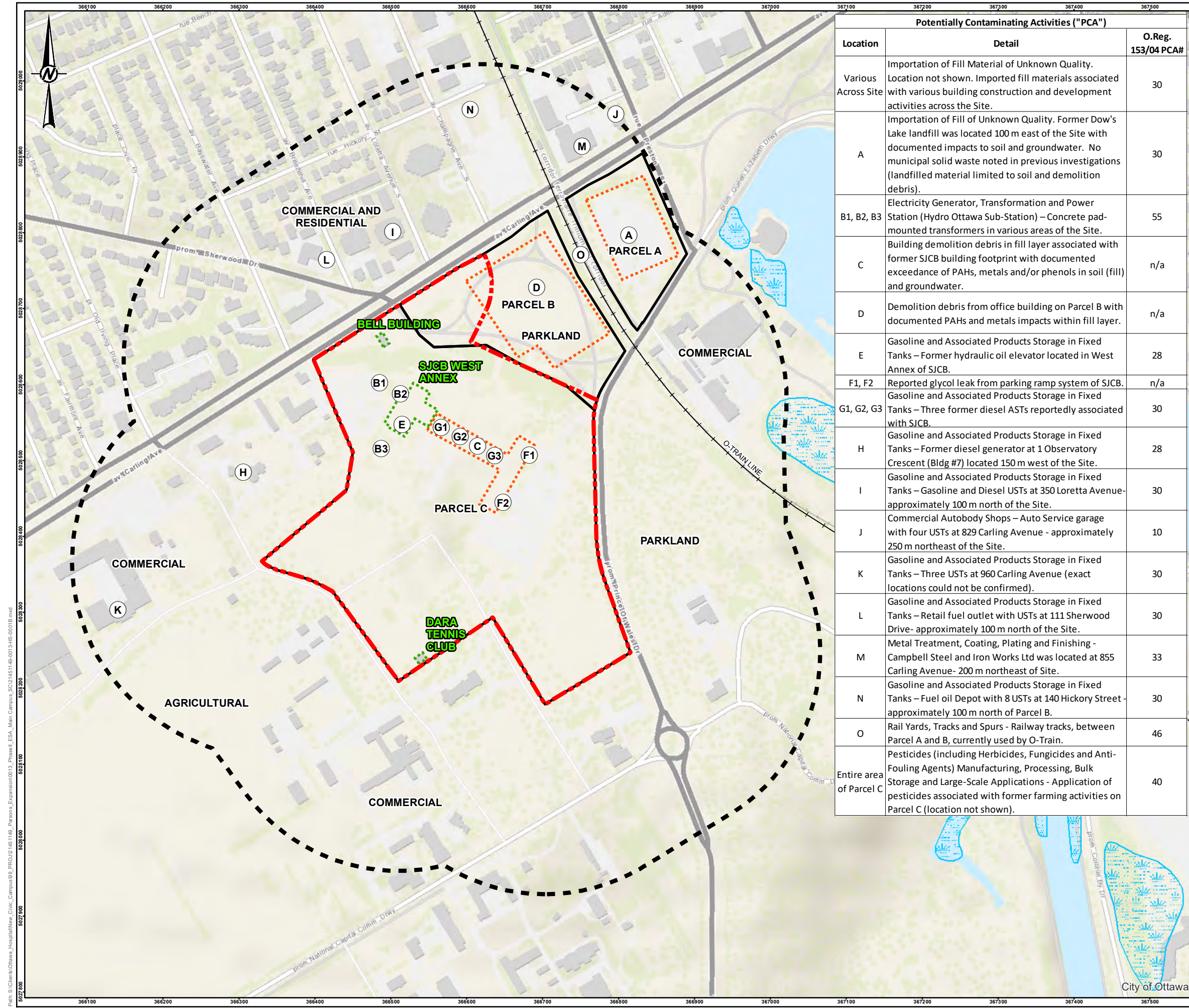
TITLE  
**KEY PLAN**

CONSULTANT	YYYY-MM-DD	2022-07-29
	DESIGNED	---
	PREPARED	JEM
	REVIEWED	OA
	APPROVED	LJJ

PROJECT NO. 21451149	CONTROL 0013	REV. 0	FIGURE <b>1A</b>
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IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 25mm

Path: S:\Clients\Ottawa Hospital\New Civic Campus\99 PROJ\21451149 Parsons Expansion\0113 Phase1\_ESA Main Campus\_SCP\21451149-001-348-001A.mxd

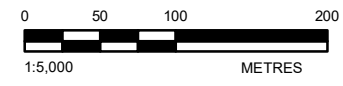


Potentially Contaminating Activities ("PCA")		
Location	Detail	O.Reg. 153/04 PCA#
Various Across Site	Importation of Fill Material of Unknown Quality. Location not shown. Imported fill materials associated with various building construction and development activities across the Site.	30
A	Importation of Fill of Unknown Quality. Former Dow's Lake landfill was located 100 m east of the Site with documented impacts to soil and groundwater. No municipal solid waste noted in previous investigations (landfilled material limited to soil and demolition debris).	30
B1, B2, B3	Electricity Generator, Transformation and Power Station (Hydro Ottawa Sub-Station) – Concrete pad-mounted transformers in various areas of the Site.	55
C	Building demolition debris in fill layer associated with former SJC building footprint with documented exceedance of PAHs, metals and/or phenols in soil (fill) and groundwater.	n/a
D	Demolition debris from office building on Parcel B with documented PAHs and metals impacts within fill layer.	n/a
E	Gasoline and Associated Products Storage in Fixed Tanks – Former hydraulic oil elevator located in West Annex of SJC.	28
F1, F2	Reported glycol leak from parking ramp system of SJC.	n/a
G1, G2, G3	Gasoline and Associated Products Storage in Fixed Tanks – Three former diesel ASTs reportedly associated with SJC.	30
H	Gasoline and Associated Products Storage in Fixed Tanks – Former diesel generator at 1 Observatory Crescent (Bldg #7) located 150 m west of the Site.	28
I	Gasoline and Associated Products Storage in Fixed Tanks – Gasoline and Diesel USTs at 350 Loretta Avenue- approximately 100 m north of the Site.	30
J	Commercial Autobody Shops – Auto Service garage with four USTs at 829 Carling Avenue - approximately 250 m northeast of the Site.	10
K	Gasoline and Associated Products Storage in Fixed Tanks – Three USTs at 960 Carling Avenue (exact locations could not be confirmed).	30
L	Gasoline and Associated Products Storage in Fixed Tanks – Retail fuel outlet with USTs at 111 Sherwood Drive- approximately 100 m north of the Site.	30
M	Metal Treatment, Coating, Plating and Finishing - Campbell Steel and Iron Works Ltd was located at 855 Carling Avenue- 200 m northeast of Site.	33
N	Gasoline and Associated Products Storage in Fixed Tanks – Fuel oil Depot with 8 USTs at 140 Hickory Street- approximately 100 m north of Parcel B.	30
O	Rail Yards, Tracks and Spurs - Railway tracks, between Parcel A and B, currently used by O-Train.	46
Entire area of Parcel C	Pesticides (including Herbicides, Fungicides and Anti-Fouling Agents) Manufacturing, Processing, Bulk Storage and Large-Scale Applications - Application of pesticides associated with former farming activities on Parcel C (location not shown).	40

**LEGEND**

- O-TRAIN RAILWAY TRACK
- FORMER BUILDING FOOTPRINT
- EXISTING BUILDING
- PHASE ONE SITE BOUNDARY, PHASE TWO SITE BOUNDARY AND RSC PROPERTY
- PHASE ONE STUDY AREA

**REFERENCE(S)**  
 1. PROJECTION: TRANSVERSE MERCATOR, DATUM: NAD 83, COORDINATE SYSTEM: MTM ZONE 9, VERTICAL DATUM: CGVD28



CLIENT  
**PARSONS INC.**

---

PROJECT  
**PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
NEW CIVIC DEVELOPMENT FOR THE OTTAWA HOSPITAL**

TITLE  
**POTENTIALLY CONTAMINATING ACTIVITIES**

---

CONSULTANT  
**wsp GOLDER**

YYYY-MM-DD	2022-07-29
DESIGNED	---
PREPARED	JEM
REVIEWED	OA
APPROVED	LJJ

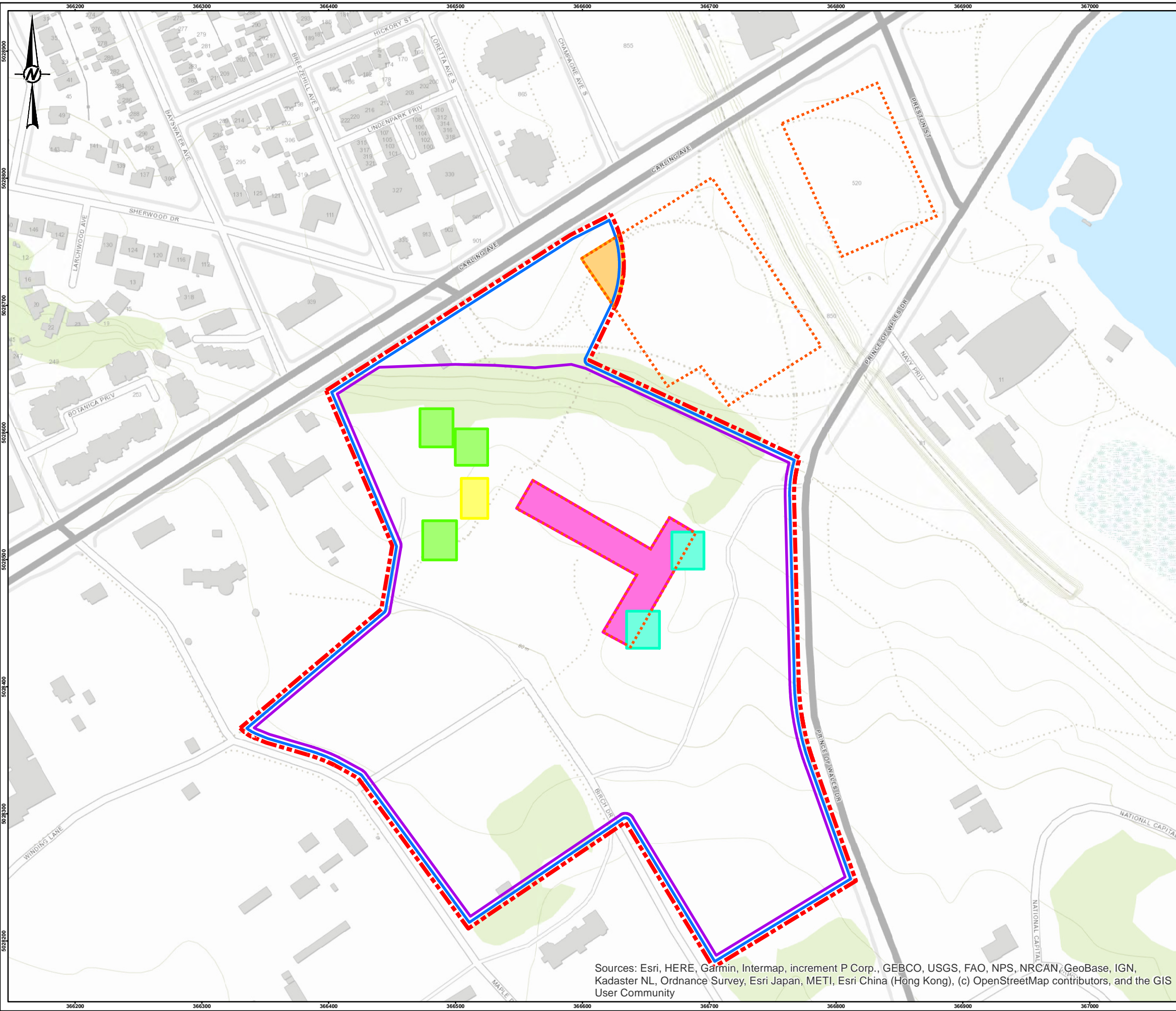
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PROJECT NO. 21451149 CONTROL 0013 REV. 0

FIGURE **1B**

Path: S:\Clients\Ottawa\_Hospital\New\_Civic\_Campus\02\_PRCU\21451149\_Person\_Expansion\013\_Phase II\_ESA\_Main Campus\_SCC1451149\_0013-ES-001B.mxd

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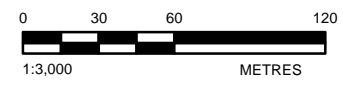


**LEGEND**

- FORMER BUILDING FOOTPRINT
- WOODED AREA
- APEC 1
- APEC 2 & APEC 6
- APEC 3
- APEC 4
- APEC 5
- APEC 7
- APEC 8
- PHASE TWO SITE BOUNDARY AND RSC PROPERTY

Areas of Potential Environmental Concern ("APEC")		
APEC#	Description	O.Reg. 153/04 PCA#
1	Demolition debris from former office building on Parcel B.	n/a
2	Building demolition debris in fill at the location of the former SJCB building.	n/a
3	Concrete pad-mounted transformers.	55
4	Gasoline and Associated Products Storage in Fixed Tanks – Former hydraulic oil elevator located in West Annex of SJCB.	28
5	Reported glycol leak from parking ramp system of SJCB.	n/a
6	Three former diesel ASTs reportedly associated with SJCB.	30
7	Imported fill materials associated with various building construction and site development activities across the Site (all parcels).	30
8	Application of pesticides associated with former farming activities on Parcel C.	40

**REFERENCE(S)**  
 1. PROJECTION: TRANSVERSE MERCATOR, DATUM: NAD 83, COORDINATE SYSTEM: MTM ZONE 9, VERTICAL DATUM: CGVD28



CLIENT  
**PARSONS INC.**

---

PROJECT  
**PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
 NEW CIVIC DEVELOPMENT FOR THE OTTAWA HOSPITAL**

TITLE  
**SITE PLAN AND PHASE ONE CONCEPTUAL SITE MODEL**

---

CONSULTANT	YYYY-MM-DD	2022-08-31
<b>wsp GOLDER</b>	DESIGNED	----
	PREPARED	JEM
	REVIEWED	OA
	APPROVED	LJJ

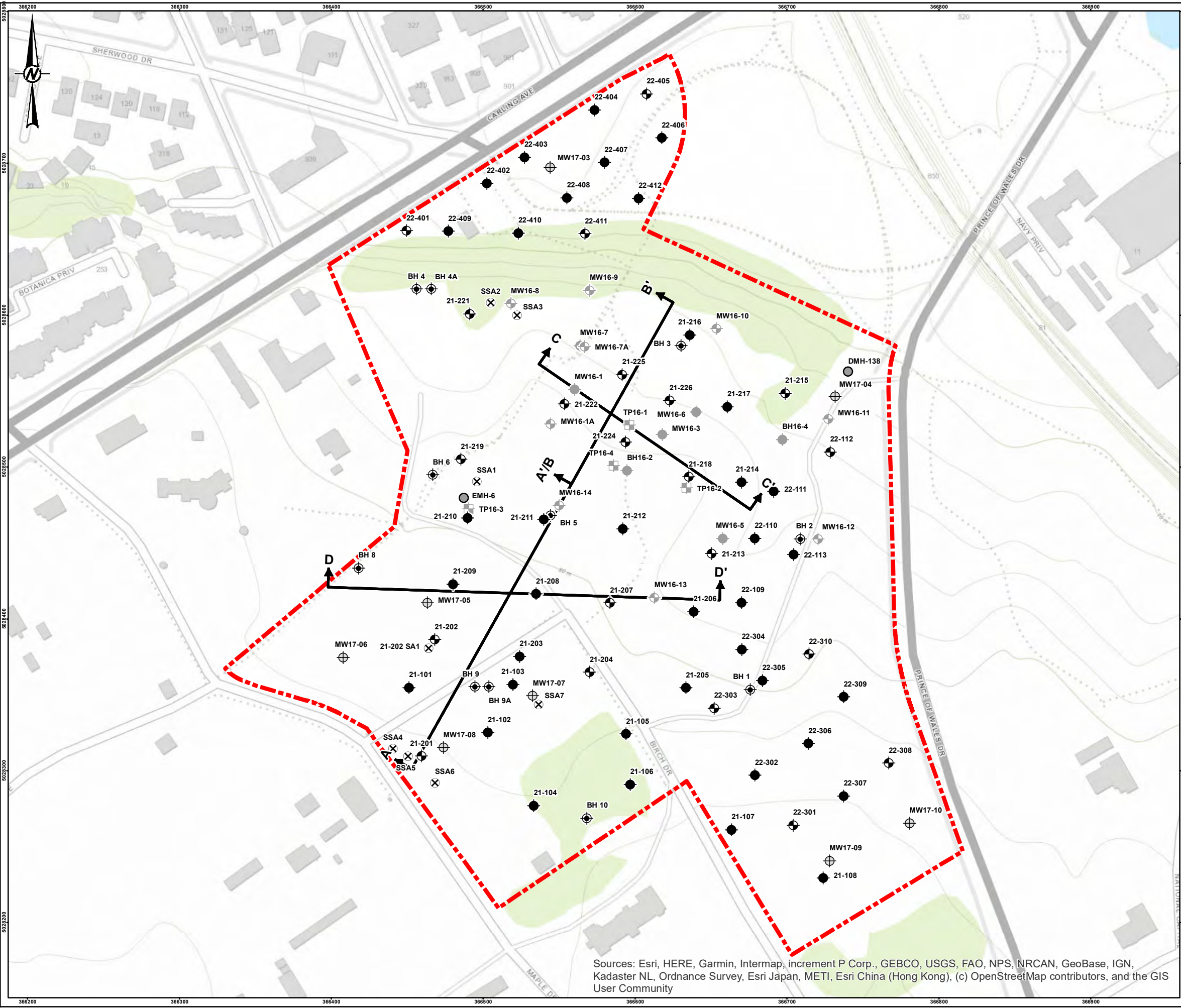
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PROJECT NO. 21451149	CONTROL 0013	REV. 0	FIGURE <b>1C</b>
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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

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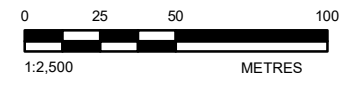
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**LEGEND**

- APPROXIMATE BOREHOLE LOCATION (GOLDER, 2021-22)
- ⊕ APPROXIMATE MONITORING WELL LOCATION (GOLDER, 2021-22)
- ⊗ APPROXIMATE SURFICIAL SOIL SAMPLE LOCATION (GOLDER, 2021)
- ⊕ PREVIOUS ENVIRONMENTAL BOREHOLE OR MONITORING WELL LOCATION (PATERSON, 2017)
- ⊕ PREVIOUS ENVIRONMENTAL BOREHOLE OR MONITORING WELL LOCATION (STANTEC PHASE II, 2017)
- ⊕ PREVIOUS ENVIRONMENTAL BOREHOLE OR MONITORING WELL LOCATION (STANTEC PHASE III, 2017)
- ⊕ PREVIOUS ENVIRONMENTAL BOREHOLE OR MONITORING WELL LOCATION (STANTEC, 2016)
- ⊕ PREVIOUS ENVIRONMENTAL TEST PIT LOCATION (STANTEC PHASE III, 2017)
- ⊕ PREVIOUS ENVIRONMENTAL MANHOLE SAMPLING LOCATION (STANTEC PHASE III, 2017)
- ↔ CROSS-SECTION LOCATION
- ⬡ PHASE TWO SITE BOUNDARY AND RSC PROPERTY

**REFERENCE(S)**  
 1. PROJECTION: TRANSVERSE MERCATOR, DATUM: NAD 83,  
 COORDINATE SYSTEM: MTM ZONE 9, VERTICAL DATUM: CGVD28

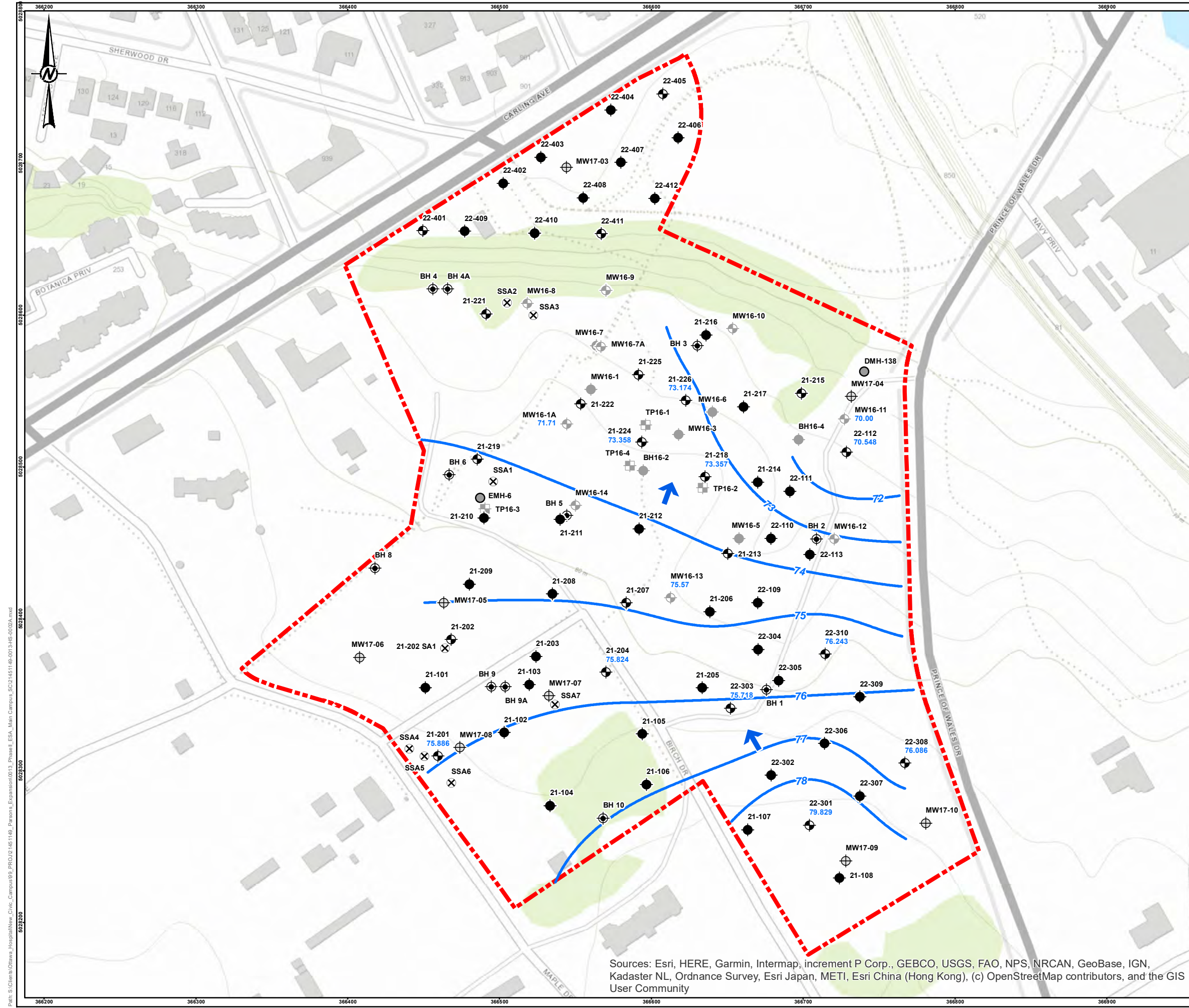


CLIENT		PARSONS INC.	
PROJECT		PHASE TWO ENVIRONMENTAL SITE ASSESSMENT NEW CIVIC DEVELOPMENT FOR THE OTTAWA HOSPITAL	
TITLE		BOREHOLE AND MONITORING WELL LOCATION PLAN	
CONSULTANT	YYYY-MM-DD	2022-07-29	
<b>wsp GOLDER</b>	DESIGNED	---	
	PREPARED	JEM	
	REVIEWED	OA	
	APPROVED	LJJ	
PROJECT NO.	CONTROL	REV.	FIGURE
21451149	0013	0	1D

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

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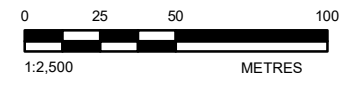
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**LEGEND**

- APPROXIMATE BOREHOLE LOCATION (GOLDER, 2021-22)
- ⊕ APPROXIMATE MONITORING WELL LOCATION (GOLDER, 2021-22)
- ⊕ PREVIOUS ENVIRONMENTAL BOREHOLE OR MONITORING WELL LOCATION (STANTEC PHASE II, 2017)
- ⊕ PREVIOUS ENVIRONMENTAL BOREHOLE OR MONITORING WELL LOCATION (STANTEC PHASE III, 2017)
- ⊕ PREVIOUS ENVIRONMENTAL BOREHOLE OR MONITORING WELL LOCATION (STANTEC, 2016)
- ⊕ PREVIOUS ENVIRONMENTAL TEST PIT LOCATION (STANTEC PHASE III, 2017)
- ⊕ PREVIOUS ENVIRONMENTAL MANHOLE SAMPLING LOCATION (STANTEC PHASE III, 2017)
- ⊕ PREVIOUS ENVIRONMENTAL BOREHOLE OR MONITORING WELL LOCATION (PATERSON, 2017)
- ⊗ APPROXIMATE SURFICIAL SOIL SAMPLE LOCATION (GOLDER, 2021)
- ▭ PHASE TWO SITE BOUNDARY AND RSC PROPERTY
- 99.99 GROUNDWATER ELEVATION, mASL (AUGUST 4, 2022)
- GROUNDWATER ELEVATION CONTOUR, mASL
- ← INTERPRETED GROUNDWATER FLOW DIRECTION

**REFERENCE(S)**  
 1. PROJECTION: TRANSVERSE MERCATOR, DATUM: NAD 83, COORDINATE SYSTEM: MTM ZONE 9, VERTICAL DATUM: CGVD28

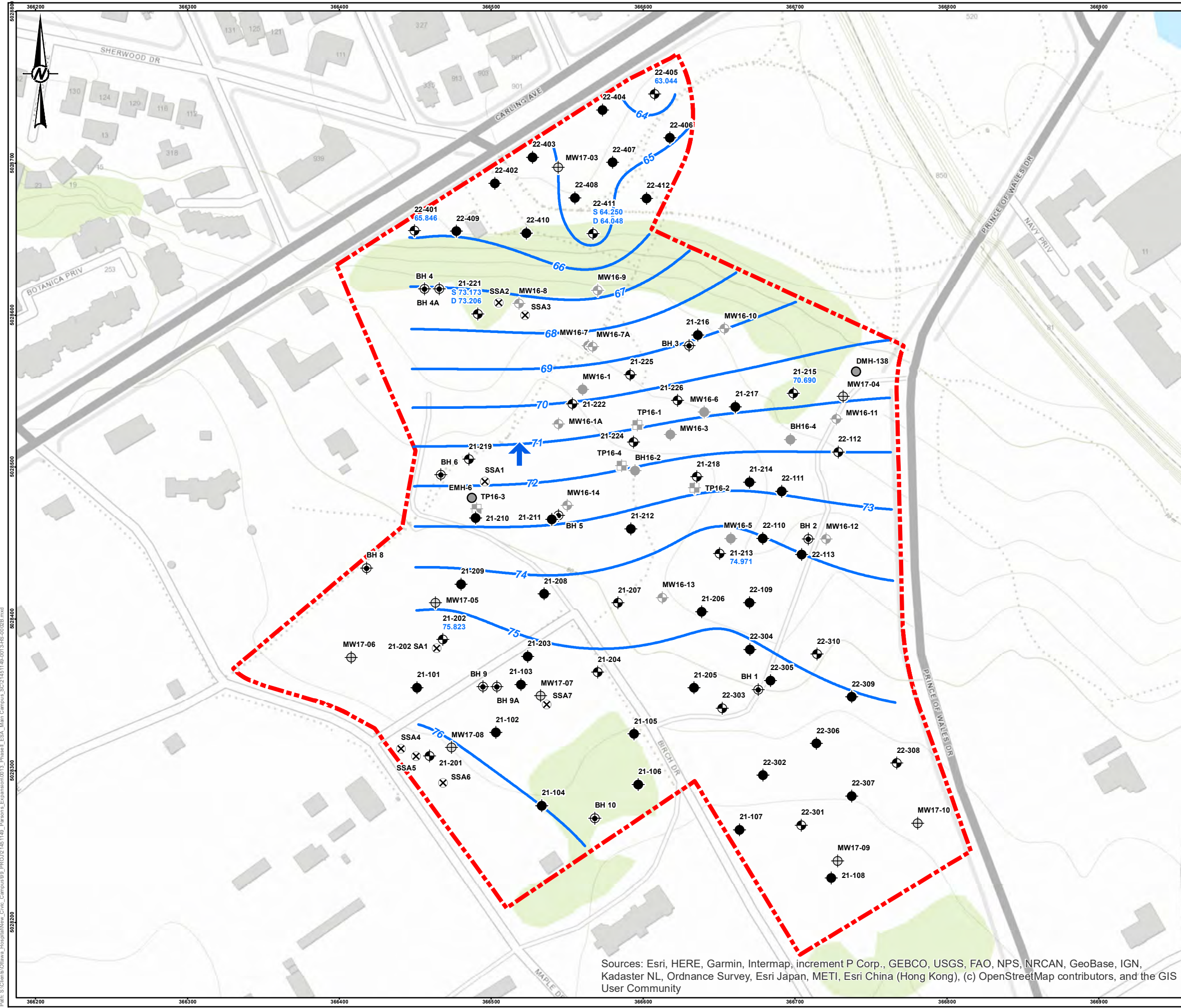


CLIENT		PARSONS INC.	
PROJECT			
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT			
NEW CIVIC DEVELOPMENT FOR THE OTTAWA HOSPITAL			
TITLE			
INTERPRETED GROUNDWATER FLOW DIRECTION IN SHALLOW OVERBURDEN (SCREENED INTERVAL > 70 mASL)			
CONSULTANT		YYYY-MM-DD	2022-08-31
DESIGNED		---	
PREPARED		JEM	
REVIEWED		OA	
APPROVED		LJJ	
PROJECT NO.	CONTROL	REV.	FIGURE
21451149	0013	0	2A

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

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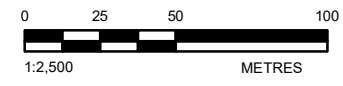
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**LEGEND**

- APPROXIMATE BOREHOLE LOCATION (GOLDER, 2021-22)
- ⊕ APPROXIMATE MONITORING WELL LOCATION (GOLDER, 2021-22)
- ⊕ PREVIOUS ENVIRONMENTAL BOREHOLE OR MONITORING WELL LOCATION (STANTEC PHASE II, 2017)
- ⊕ PREVIOUS ENVIRONMENTAL BOREHOLE OR MONITORING WELL LOCATION (STANTEC PHASE III, 2017)
- ⊕ PREVIOUS ENVIRONMENTAL BOREHOLE OR MONITORING WELL LOCATION (STANTEC, 2016)
- ⊕ PREVIOUS ENVIRONMENTAL TEST PIT LOCATION (STANTEC PHASE III, 2017)
- ⊕ PREVIOUS ENVIRONMENTAL MANHOLE SAMPLING LOCATION (STANTEC PHASE III, 2017)
- ⊕ PREVIOUS ENVIRONMENTAL BOREHOLE OR MONITORING WELL LOCATION (PATERSON, 2017)
- ⊗ APPROXIMATE SURFICIAL SOIL SAMPLE LOCATION (GOLDER, 2021)
- ⬡ PHASE TWO SITE BOUNDARY AND RSC PROPERTY
- 99.99 GROUNDWATER ELEVATION, mASL (AUGUST 4, 2022)
- GROUNDWATER ELEVATION CONTOUR, mASL
- ➔ INTERPRETED GROUNDWATER FLOW DIRECTION

**REFERENCE(S)**  
 1. PROJECTION: TRANSVERSE MERCATOR, DATUM: NAD 83,  
 COORDINATE SYSTEM: MTM ZONE 9, VERTICAL DATUM: CGVD28

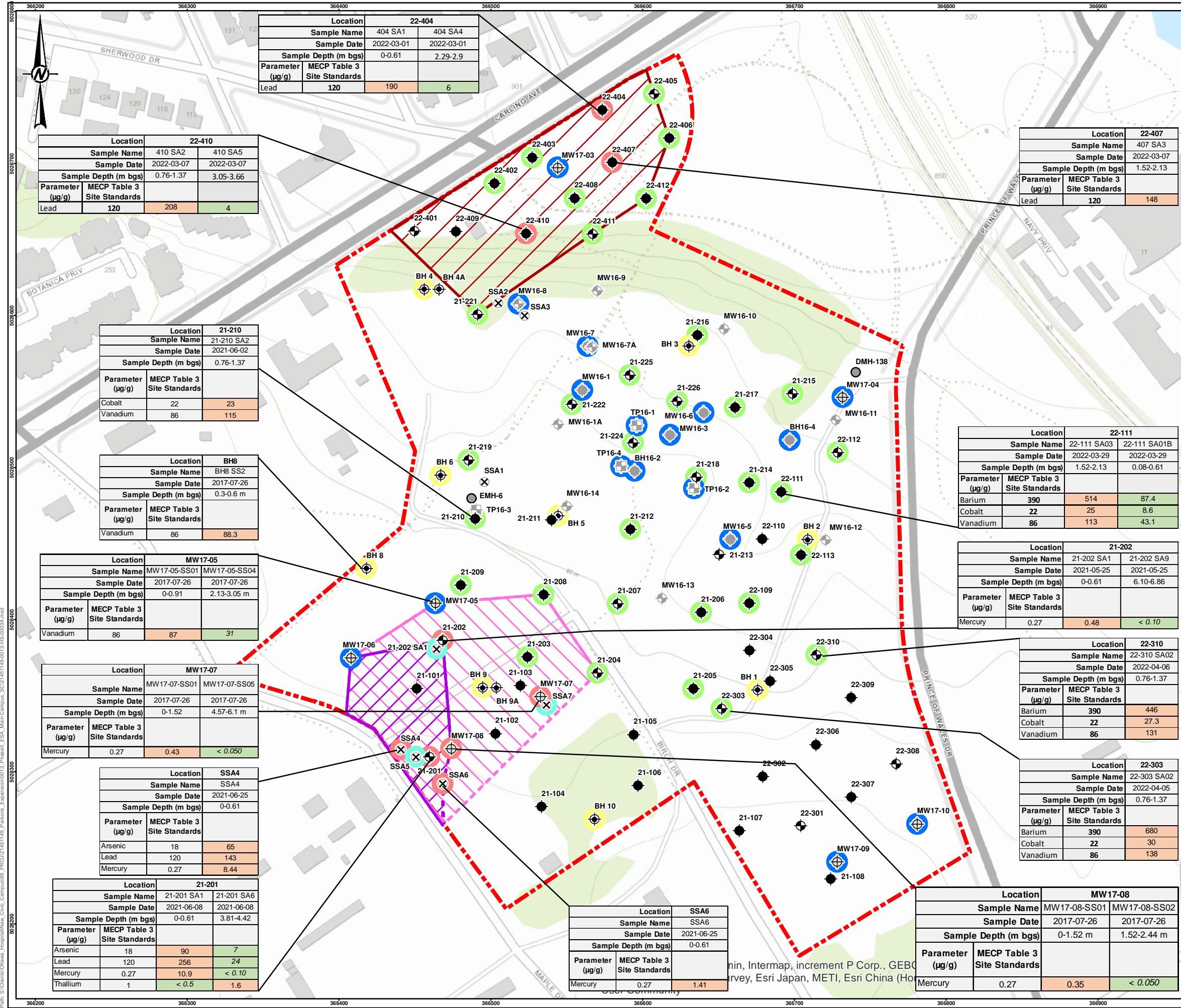


CLIENT <b>PARSONS INC.</b>		
PROJECT <b>PHASE TWO ENVIRONMENTAL SITE ASSESSMENT NEW CIVIC DEVELOPMENT FOR THE OTTAWA HOSPITAL</b>		
TITLE <b>INTERPRETED GROUNDWATER FLOW DIRECTION IN DEEP OVERBURDEN (SCREENED INTERVAL &lt; 70 mASL)</b>		
CONSULTANT	YYYY-MM-DD	2022-08-31
<b>wsp GOLDER</b>	DESIGNED	---
	PREPARED	JEM
	REVIEWED	OA
	APPROVED	LJJ
PROJECT NO. 21451149	CONTROL 0013	REV. 0
		FIGURE <b>2B</b>

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

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Location		22-404	
Sample Name		404 SA1	404 SA4
Sample Date		2022-03-01	2022-03-01
Sample Depth (m bgs)		0-0.61	2.29-2.9
Parameter (µg/g)	MECP Table 3 Site Standards		
Lead		120	6

Location		22-410	
Sample Name		410 SA2	410 SA5
Sample Date		2022-03-07	2022-03-07
Sample Depth (m bgs)		0.76-1.37	3.05-3.66
Parameter (µg/g)	MECP Table 3 Site Standards		
Lead		208	4

Location		22-407	
Sample Name		407 SA3	
Sample Date		2022-03-07	
Sample Depth (m bgs)		1.52-2.13	
Parameter (µg/g)	MECP Table 3 Site Standards		
Lead		120	148

Location		21-210	
Sample Name		21-210 SA2	
Sample Date		2021-06-02	
Sample Depth (m bgs)		0.76-1.37	
Parameter (µg/g)	MECP Table 3 Site Standards		
Cobalt		22	23
Vanadium		86	115

Location		BH8	
Sample Name		BH8 SS2	
Sample Date		2017-07-26	
Sample Depth (m bgs)		0.3-0.6 m	
Parameter (µg/g)	MECP Table 3 Site Standards		
Vanadium		86	88.3

Location		MW17-05	
Sample Name		MW17-05-SS01	MW17-05-SS04
Sample Date		2017-07-26	2017-07-26
Sample Depth (m bgs)		0-0.91	2.13-3.05 m
Parameter (µg/g)	MECP Table 3 Site Standards		
Vanadium		86	87
			31

Location		MW17-07	
Sample Name		MW17-07-SS01	MW17-07-SS05
Sample Date		2017-07-26	2017-07-26
Sample Depth (m bgs)		0-1.52	4.57-6.1 m
Parameter (µg/g)	MECP Table 3 Site Standards		
Mercury		0.27	0.43
			< 0.050

Location		SSA4	
Sample Name		SSA4	
Sample Date		2021-06-25	
Sample Depth (m bgs)		0-0.61	
Parameter (µg/g)	MECP Table 3 Site Standards		
Arsenic		18	65
Lead		120	143
Mercury		0.27	8.44

Location		21-201	
Sample Name		21-201 SA1	21-201 SA6
Sample Date		2021-06-08	2021-06-08
Sample Depth (m bgs)		0-0.61	3.81-4.42
Parameter (µg/g)	MECP Table 3 Site Standards		
Arsenic		18	90
Lead		120	256
Mercury		0.27	10.9
Thallium		1	< 0.5
			1.6

Location		SSA6	
Sample Name		SSA6	
Sample Date		2021-06-25	
Sample Depth (m bgs)		0-0.61	
Parameter (µg/g)	MECP Table 3 Site Standards		
Mercury		0.27	1.41

Location		MW17-08	
Sample Name		MW17-08-SS01	MW17-08-SS02
Sample Date		2017-07-26	2017-07-26
Sample Depth (m bgs)		0-1.52 m	1.52-2.44 m
Parameter (µg/g)	MECP Table 3 Site Standards		
Mercury		0.27	0.35
			< 0.050

**LEGEND**

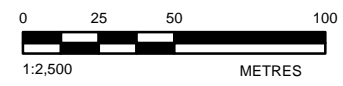
- APPROXIMATE BOREHOLE LOCATION (GOLDER, 2021-22)
- ⊕ APPROXIMATE MONITORING WELL LOCATION (GOLDER, 2021-22)
- ⊕ PREVIOUS ENVIRONMENTAL BOREHOLE OR MONITORING WELL LOCATION (STANTEC PHASE II, 2017)
- ⊕ PREVIOUS ENVIRONMENTAL BOREHOLE OR MONITORING WELL LOCATION (STANTEC PHASE III, 2017)
- ⊕ PREVIOUS ENVIRONMENTAL BOREHOLE OR MONITORING WELL LOCATION (STANTEC, 2016)
- ⊕ PREVIOUS ENVIRONMENTAL TEST PIT LOCATION (STANTEC PHASE III, 2017)
- ⊕ PREVIOUS ENVIRONMENTAL MANHOLE SAMPLING LOCATION (STANTEC PHASE III, 2017)
- ⊕ PREVIOUS ENVIRONMENTAL BOREHOLE OR MONITORING WELL LOCATION (PATERSON, 2017)
- ⊗ APPROXIMATE SURFICIAL SOIL SAMPLE LOCATION (GOLDER, 2021)
- LOCATION WHERE ALL SAMPLES MEET TABLE 3 STANDARDS (ONLY METHYL MERCURY WAS ANALYZED)
- LOCATION WHERE ALL SAMPLES MEET TABLE 3 STANDARDS (METALS, Hg, CrVI ANALYZED)
- LOCATION WHERE ALL SAMPLES MEET TABLE 3 STANDARDS (ONLY METALS WERE ANALYZED)
- LOCATION WHERE ALL SAMPLES MEET TABLE 3 STANDARDS (METALS, Hg, CrVI AND B-HWS ANALYZED)
- LOCATION WHERE ONE OR MORE SAMPLES EXCEEDS TABLE 3 STANDARDS
- ▭ EXTENT OF METALS IMPACTS IN NORTH PART OF SITE
- ▭ EXTENT OF METALS IMPACTS
- ▭ EXTENT OF MERCURY IMPACTS
- ▭ INFERRED DELINEATION OF METALS IMPACTS
- ▭ INFERRED DELINEATION OF MERCURY IMPACTS
- ▭ PHASE TWO SITE BOUNDARY AND RSC PROPERTY

**NOTE(S)**

- ITALICISED TEXT INDICATES A VALUE BELOW TABLE 3 SITE CONDITION STANDARDS
- ONTARIO REG 153/04 (2011) TABLE 3: FULL DEPTH BACKGROUND SITE CONDITION STANDARDS, RESIDENTIAL, COARSE-TEXTURE SOIL.
- COBALT AND VANADIUM ARE OF NATURAL ORIGIN IN THE MARINE CLAYS OF THE OTTAWA REGION AND DO NOT REPRESENT AN EXCEEDANCE OF MECP TABLE 3 SITE STANDARDS

**REFERENCE(S)**

- PROJECTION: TRANSVERSE MERCATOR, DATUM: NAD 83, COORDINATE SYSTEM: MTM ZONE 9, VERTICAL DATUM: CGVD28



CLIENT  
**PARSONS INC.**

PROJECT  
**PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
NEW CIVIC DEVELOPMENT FOR THE OTTAWA HOSPITAL**

TITLE  
**SUMMARY OF SOIL ANALYTICAL RESULTS – METALS, METAL HYDRIDES AND ORPs (Hg, MeHg, CrVI, B-HWS)**

CONSULTANT  
**wsp GOLDER**

DESIGNED	----
PREPARED	JEM
REVIEWED	OA
APPROVED	LJJ

PROJECT NO. 21451149 CONTROL 0013 REV. 0

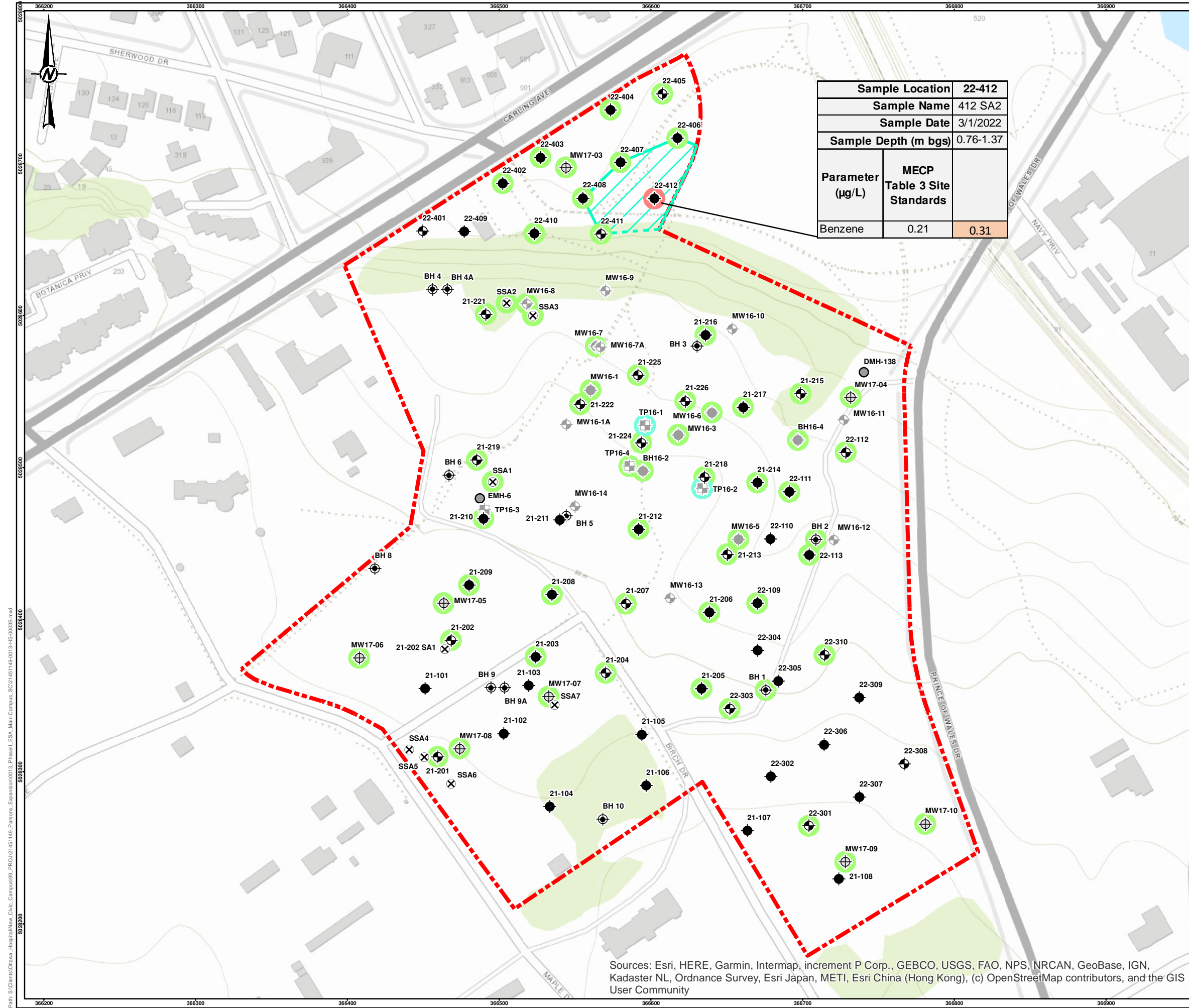
DATE 2022-09-01

FIGURE  
**3A**

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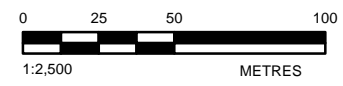


Sample Location	22-412	
Sample Name	412 SA2	
Sample Date	3/1/2022	
Sample Depth (m bgs)	0.76-1.37	
Parameter (µg/L)	MECP	Table 3 Site Standards
Benzene	0.21	0.31

- LEGEND**
- APPROXIMATE BOREHOLE LOCATION (GOLDER, 2021-22)
  - ⊕ APPROXIMATE MONITORING WELL LOCATION (GOLDER, 2021-22)
  - ⊕ PREVIOUS ENVIRONMENTAL BOREHOLE OR MONITORING WELL LOCATION (STANTEC PHASE II, 2017)
  - ⊕ PREVIOUS ENVIRONMENTAL BOREHOLE OR MONITORING WELL LOCATION (STANTEC PHASE III, 2017)
  - ⊕ PREVIOUS ENVIRONMENTAL BOREHOLE OR MONITORING WELL LOCATION (STANTEC, 2016)
  - ⊕ PREVIOUS ENVIRONMENTAL TEST PIT LOCATION (STANTEC PHASE III, 2017)
  - ⊕ PREVIOUS ENVIRONMENTAL MANHOLE SAMPLING LOCATION (STANTEC PHASE III, 2017)
  - ⊕ PREVIOUS ENVIRONMENTAL BOREHOLE OR MONITORING WELL LOCATION (PATERSON, 2017)
  - ⊗ APPROXIMATE SURFICIAL SOIL SAMPLE LOCATION (GOLDER, 2021)
  - LOCATION WHERE ALL SAMPLES MEET TABLE 3 STANDARDS
  - LOCATION WHERE ONE OR MORE SAMPLES EXCEEDS TABLE 3 STANDARDS
  - LOCATION WHERE ALL SAMPLES MEET TABLE 3 STANDARDS (ONLY BTEX ANALYZED)
  - ▭ EXTENT OF BTEX IMPACTS
  - ▭ PHASE TWO SITE BOUNDARY AND RSC PROPERTY

**NOTE(S)**  
 1. ITALICISED TEXT INDICATES A VALUE BELOW TABLE 3 SITE CONDITION STANDARDS

**REFERENCE(S)**  
 1. PROJECTION: TRANSVERSE MERCATOR, DATUM: NAD 83, COORDINATE SYSTEM: MTM ZONE 9, VERTICAL DATUM: CGVD28



CLIENT  
**PARSONS INC.**

PROJECT  
**PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
 NEW CIVIC DEVELOPMENT FOR THE OTTAWA HOSPITAL**

TITLE  
**SUMMARY OF SOIL ANALYTICAL RESULTS – PETROLEUM  
 HYDROCARBONS AND BTEX**

CONSULTANT	YYYY-MM-DD	2022-09-01
DESIGNED	----	
PREPARED	JEM	
REVIEWED	OA	
APPROVED	LJJ	

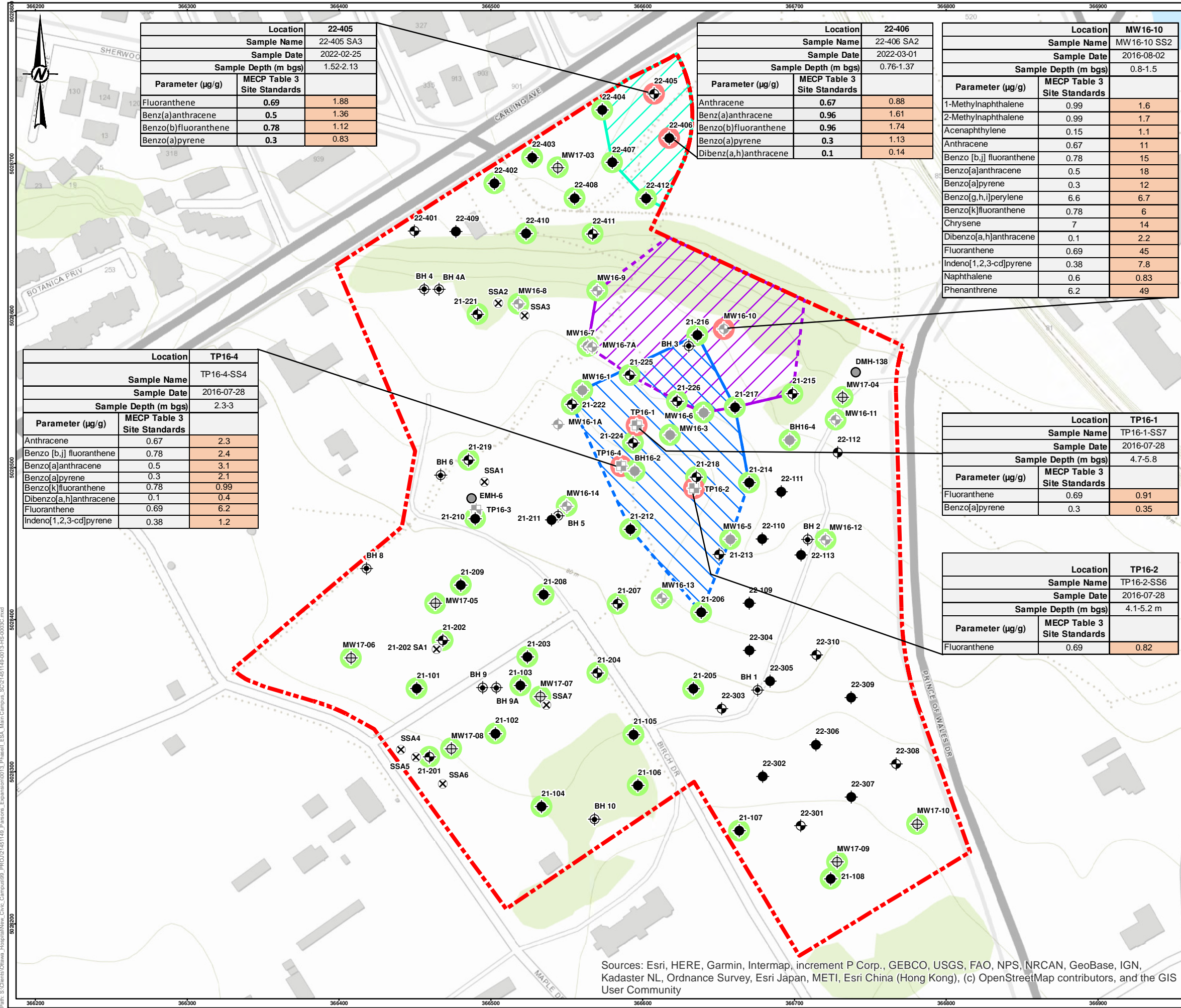
**wsp GOLDER**

PROJECT NO.	CONTROL	REV.	FIGURE
21451149	0006	0	<b>3B</b>

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

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IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 25mm



Location		
22-405		
Sample Name		
22-405 SA3		
Sample Date		
2022-02-25		
Sample Depth (m bgs)		
1.52-2.13		
Parameter (µg/g)	MECP Table 3 Site Standards	
Fluoranthene	0.69	1.88
Benzo(a)anthracene	0.5	1.36
Benzo(b)fluoranthene	0.78	1.12
Benzo(a)pyrene	0.3	0.83

Location		
22-406		
Sample Name		
22-406 SA2		
Sample Date		
2022-03-01		
Sample Depth (m bgs)		
0.76-1.37		
Parameter (µg/g)	MECP Table 3 Site Standards	
Anthracene	0.67	0.88
Benzo(a)anthracene	0.96	1.61
Benzo(b)fluoranthene	0.96	1.74
Benzo(a)pyrene	0.3	1.13
Dibenz(a,h)anthracene	0.1	0.14

Location		
MW16-10		
Sample Name		
MW16-10 SS2		
Sample Date		
2016-08-02		
Sample Depth (m bgs)		
0.8-1.5		
Parameter (µg/g)	MECP Table 3 Site Standards	
1-Methylnaphthalene	0.99	1.6
2-Methylnaphthalene	0.99	1.7
Acenaphthylene	0.15	1.1
Anthracene	0.67	11
Benzo [b,j] fluoranthene	0.78	15
Benzo[a]anthracene	0.5	18
Benzo[a]pyrene	0.3	12
Benzo[g,h,i]perylene	6.6	6.7
Benzo[k]fluoranthene	0.78	6
Chrysene	7	14
Dibenzo[a,h]anthracene	0.1	2.2
Fluoranthene	0.69	45
Indeno[1,2,3-cd]pyrene	0.38	7.8
Naphthalene	0.6	0.83
Phenanthrene	6.2	49

Location		
TP16-4		
Sample Name		
TP16-4-SS4		
Sample Date		
2016-07-28		
Sample Depth (m bgs)		
2.3-3		
Parameter (µg/g)	MECP Table 3 Site Standards	
Anthracene	0.67	2.3
Benzo [b,j] fluoranthene	0.78	2.4
Benzo[a]anthracene	0.5	3.1
Benzo[a]pyrene	0.3	2.1
Benzo[k]fluoranthene	0.78	0.99
Dibenzo[a,h]anthracene	0.1	0.4
Fluoranthene	0.69	6.2
Indeno[1,2,3-cd]pyrene	0.38	1.2

Location		
TP16-1		
Sample Name		
TP16-1-SS7		
Sample Date		
2016-07-28		
Sample Depth (m bgs)		
4.7-5.8		
Parameter (µg/g)	MECP Table 3 Site Standards	
Fluoranthene	0.69	0.91
Benzo[a]pyrene	0.3	0.35

Location		
TP16-2		
Sample Name		
TP16-2-SS6		
Sample Date		
2016-07-28		
Sample Depth (m bgs)		
4.1-5.2 m		
Parameter (µg/g)	MECP Table 3 Site Standards	
Fluoranthene	0.69	0.82

**LEGEND**

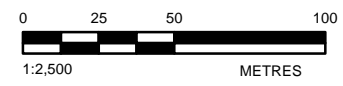
- APPROXIMATE BOREHOLE LOCATION (GOLDER, 2021-22)
- ⊕ APPROXIMATE MONITORING WELL LOCATION (GOLDER, 2021-22)
- ⊕ PREVIOUS ENVIRONMENTAL BOREHOLE OR MONITORING WELL LOCATION (STANTEC PHASE II, 2017)
- ⊕ PREVIOUS ENVIRONMENTAL BOREHOLE OR MONITORING WELL LOCATION (STANTEC PHASE III, 2017)
- ⊕ PREVIOUS ENVIRONMENTAL BOREHOLE OR MONITORING WELL LOCATION (STANTEC, 2016)
- ⊕ PREVIOUS ENVIRONMENTAL TEST PIT LOCATION (STANTEC PHASE III, 2017)
- ⊕ PREVIOUS ENVIRONMENTAL MANHOLE SAMPLING LOCATION (STANTEC PHASE III, 2017)
- ⊕ PREVIOUS ENVIRONMENTAL BOREHOLE OR MONITORING WELL LOCATION (PATERSON, 2017)
- ⊗ APPROXIMATE SURFICIAL SOIL SAMPLE LOCATION (GOLDER, 2021)
- LOCATION WHERE ALL SAMPLES MEET TABLE 3 STANDARDS
- LOCATION WHERE ONE OR MORE SAMPLE EXCEEDS TABLE 3 STANDARDS
- ▭ EXTENT OF PAH IMPACTS AT INTERMEDIATE DEPTH
- ▭ EXTENT OF PAH IMPACTS AT SHALLOW DEPTH
- ▭ INFERRED DELINEATION OF PAH IMPACTS AT INTERMEDIATE DEPTH
- ▭ INFERRED DELINEATION OF PAH IMPACTS AT SHALLOW DEPTH
- ▭ EXTENT OF PAH IMPACTS NE CORNER
- ▭ PHASE TWO SITE BOUNDARY AND RSC PROPERTY

**NOTE(S)**

- ITALICISED TEXT INDICATES A VALUE BELOW TABLE 3 SITE CONDITION STANDARDS
- ONTARIO REG 153/04 (2011) TABLE 3: FULL DEPTH BACKGROUND SITE CONDITION STANDARDS, RESIDENTIAL, COARSE-TEXTURE SOIL.

**REFERENCE(S)**

- PROJECTION: TRANSVERSE MERCATOR, DATUM: NAD 83, COORDINATE SYSTEM: MTM ZONE 9, VERTICAL DATUM: CGVD28



CLIENT  
PARSONS INC.

PROJECT  
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
NEW CIVIC DEVELOPMENT FOR THE OTTAWA HOSPITAL

TITLE  
**SUMMARY OF SOIL ANALYTICAL RESULTS – POLYCYCLIC AROMATIC HYDROCARBONS**

CONSULTANT  
wsp GOLDER

YYYY-MM-DD	2022-08-31
DESIGNED	----
PREPARED	JEM
REVIEWED	OA
APPROVED	LJJ

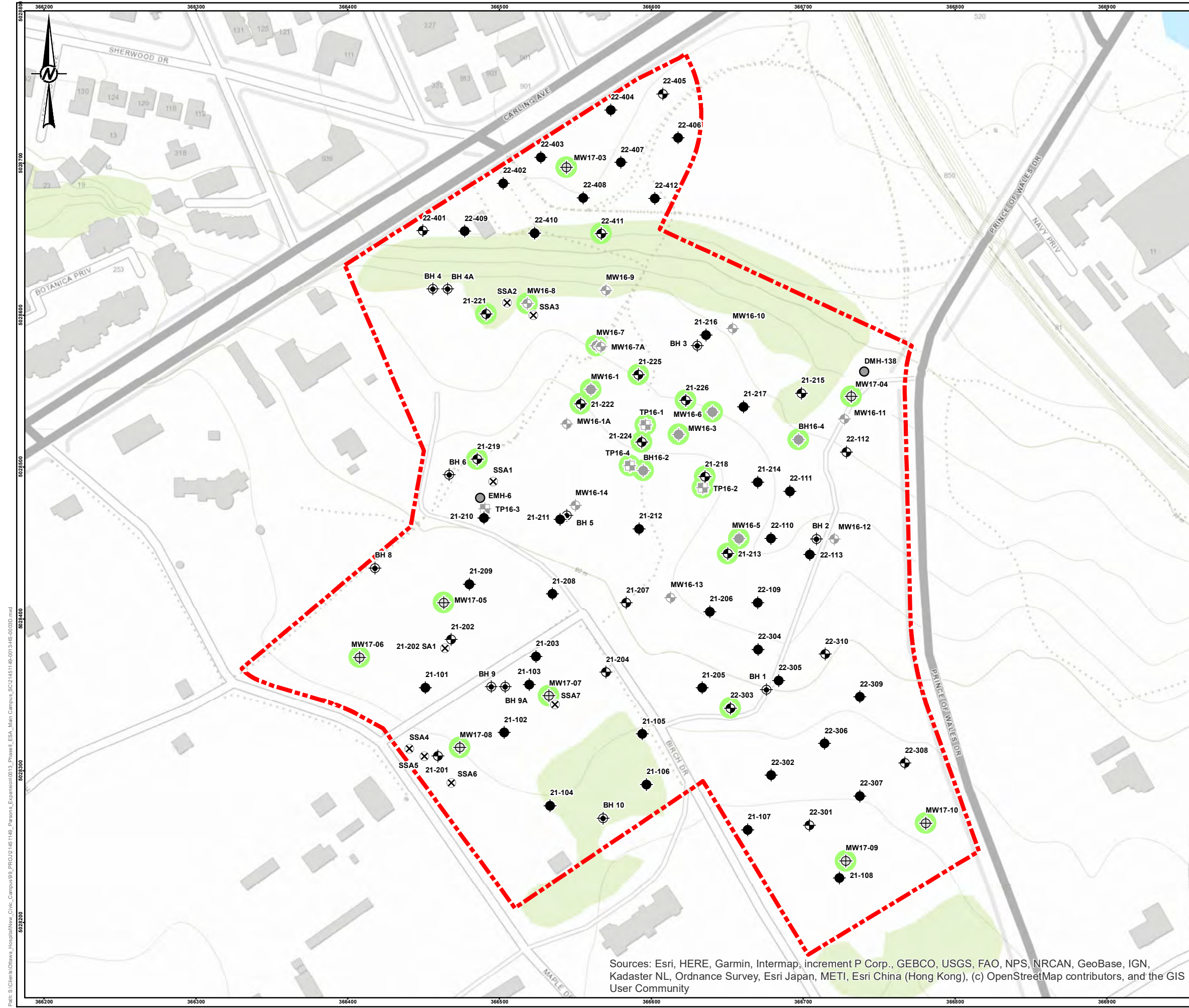
PROJECT NO. 21451149 CONTROL 0013 REV. 0

FIGURE 3C

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

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IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 25mm



**LEGEND**

- APPROXIMATE BOREHOLE LOCATION (GOLDER, 2021-22)
- ⊕ APPROXIMATE MONITORING WELL LOCATION (GOLDER, 2021-22)
- ⊕ PREVIOUS ENVIRONMENTAL BOREHOLE OR MONITORING WELL LOCATION (STANTEC PHASE II, 2017)
- ⊕ PREVIOUS ENVIRONMENTAL BOREHOLE OR MONITORING WELL LOCATION (STANTEC PHASE III, 2017)
- ⊕ PREVIOUS ENVIRONMENTAL BOREHOLE OR MONITORING WELL LOCATION (STANTEC, 2016)
- ⊕ PREVIOUS ENVIRONMENTAL TEST PIT LOCATION (STANTEC PHASE III, 2017)
- ⊕ PREVIOUS ENVIRONMENTAL MANHOLE SAMPLING LOCATION (STANTEC PHASE III, 2017)
- ⊕ PREVIOUS ENVIRONMENTAL BOREHOLE OR MONITORING WELL LOCATION (PATERSON, 2017)
- ⊗ APPROXIMATE SURFICIAL SOIL SAMPLE LOCATION (GOLDER, 2021)
- LOCATION WHERE ALL SAMPLES MEET TABLE 3 STANDARDS
- ⬡ PHASE TWO SITE BOUNDARY AND RSC PROPERTY

**REFERENCE(S)**  
 1. PROJECTION: TRANSVERSE MERCATOR, DATUM: NAD 83,  
 COORDINATE SYSTEM: MTM ZONE 9, VERTICAL DATUM: CGVD28

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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

CLIENT  
**PARSONS INC.**

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PROJECT  
**PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
 NEW CIVIC DEVELOPMENT FOR THE OTTAWA HOSPITAL**

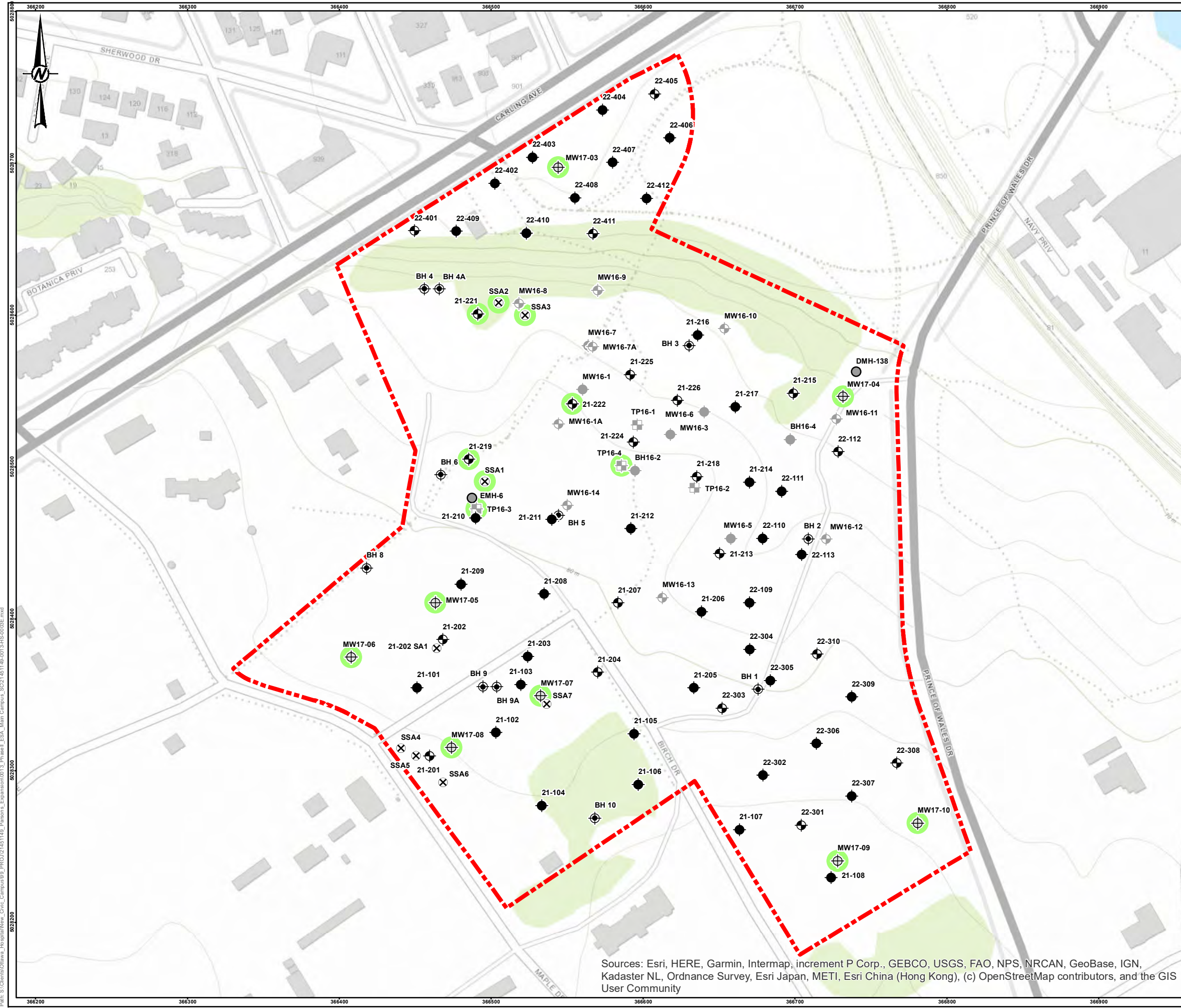
TITLE  
**SUMMARY OF SOIL ANALYTICAL RESULTS – VOLATILE  
 ORGANIC COMPOUNDS**

CONSULTANT	YYYY-MM-DD	2022-07-29
DESIGNED	---	
PREPARED	JEM	
REVIEWED	OA	
APPROVED	LJJ	

**wsp GOLDER**

PROJECT NO. 21451149	CONTROL 0013	REV. 0	FIGURE <b>3D</b>
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IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 28mm

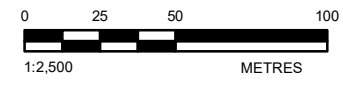


**LEGEND**

- APPROXIMATE BOREHOLE LOCATION (GOLDER, 2021-22)
- ⊕ APPROXIMATE MONITORING WELL LOCATION (GOLDER, 2021-22)
- ⊕ PREVIOUS ENVIRONMENTAL BOREHOLE OR MONITORING WELL LOCATION (STANTEC PHASE II, 2017)
- ⊕ PREVIOUS ENVIRONMENTAL BOREHOLE OR MONITORING WELL LOCATION (STANTEC PHASE III, 2017)
- ⊕ PREVIOUS ENVIRONMENTAL BOREHOLE OR MONITORING WELL LOCATION (STANTEC, 2016)
- ⊕ PREVIOUS ENVIRONMENTAL TEST PIT LOCATION (STANTEC PHASE III, 2017)
- ⊕ PREVIOUS ENVIRONMENTAL MANHOLE SAMPLING LOCATION (STANTEC PHASE III, 2017)
- ⊕ PREVIOUS ENVIRONMENTAL BOREHOLE OR MONITORING WELL LOCATION (PATERSON, 2017)
- ⊗ APPROXIMATE SURFICIAL SOIL SAMPLE LOCATION (GOLDER, 2021)
- LOCATION WHERE ALL SAMPLES MEET TABLE 3 STANDARDS
- ⬡ PHASE TWO SITE BOUNDARY AND RSC PROPERTY

**NOTE(S)**  
 1. ONTARIO REG 153/04 (2011) TABLE 3: FULL DEPTH BACKGROUND SITE CONDITION STANDARDS, RESIDENTIAL, COARSE-TEXTURE SOIL.

**REFERENCE(S)**  
 1. PROJECTION: TRANSVERSE MERCATOR, DATUM: NAD 83, COORDINATE SYSTEM: MTM ZONE 9, VERTICAL DATUM: CGVD28

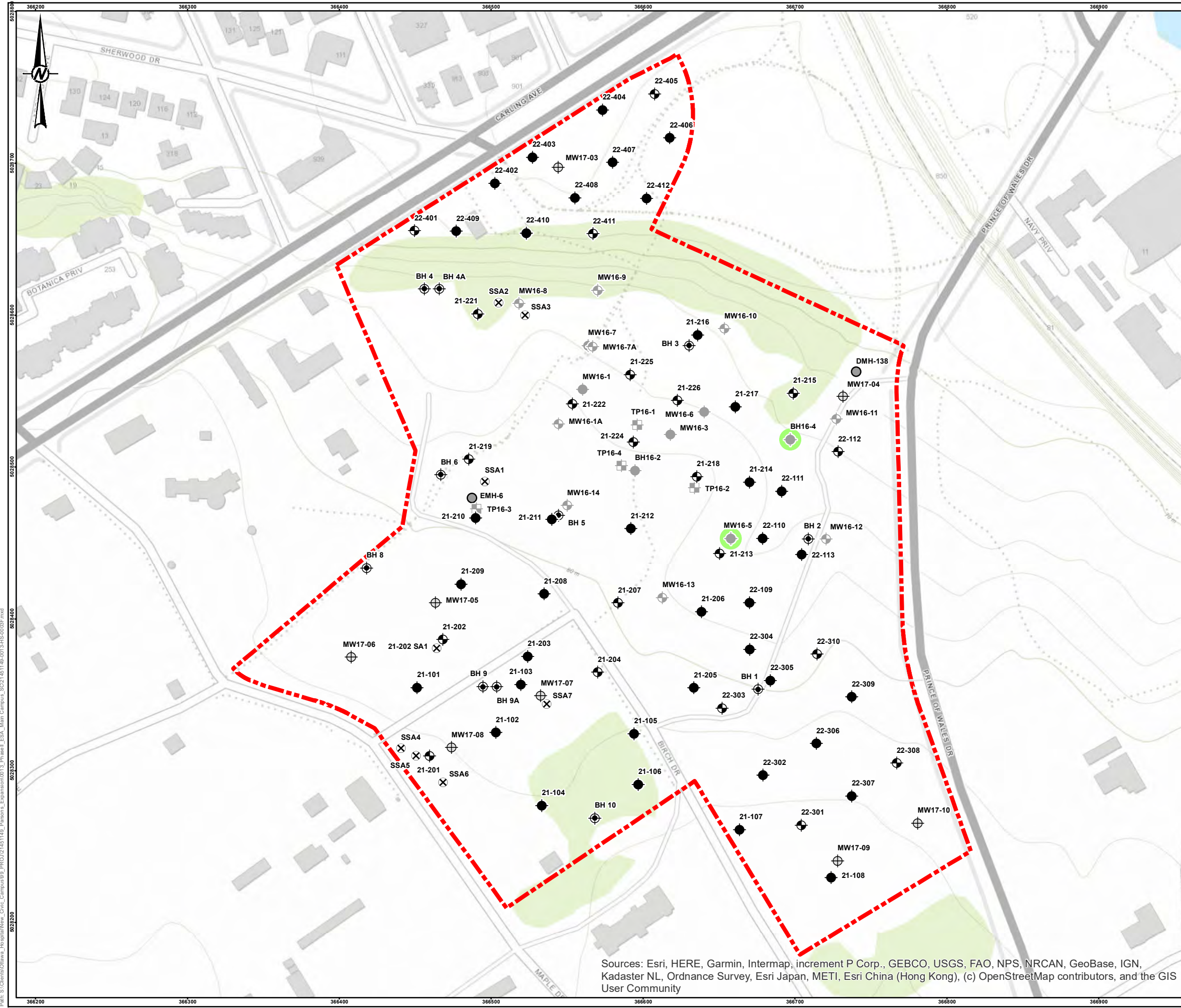


CLIENT PARSONS INC.		
PROJECT PHASE TWO ENVIRONMENTAL SITE ASSESSMENT NEW CIVIC DEVELOPMENT FOR THE OTTAWA HOSPITAL		
TITLE <b>SUMMARY OF SOIL ANALYTICAL RESULTS – POLYCHLORINATED BIPHENYLS</b>		
CONSULTANT	YYYY-MM-DD	2022-07-29
<b>wsp GOLDER</b>	DESIGNED	---
	PREPARED	JEM
	REVIEWED	OA
	APPROVED	LJJ
PROJECT NO. 21451149	CONTROL 0013	REV. 0
		FIGURE <b>3E</b>

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

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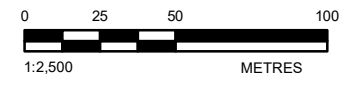


**LEGEND**

- APPROXIMATE BOREHOLE LOCATION (GOLDER, 2021-22)
- ⊕ APPROXIMATE MONITORING WELL LOCATION (GOLDER, 2021-22)
- ⊕ PREVIOUS ENVIRONMENTAL BOREHOLE OR MONITORING WELL LOCATION (STANTEC PHASE II, 2017)
- ⊕ PREVIOUS ENVIRONMENTAL BOREHOLE OR MONITORING WELL LOCATION (STANTEC PHASE III, 2017)
- PREVIOUS ENVIRONMENTAL BOREHOLE OR MONITORING WELL LOCATION (STANTEC, 2016)
- ⊕ PREVIOUS ENVIRONMENTAL TEST PIT LOCATION (STANTEC PHASE III, 2017)
- PREVIOUS ENVIRONMENTAL MANHOLE SAMPLING LOCATION (STANTEC PHASE III, 2017)
- ⊕ PREVIOUS ENVIRONMENTAL BOREHOLE OR MONITORING WELL LOCATION (PATERSON, 2017)
- ⊗ APPROXIMATE SURFICIAL SOIL SAMPLE LOCATION (GOLDER, 2021)
- LOCATION WHERE ALL SAMPLES MEET TABLE 3 STANDARDS
- ⬡ PHASE TWO SITE BOUNDARY AND RSC PROPERTY

**NOTE(S)**  
 1. ONTARIO REG 153/04 (2011) TABLE 3: FULL DEPTH BACKGROUND SITE CONDITION STANDARDS, RESIDENTIAL, COARSE-TEXTURE SOIL.

**REFERENCE(S)**  
 1. PROJECTION: TRANSVERSE MERCATOR, DATUM: NAD 83, COORDINATE SYSTEM: MTM ZONE 9, VERTICAL DATUM: CGVD28



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

CLIENT  
**PARSONS INC.**

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PROJECT  
**PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
 NEW CIVIC DEVELOPMENT FOR THE OTTAWA HOSPITAL**

TITLE  
**SUMMARY OF SOIL ANALYTICAL RESULTS – GLYCOLS**

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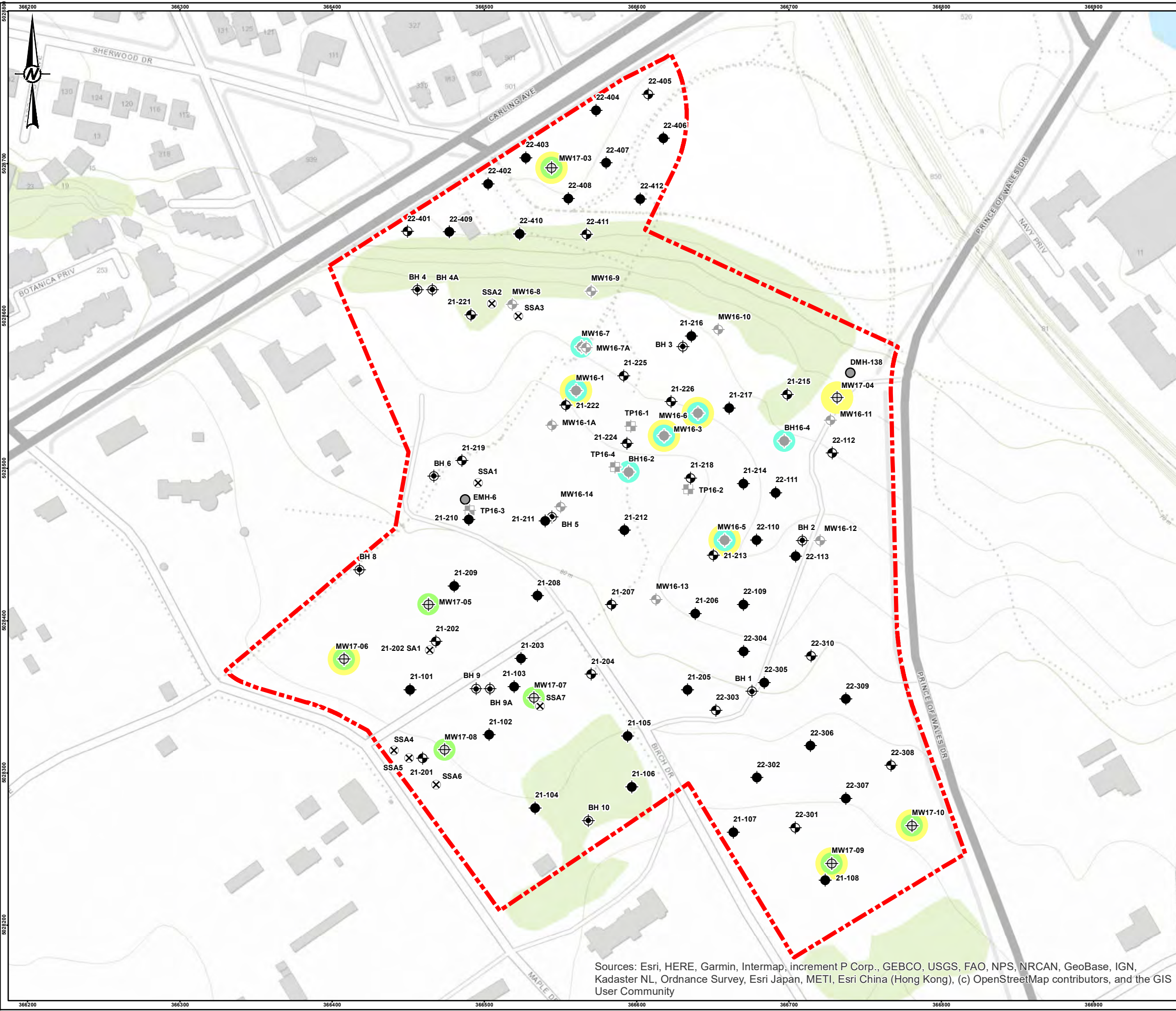
CONSULTANT	YYYY-MM-DD	2022-07-29
<b>GOLDER</b> MEMBER OF WSP	DESIGNED	---
	PREPARED	JEM
	REVIEWED	RM
	APPROVED	KPH

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PROJECT NO. 21451149	CONTROL 0006	REV. 0	FIGURE <b>3F</b>
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Path: S:\Clients\Ottawa\_Hospital\New\_Civic\_Campus\02\_PRCU\21451149\_Parsons\_Eng\013\_PhaseII\_ESA\_Main\Campus\_SCI\451149\_001\145-002E.mxd

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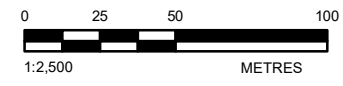


**LEGEND**

- APPROXIMATE BOREHOLE LOCATION (GOLDER, 2021-22)
- ⊕ APPROXIMATE MONITORING WELL LOCATION (GOLDER, 2021-22)
- ⊕ PREVIOUS ENVIRONMENTAL BOREHOLE OR MONITORING WELL LOCATION (STANTEC PHASE II, 2017)
- ⊕ PREVIOUS ENVIRONMENTAL BOREHOLE OR MONITORING WELL LOCATION (STANTEC PHASE III, 2017)
- ⊕ PREVIOUS ENVIRONMENTAL BOREHOLE OR MONITORING WELL LOCATION (STANTEC, 2016)
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- PREVIOUS ENVIRONMENTAL MANHOLE SAMPLING LOCATION (STANTEC PHASE III, 2017)
- ⊕ PREVIOUS ENVIRONMENTAL BOREHOLE OR MONITORING WELL LOCATION (PATERSON, 2017)
- ⊗ APPROXIMATE SURFICIAL SOIL SAMPLE LOCATION (GOLDER, 2021)
- LOCATION WHERE ALL SAMPLES MEET TABLE 3 STANDARDS (PESTICIDES ANALYZED ONLY)
- LOCATION WHERE ALL SAMPLES MEET TABLE 3 STANDARDS (ENERGETICS ONLY ANALYZED)
- LOCATION WHERE ALL SAMPLES MEET TABLE 3 STANDARDS (CYANIDE ONLY ANALYZED)
- ⬡ PHASE TWO SITE BOUNDARY AND RSC PROPERTY

**NOTE(S)**  
 1. ONTARIO REG 153/04 (2011) TABLE 3: FULL DEPTH BACKGROUND SITE CONDITION STANDARDS, RESIDENTIAL, COARSE-TEXTURE SOIL.

**REFERENCE(S)**  
 1. PROJECTION: TRANSVERSE MERCATOR, DATUM: NAD 83, COORDINATE SYSTEM: MTM ZONE 9, VERTICAL DATUM: CGVD28

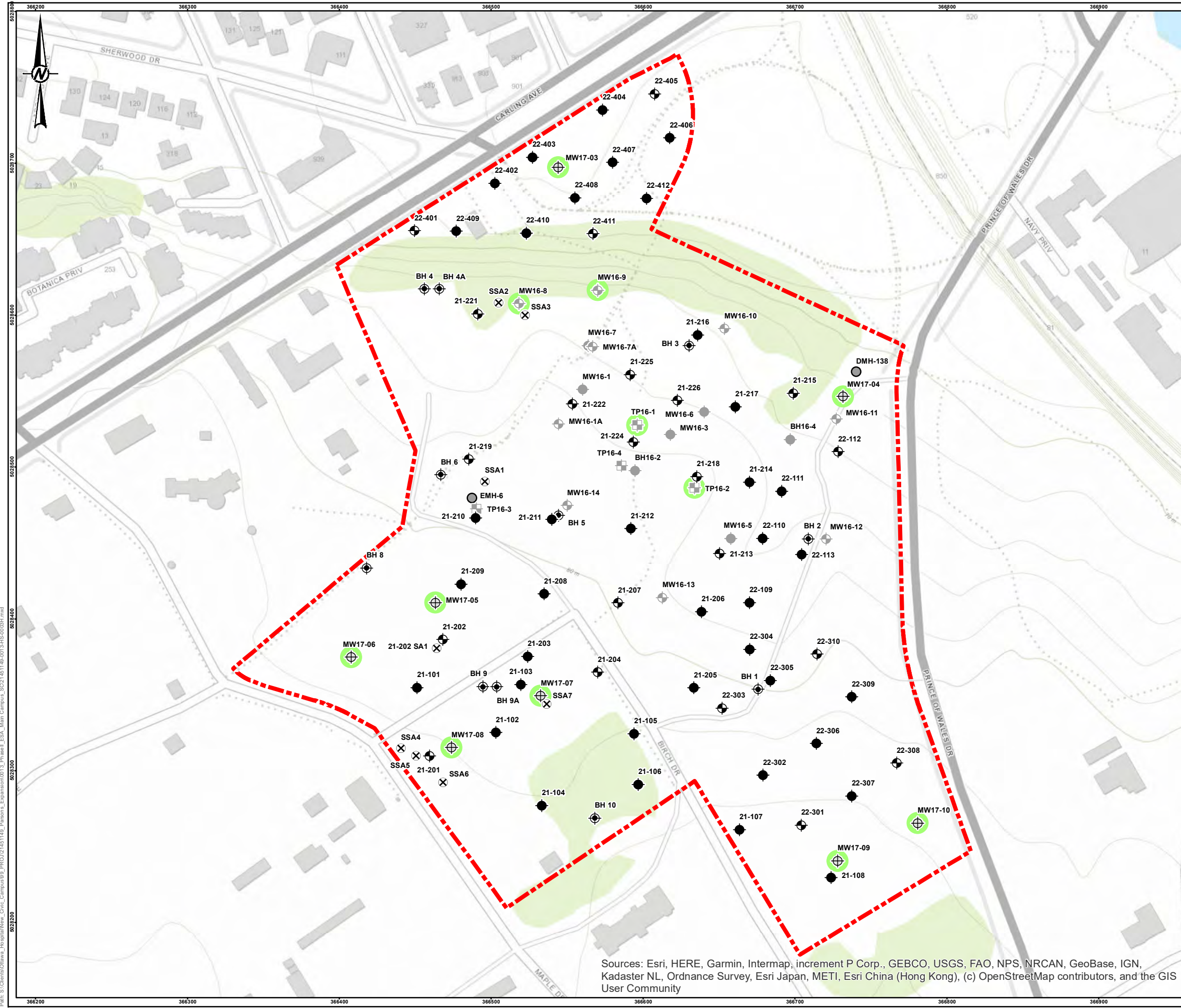


CLIENT		PARSONS INC.	
PROJECT			
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT			
NEW CIVIC DEVELOPMENT FOR THE OTTAWA HOSPITAL			
TITLE			
SUMMARY OF SOIL ANALYTICAL RESULTS – PESTICIDES, ENERGETICS AND CYANIDE			
CONSULTANT		YYYY-MM-DD	2022-07-29
DESIGNED		---	
PREPARED		JEM	
REVIEWED		OA	
APPROVED		LJJ	
PROJECT NO.	CONTROL	REV.	FIGURE
21451149	0013	0	3G

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

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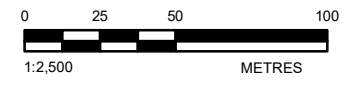


**LEGEND**

- APPROXIMATE BOREHOLE LOCATION (GOLDER, 2021-22)
- ⊕ APPROXIMATE MONITORING WELL LOCATION (GOLDER, 2021-22)
- ⊕ PREVIOUS ENVIRONMENTAL BOREHOLE OR MONITORING WELL LOCATION (STANTEC PHASE II, 2017)
- ⊕ PREVIOUS ENVIRONMENTAL BOREHOLE OR MONITORING WELL LOCATION (STANTEC PHASE III, 2017)
- ⊕ PREVIOUS ENVIRONMENTAL BOREHOLE OR MONITORING WELL LOCATION (STANTEC, 2016)
- ⊕ PREVIOUS ENVIRONMENTAL TEST PIT LOCATION (STANTEC PHASE III, 2017)
- ⊕ PREVIOUS ENVIRONMENTAL MANHOLE SAMPLING LOCATION (STANTEC PHASE III, 2017)
- ⊕ PREVIOUS ENVIRONMENTAL BOREHOLE OR MONITORING WELL LOCATION (PATERSON, 2017)
- ⊗ APPROXIMATE SURFICIAL SOIL SAMPLE LOCATION (GOLDER, 2021)
- LOCATION WHERE ALL SAMPLES MEET TABLE 3 STANDARDS
- ⬡ PHASE TWO SITE BOUNDARY AND RSC PROPERTY

**NOTE(S)**  
 1. ONTARIO REG 153/04 (2011) TABLE 3: FULL DEPTH BACKGROUND SITE CONDITION STANDARDS, RESIDENTIAL, COARSE-TEXTURE SOIL.

**REFERENCE(S)**  
 1. PROJECTION: TRANSVERSE MERCATOR, DATUM: NAD 83, COORDINATE SYSTEM: MTM ZONE 9, VERTICAL DATUM: CGVD28

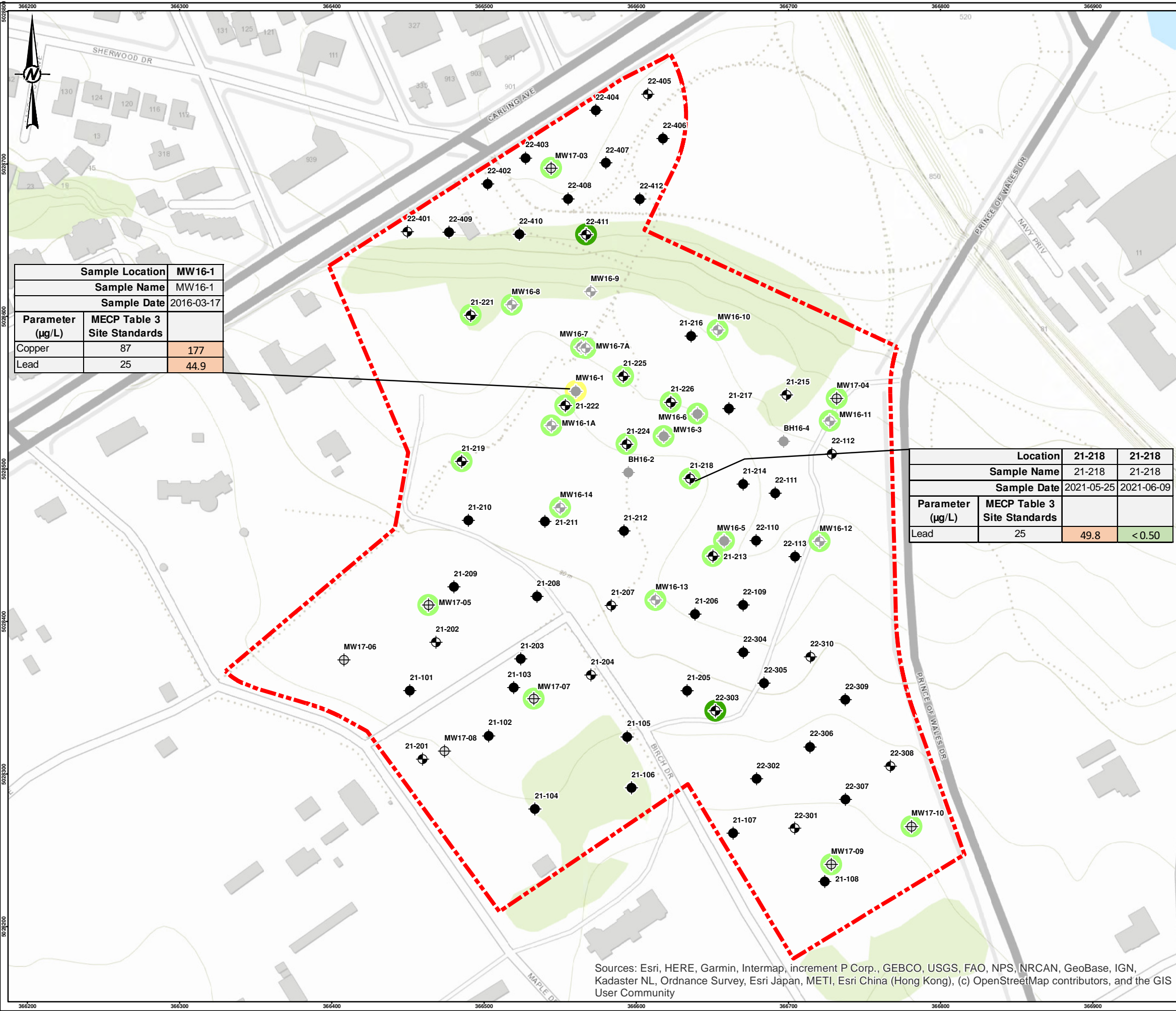


CLIENT		PARSONS INC.	
PROJECT		PHASE TWO ENVIRONMENTAL SITE ASSESSMENT NEW CIVIC DEVELOPMENT FOR THE OTTAWA HOSPITAL	
TITLE		SUMMARY OF SOIL ANALYTICAL RESULTS – PHENOLS	
CONSULTANT	YYYY-MM-DD	2022-07-29	
<b>wsp GOLDER</b>	DESIGNED	---	
	PREPARED	JEM	
	REVIEWED	OA	
	APPROVED	LJJ	
PROJECT NO.	CONTROL	REV.	FIGURE
21451149	0013	0	<b>3H</b>

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

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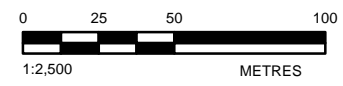
**LEGEND**

- APPROXIMATE BOREHOLE LOCATION (GOLDER, 2021-22)
- ⊕ APPROXIMATE MONITORING WELL LOCATION (GOLDER, 2021-22)
- ⊕ PREVIOUS ENVIRONMENTAL BOREHOLE OR MONITORING WELL LOCATION (STANTEC PHASE II, 2017)
- ⊕ PREVIOUS ENVIRONMENTAL BOREHOLE OR MONITORING WELL LOCATION (STANTEC PHASE III, 2017)
- ⊕ PREVIOUS ENVIRONMENTAL BOREHOLE OR MONITORING WELL LOCATION (STANTEC, 2016)
- LOCATION WHERE ALL SAMPLES MEET TABLE 3 STANDARDS FOR METALS, METAL HYDRIDES, AND ORPs
- LOCATION WHERE ALL SAMPLES MEET TABLE 3 STANDARDS FOR METALS
- EXCEEDANCES OF MECP TABLE 3 SITE STANDARDS IN GROUNDWATER AT MW16-1 WERE NOT CONFIRMED BY SUBSEQUENT INVESTIGATIONS AT REPLACEMENT MONITORING WELLS MW16-1A OR 21-222
- ⬜ PHASE TWO SITE BOUNDARY AND RSC PROPERTY

**REFERENCE(S)**  
 1. PROJECTION: TRANSVERSE MERCATOR, DATUM: NAD 83, COORDINATE SYSTEM: MTM ZONE 9, VERTICAL DATUM: CGVD28

<b>Sample Location</b>		MW16-1
<b>Sample Name</b>		MW16-1
<b>Sample Date</b>		2016-03-17
<b>Parameter (µg/L)</b>	<b>MECP Table 3 Site Standards</b>	
Copper	87	177
Lead	25	44.9

<b>Location</b>		21-218	21-218
<b>Sample Name</b>		21-218	21-218
<b>Sample Date</b>		2021-05-25	2021-06-09
<b>Parameter (µg/L)</b>	<b>MECP Table 3 Site Standards</b>		
Lead	25	49.8	< 0.50



CLIENT  
PARSONS INC.

PROJECT  
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
NEW CIVIC DEVELOPMENT FOR THE OTTAWA HOSPITAL

TITLE  
**SUMMARY OF GROUNDWATER ANALYTICAL RESULTS - METALS, METAL HYDRIDES AND ORPs (Hg, CrVI)**

CONSULTANT	YYYY-MM-DD	2022-08-31
DESIGNED	----	
PREPARED	JEM	
REVIEWED	OA	
APPROVED	LJJ	

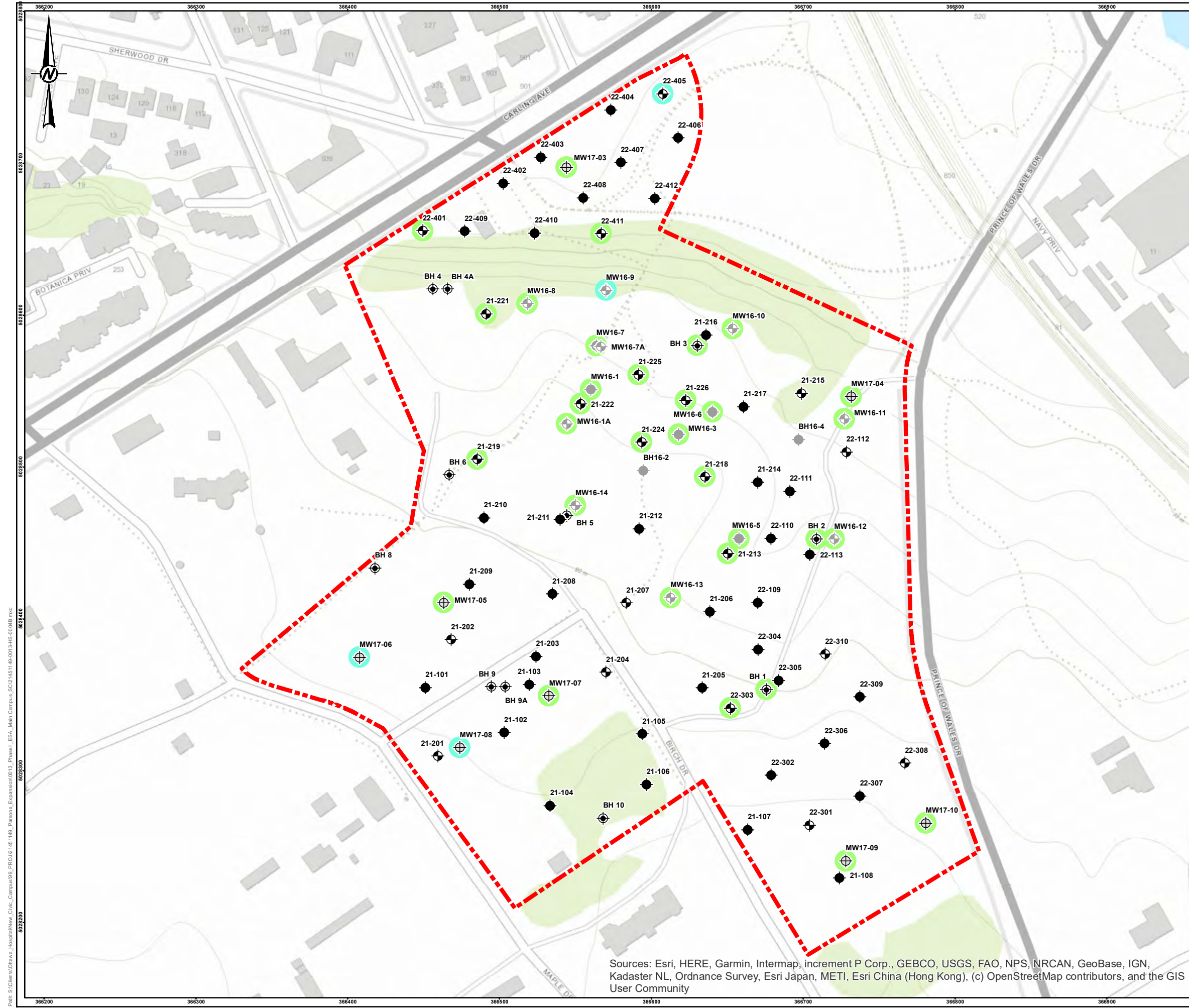
**wsp GOLDER**

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

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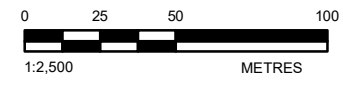




**LEGEND**

- APPROXIMATE BOREHOLE LOCATION (GOLDER, 2021-22)
- APPROXIMATE MONITORING WELL LOCATION (GOLDER, 2021-22)
- ⊕ PREVIOUS ENVIRONMENTAL BOREHOLE OR MONITORING WELL LOCATION (STANTEC PHASE II, 2017)
- ⊕ PREVIOUS ENVIRONMENTAL BOREHOLE OR MONITORING WELL LOCATION (STANTEC PHASE III, 2017)
- PREVIOUS ENVIRONMENTAL BOREHOLE OR MONITORING WELL LOCATION (STANTEC, 2016)
- ⊕ PREVIOUS ENVIRONMENTAL BOREHOLE OR MONITORING WELL LOCATION (PATERSON, 2017)
- LOCATION WHERE ALL SAMPLES MEET TABLE 3 STANDARDS
- LOCATION WHERE ALL SAMPLES MEET TABLE 3 STANDARDS (ONLY BTEX ANALYZED)
- ▭ PHASE TWO SITE BOUNDARY AND RSC PROPERTY

**REFERENCE(S)**  
 1. PROJECTION: TRANSVERSE MERCATOR, DATUM: NAD 83,  
 COORDINATE SYSTEM: MTM ZONE 9, VERTICAL DATUM: CGVD28

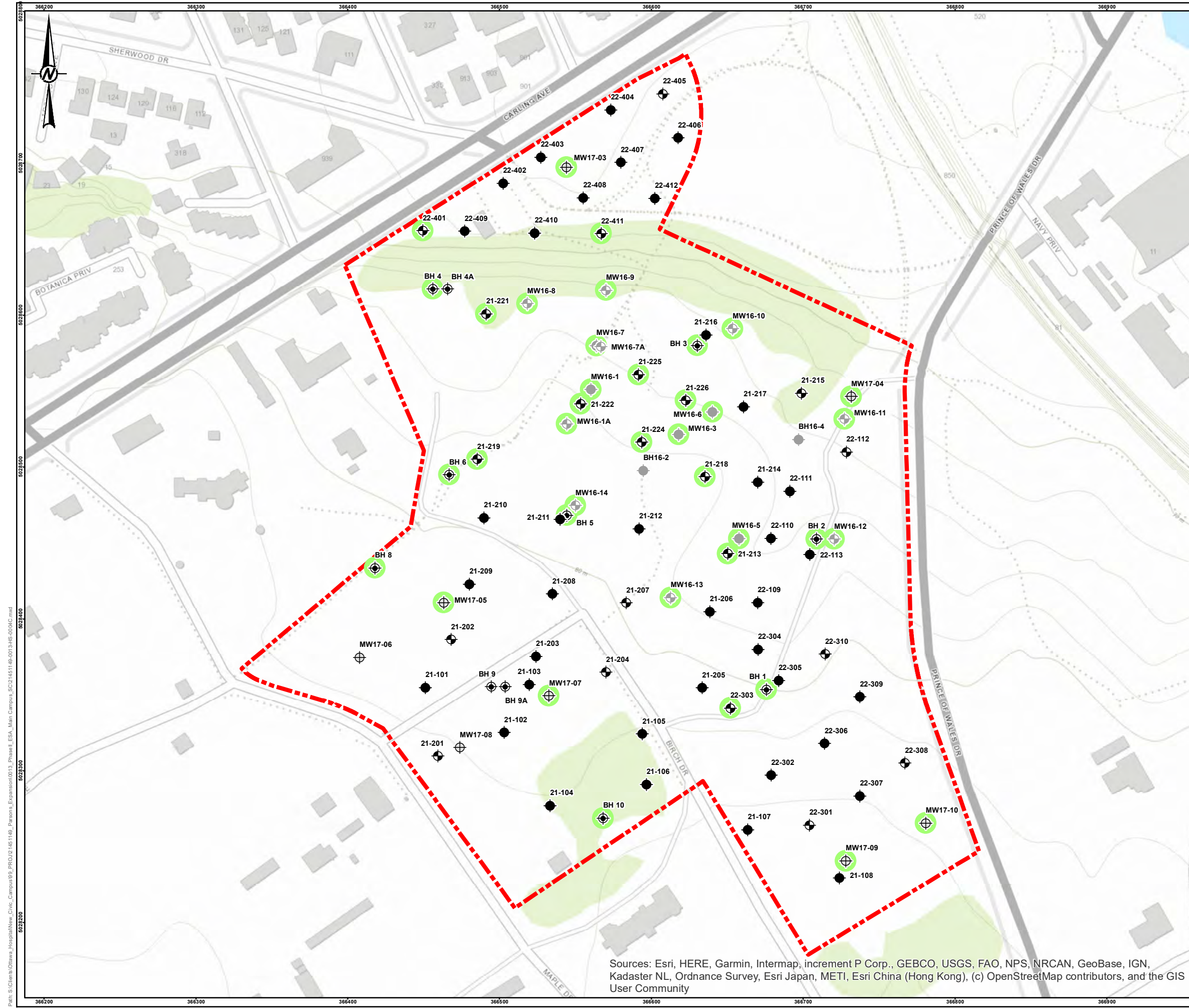


CLIENT <b>PARSONS INC.</b>		
PROJECT <b>PHASE TWO ENVIRONMENTAL SITE ASSESSMENT NEW CIVIC DEVELOPMENT FOR THE OTTAWA HOSPITAL</b>		
TITLE <b>GROUNDWATER EXCEEDANCES AND DELINEATION - PETROLEUM HYDROCARBONS AND BTEX</b>		
CONSULTANT	YYYY-MM-DD	2022-07-29
<b>wsp GOLDER</b>	DESIGNED	---
	PREPARED	JEM
	REVIEWED	OA
	APPROVED	LJJ
PROJECT NO. 21451149	CONTROL 0013	REV. 0
		FIGURE <b>4B</b>

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

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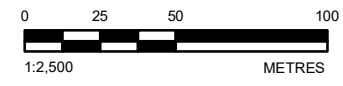
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**LEGEND**

- APPROXIMATE BOREHOLE LOCATION (GOLDER, 2021-22)
- ⊕ APPROXIMATE MONITORING WELL LOCATION (GOLDER, 2021-22)
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- ⊕ PREVIOUS ENVIRONMENTAL BOREHOLE OR MONITORING WELL LOCATION (STANTEC, 2016)
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- LOCATION WHERE ALL SAMPLES MEET TABLE 3 STANDARDS
- ⬡ PHASE TWO SITE BOUNDARY AND RSC PROPERTY

**REFERENCE(S)**  
 1. PROJECTION: TRANSVERSE MERCATOR, DATUM: NAD 83,  
 COORDINATE SYSTEM: MTM ZONE 9, VERTICAL DATUM: CGVD28



CLIENT  
**PARSONS INC.**

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PROJECT  
**PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
 NEW CIVIC DEVELOPMENT FOR THE OTTAWA HOSPITAL**

---

TITLE  
**SUMMARY OF GROUNDWATER ANALYTICAL RESULTS -  
 POLYCYCLIC AROMATIC HYDROCARBONS**

---

CONSULTANT	YYYY-MM-DD	2022-07-29
<b>wsp GOLDER</b>	DESIGNED	---
	PREPARED	JEM
	REVIEWED	OA
	APPROVED	LJJ

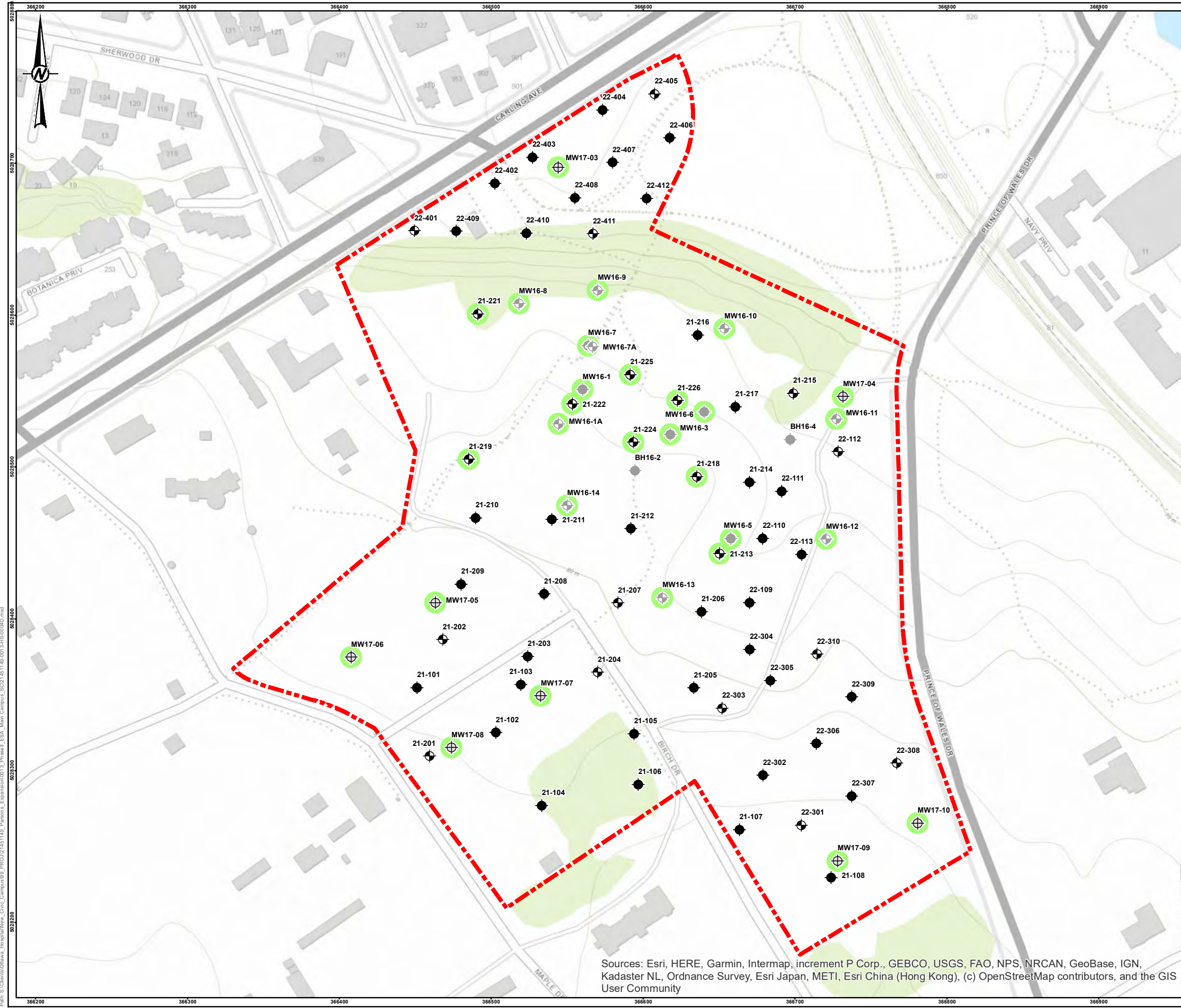
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PROJECT NO. 21451149	CONTROL 0013	REV. 0	FIGURE <b>4C</b>
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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

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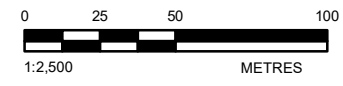
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 28mm



**LEGEND**

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- ⊕ APPROXIMATE MONITORING WELL LOCATION (GOLDER, 2021-22)
- ⊕ PREVIOUS ENVIRONMENTAL BOREHOLE OR MONITORING WELL LOCATION (STANTEC PHASE II, 2017)
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- LOCATION WHERE ALL SAMPLES MEET TABLE 3 STANDARDS
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**REFERENCE(S)**  
 1. PROJECTION: TRANSVERSE MERCATOR, DATUM: NAD 83, COORDINATE SYSTEM: MTM ZONE 9, VERTICAL DATUM: CGVD28



CLIENT  
**PARSONS INC.**

---

PROJECT  
**PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
 NEW CIVIC DEVELOPMENT FOR THE OTTAWA HOSPITAL**

---

TITLE  
**SUMMARY OF GROUNDWATER ANALYTICAL RESULTS -  
 VOLATILE ORGANIC COMPOUNDS**

---

CONSULTANT	YYYY-MM-DD	2022-07-29
DESIGNED	---	
PREPARED	JEM	
REVIEWED	OA	
APPROVED	LJJ	

---

**wsp GOLDER**

---

PROJECT NO. 21451149	CONTROL 0013	REV. 0	FIGURE <b>4D</b>
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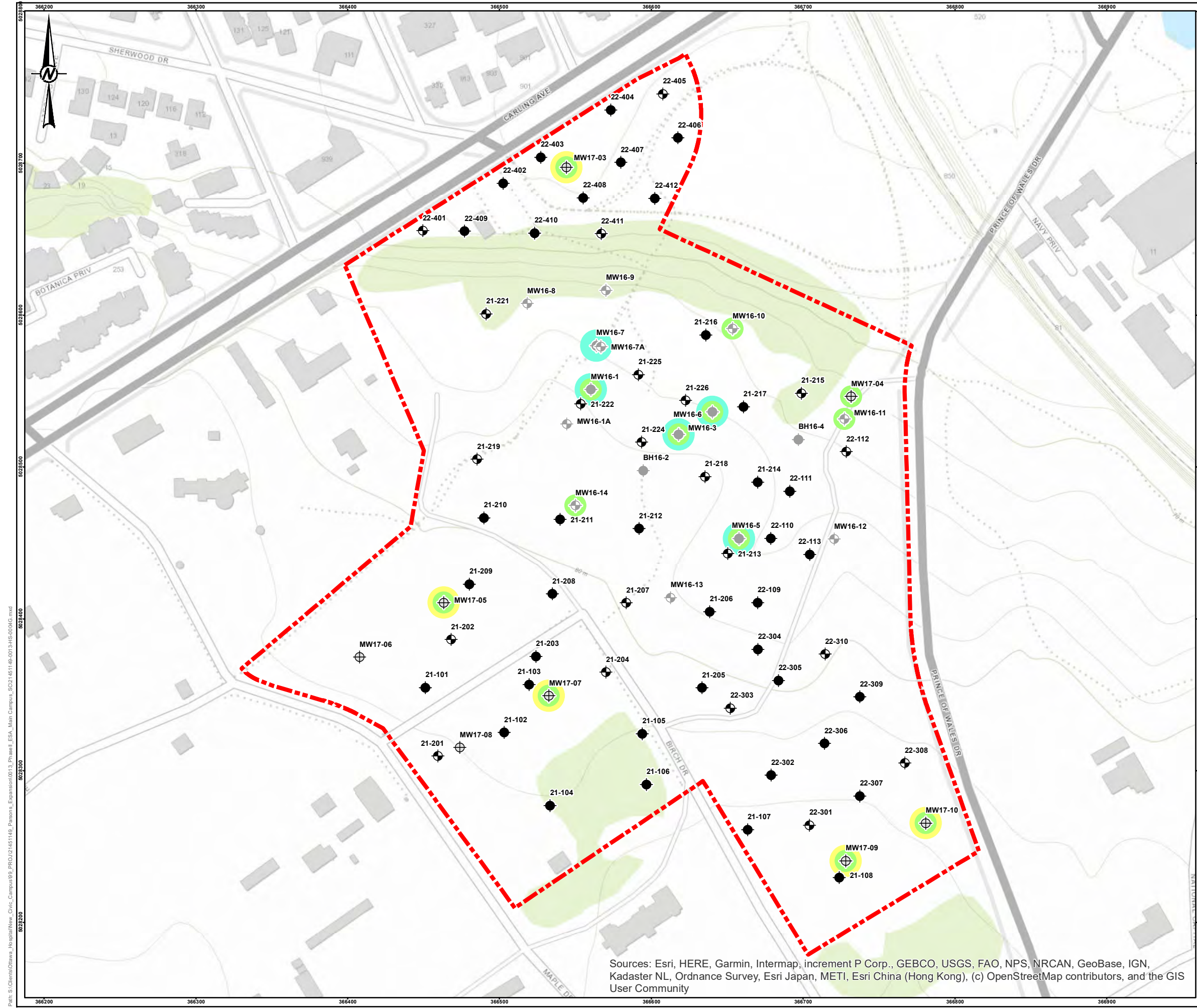
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

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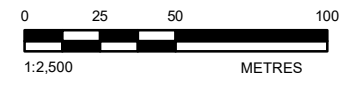




**LEGEND**

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- ⊕ PREVIOUS ENVIRONMENTAL BOREHOLE OR MONITORING WELL LOCATION (STANTEC, 2016)
- LOCATION WHERE ALL SAMPLES MEET TABLE 3 STANDARDS (SUBMITTED FOR ANALYSIS OF CYANIDE)
- LOCATION WHERE ALL SAMPLES MEET TABLE 3 STANDARDS (SUBMITTED FOR ANALYSIS OF ENERGETICS)
- LOCATION WHERE ALL SAMPLES MEET TABLE 3 STANDARDS (SUBMITTED FOR ANALYSIS OF PESTICIDES)
- ⬡ PHASE TWO SITE BOUNDARY AND RSC PROPERTY

**REFERENCE(S)**  
 1. PROJECTION: TRANSVERSE MERCATOR, DATUM: NAD 83, COORDINATE SYSTEM: MTM ZONE 9, VERTICAL DATUM: CGVD28



CLIENT  
**PARSONS INC.**

---

PROJECT  
**PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
 NEW CIVIC DEVELOPMENT FOR THE OTTAWA HOSPITAL**

TITLE  
**SUMMARY OF GROUNDWATER ANALYTICAL RESULTS -  
 PESTICIDES, ENERGETICS AND CYANIDE**

CONSULTANT	YYYY-MM-DD	2022-07-29
<b>wsp GOLDER</b>	DESIGNED	---
	PREPARED	JEM
	REVIEWED	OA
	APPROVED	LJJ

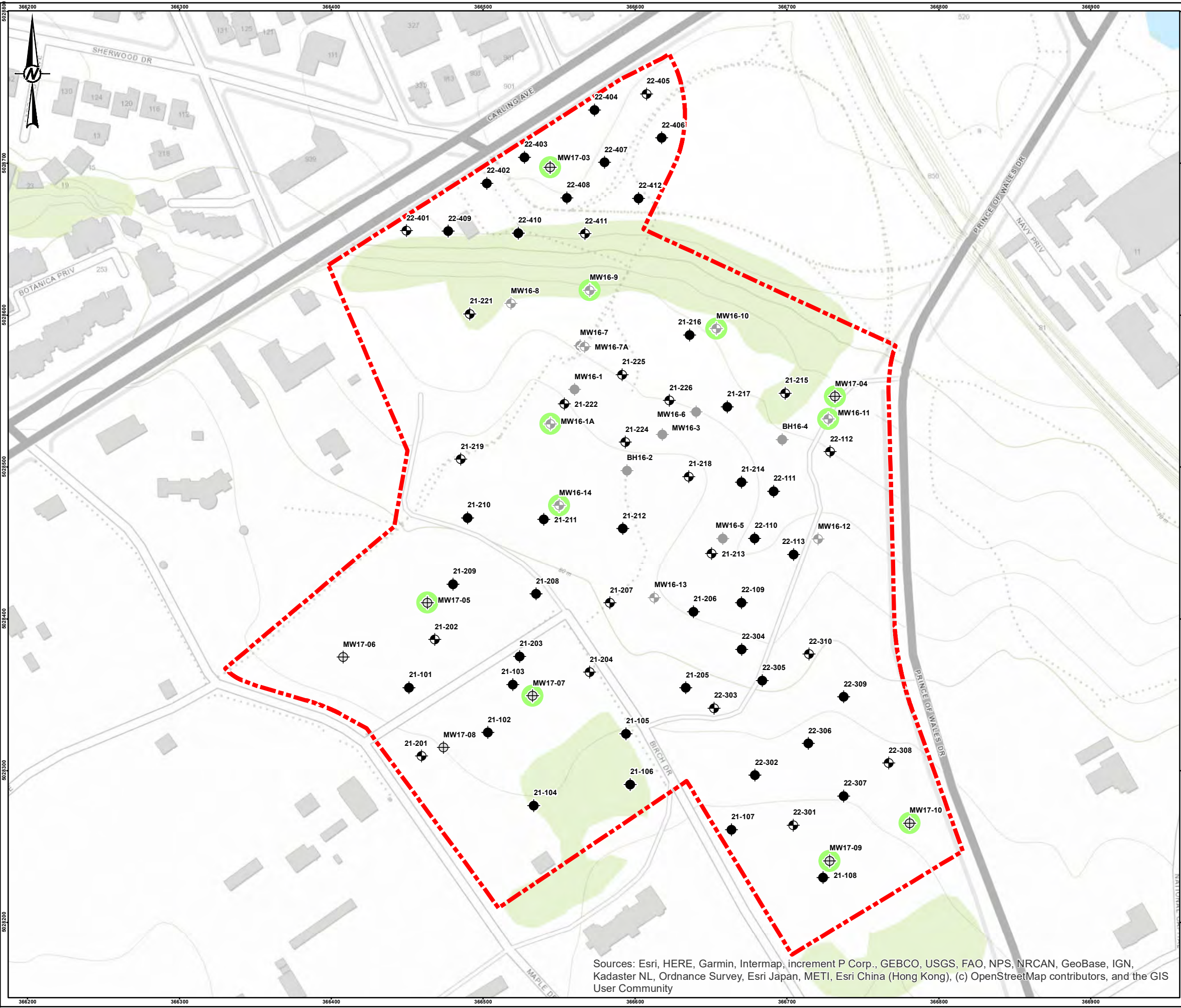
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PROJECT NO. 21451149	CONTROL 0013	REV. 0	FIGURE <b>4G</b>
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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

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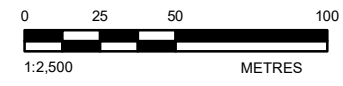
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**LEGEND**

- APPROXIMATE BOREHOLE LOCATION (GOLDER, 2021-22)
- ⊕ APPROXIMATE MONITORING WELL LOCATION (GOLDER, 2021-22)
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- ⊕ PREVIOUS ENVIRONMENTAL BOREHOLE OR MONITORING WELL LOCATION (STANTEC, 2016)
- LOCATION WHERE ALL SAMPLES MEET TABLE 3 STANDARDS
- ▭ PHASE TWO SITE BOUNDARY AND RSC PROPERTY

**REFERENCE(S)**  
 1. PROJECTION: TRANSVERSE MERCATOR, DATUM: NAD 83,  
 COORDINATE SYSTEM: MTM ZONE 9, VERTICAL DATUM: CGVD28



CLIENT <b>PARSONS INC.</b>	
PROJECT <b>PHASE TWO ENVIRONMENTAL SITE ASSESSMENT NEW CIVIC DEVELOPMENT FOR THE OTTAWA HOSPITAL</b>	
TITLE <b>SUMMARY OF GROUNDWATER ANALYTICAL RESULTS - PHENOLS</b>	
CONSULTANT	YYYY-MM-DD 2022-07-29
<b>wsp GOLDER</b>	DESIGNED ---
	PREPARED JEM
	REVIEWED OA
	APPROVED LJJ
PROJECT NO. 21451149	CONTROL 0013
REV. 0	FIGURE <b>4H</b>

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

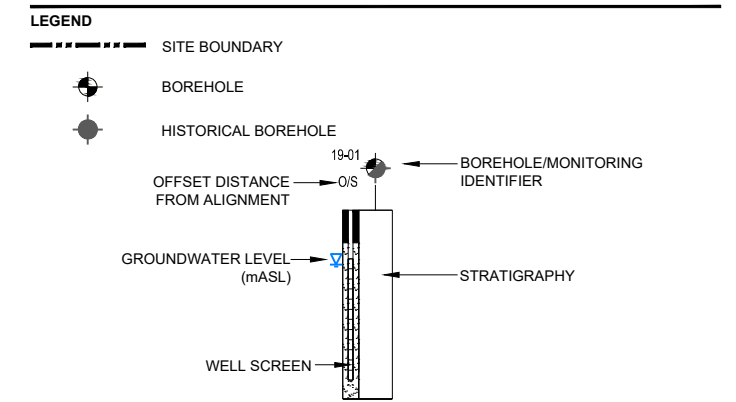
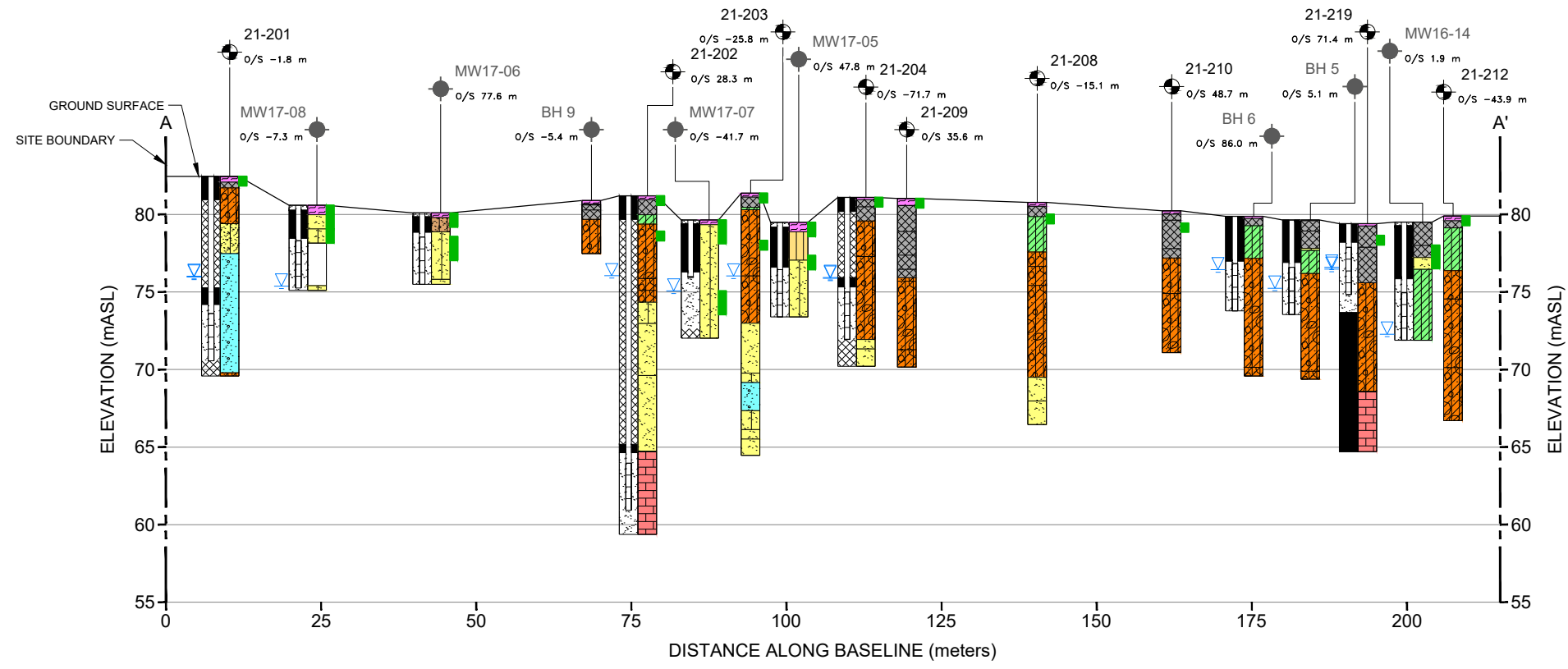
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IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 28mm





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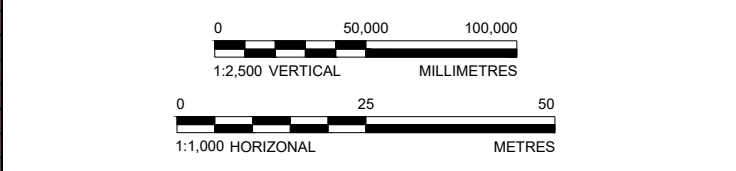
**SOIL STRATIGRAPHY**

[Pattern]	CONCRETE	[Pattern]	SILTY SAND
[Pattern]	FILL	[Pattern]	SILTY CLAY
[Pattern]	TOPSOIL	[Pattern]	CLAYEY SILT
[Pattern]	SAND	[Pattern]	CLAY
[Pattern]	SAND AND GRAVEL	[Pattern]	GLACIAL TILL
[Pattern]	SILTY SAND AND GRAVEL	[Pattern]	LIMESTONE
[Pattern]	SILT	[Pattern]	SHALEY LIMESTONE
[Pattern]	SANDY SILT		

**ANALYTICAL LEGEND**

- [Green Box] SAMPLE ANALYZED - MEETS SOIL STANDARDS.
- [Red Box] SAMPLE ANALYZED - EXCEEDS SOIL STANDARDS.
- [Red Line] DELINEATION OF METALS IMPACTS
- [Dashed Red Line] INFERRED DELINEATION OF IMPACTS

**NOTE(S)**  
1. GEODETIC ELEVATION WAS ESTIMATED FOR 17-SERIES BOREHOLES.



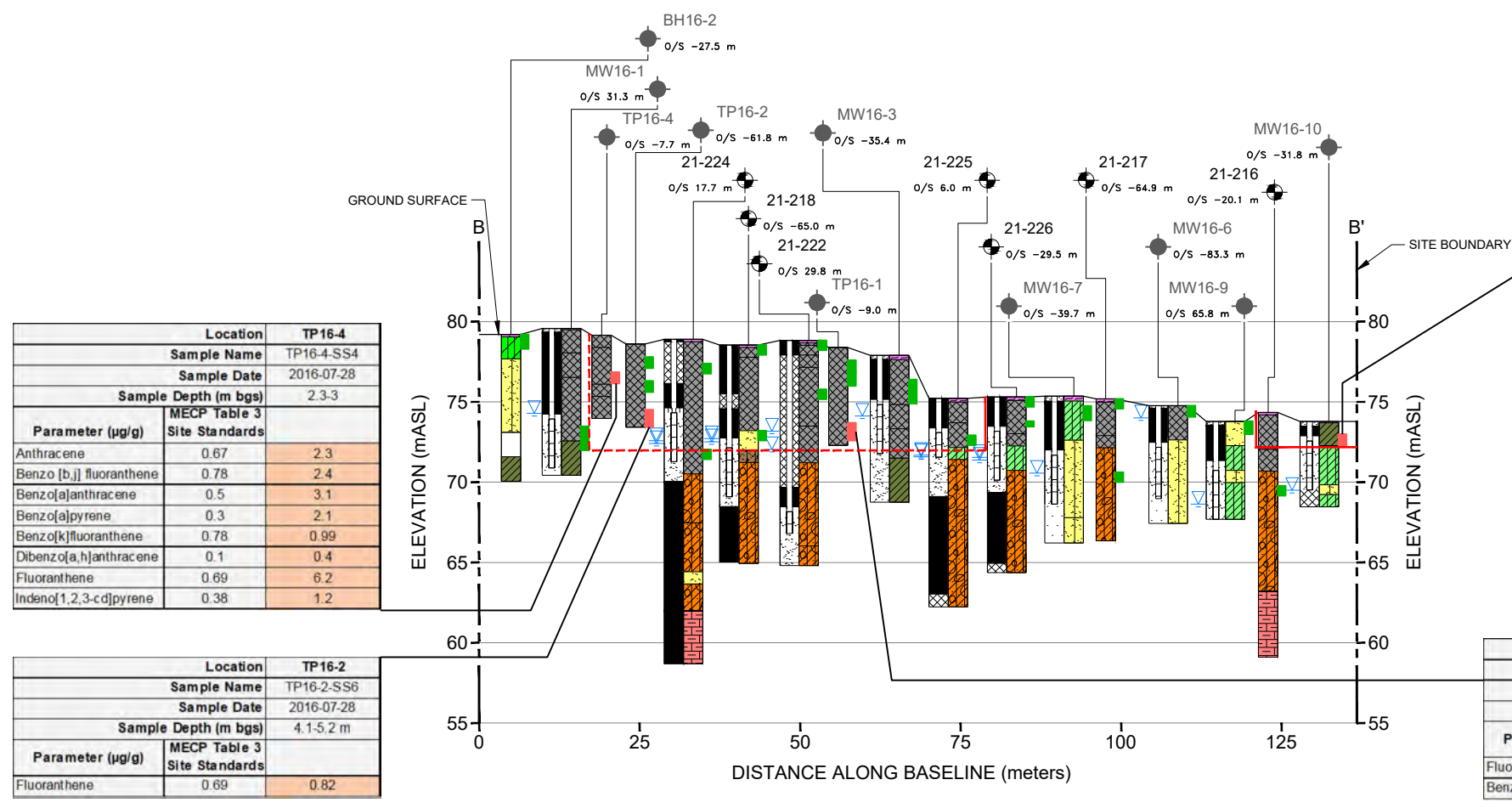
CLIENT  
**PARSONS INC.**

PROJECT  
**PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
NEW CIVIC DEVELOPMENT FOR THE OTTAWA HOSPITAL**

TITLE  
**CROSS SECTION A-A' AND B-B' (SOIL EXCEEDANCES -  
POLYCYCLIC AROMATIC HYDROCARBONS)**

CONSULTANT	YYYY-MM-DD	2021-09-06
	DESIGNED	RM
	PREPARED	ZS
	REVIEWED	LJ
	APPROVED	KPH

PROJECT NO. 21451149 CONTROL 006 REV. 0 FIGURE 5B



Location		TP16-4
Sample Name		TP16-4-SS4
Sample Date		2016-07-28
Sample Depth (m bgs)		2.3-3
Parameter (µg/g)	MECPC Table 3 Site Standards	
Anthracene	0.67	2.3
Benzo [b,j] fluoranthene	0.78	2.4
Benzo[a]anthracene	0.5	3.1
Benzo[a]pyrene	0.3	2.1
Benzo[k]fluoranthene	0.78	0.99
Dibenzo[a,h]anthracene	0.1	0.4
Fluoranthene	0.69	6.2
Indeno[1,2,3-cd]pyrene	0.38	1.2

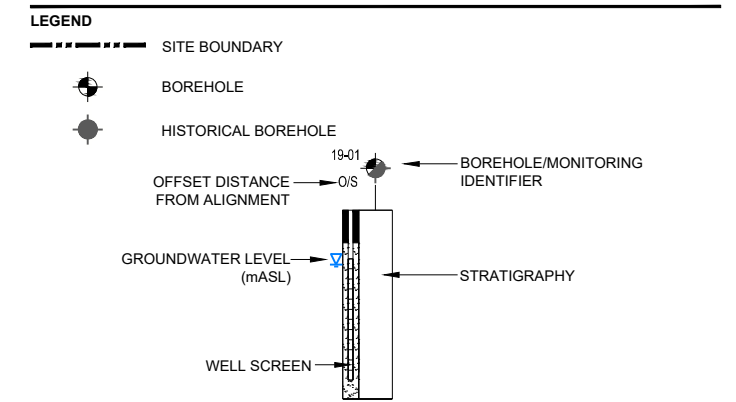
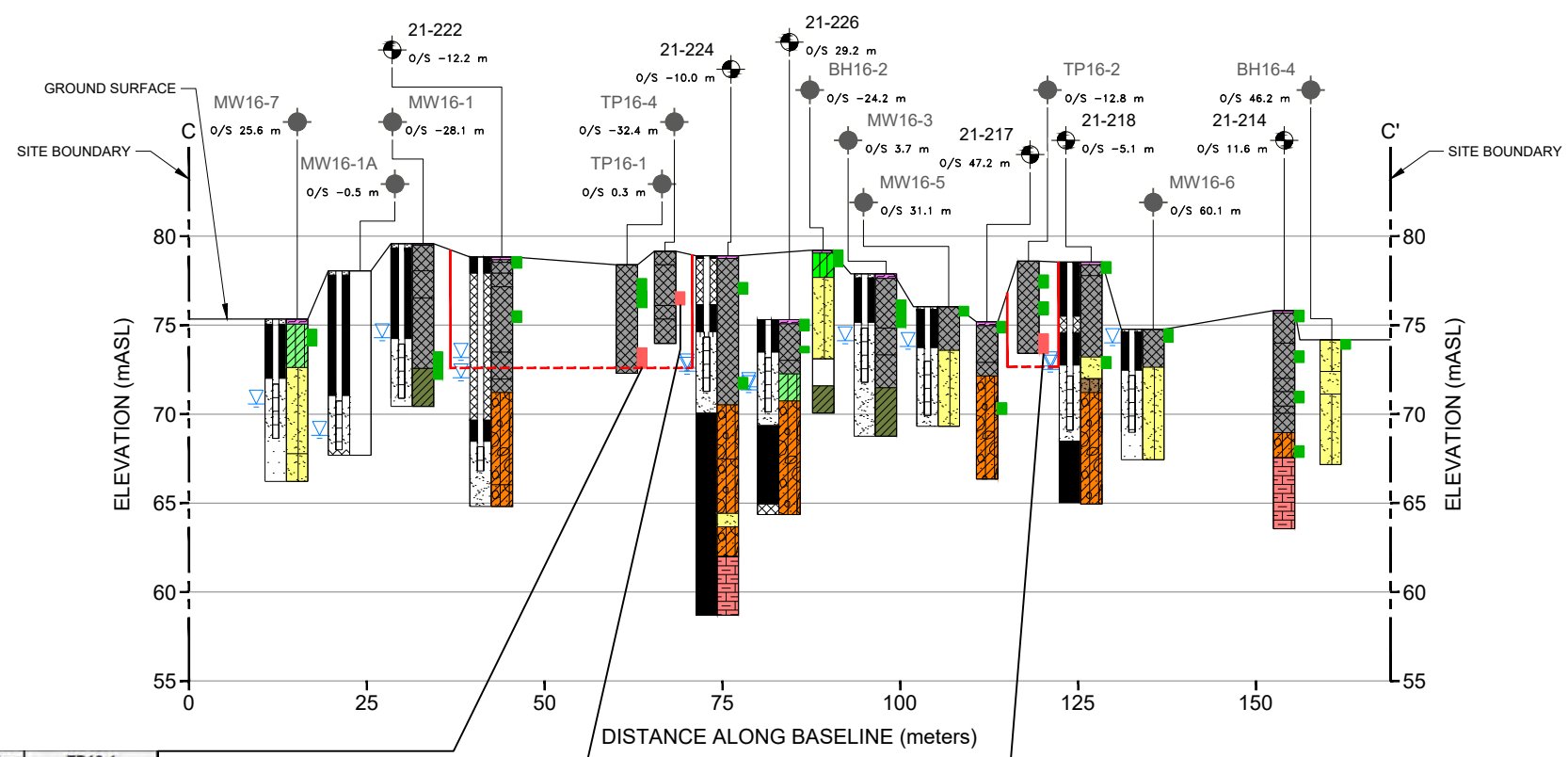
Location		TP16-2
Sample Name		TP16-2-SS6
Sample Date		2016-07-28
Sample Depth (m bgs)		4.1-5.2 m
Parameter (µg/g)	MECPC Table 3 Site Standards	
Fluoranthene	0.69	0.82

Location		MW16-10
Sample Name		MW16-10 SS2
Sample Date		2016-08-02
Sample Depth (m bgs)		0.8-1.5
Parameter (µg/g)	MECPC Table 3 Site Standards	
1-Methylnaphthalene	0.99	1.6
2-Methylnaphthalene	0.99	1.7
Acenaphthylene	0.15	1.1
Anthracene	0.67	11
Benzo [b,j] fluoranthene	0.78	15
Benzo[a]anthracene	0.5	18
Benzo[a]pyrene	0.3	12
Benzo[g,h,i]perylene	6.6	6.7
Benzo[k]fluoranthene	0.78	6
Chrysene	7	14
Dibenzo[a,h]anthracene	0.1	2.2
Fluoranthene	0.69	45
Indeno[1,2,3-cd]pyrene	0.38	7.8
Naphthalene	0.6	0.83
Phenanthrene	6.2	49

Location		TP16-1
Sample Name		TP16-1-SS7
Sample Date		2016-07-28
Sample Depth (m bgs)		4.7-5.8
Parameter (µg/g)	MECPC Table 3 Site Standards	
Fluoranthene	0.69	0.91
Benzo[a]pyrene	0.3	0.35

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

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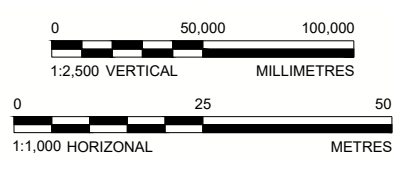


**SOIL STRATIGRAPHY**

	FILL		SILTY CLAY
	TOPSOIL		CLAYEY SILT
	SAND		CLAY
	SILT		GLACIAL TILL
	SANDY SILT		SHALEY LIMESTONE
	SILTY SAND		

**ANALYTICAL LEGEND**

	SAMPLE ANALYZED - MEETS SOIL STANDARDS.
	SAMPLE ANALYZED - EXCEEDS SOIL STANDARDS.
	DELINEATION OF METALS IMPACTS
	INFERRED DELINEATION OF IMPACTS



Location		TP16-1
Sample Name		TP16-1-SS7
Sample Date		2016-07-28
Sample Depth (m bgs)		4.7-5.8
Parameter (µg/g)	MECP Table 3 Site Standards	
Fluoranthene	0.69	0.91
Benzo[a]pyrene	0.3	0.35

Location		TP16-4
Sample Name		TP16-4-SS4
Sample Date		2016-07-28
Sample Depth (m bgs)		2.3-3
Parameter (µg/g)	MECP Table 3 Site Standards	
Anthracene	0.67	2.3
Benzo [b,j] fluoranthene	0.78	2.4
Benzo[a]anthracene	0.5	3.1
Benzo[a]pyrene	0.3	2.1
Benzo[k]fluoranthene	0.78	0.99
Dibenzo[a,h]anthracene	0.1	0.4
Fluoranthene	0.69	6.2
Indeno[1,2,3-cd]pyrene	0.38	1.2

Location		TP16-2
Sample Name		TP16-2-SS6
Sample Date		2016-07-28
Sample Depth (m bgs)		4.1-5.2 m
Parameter (µg/g)	MECP Table 3 Site Standards	
Fluoranthene	0.69	0.82

CLIENT  
PARSONS INC.

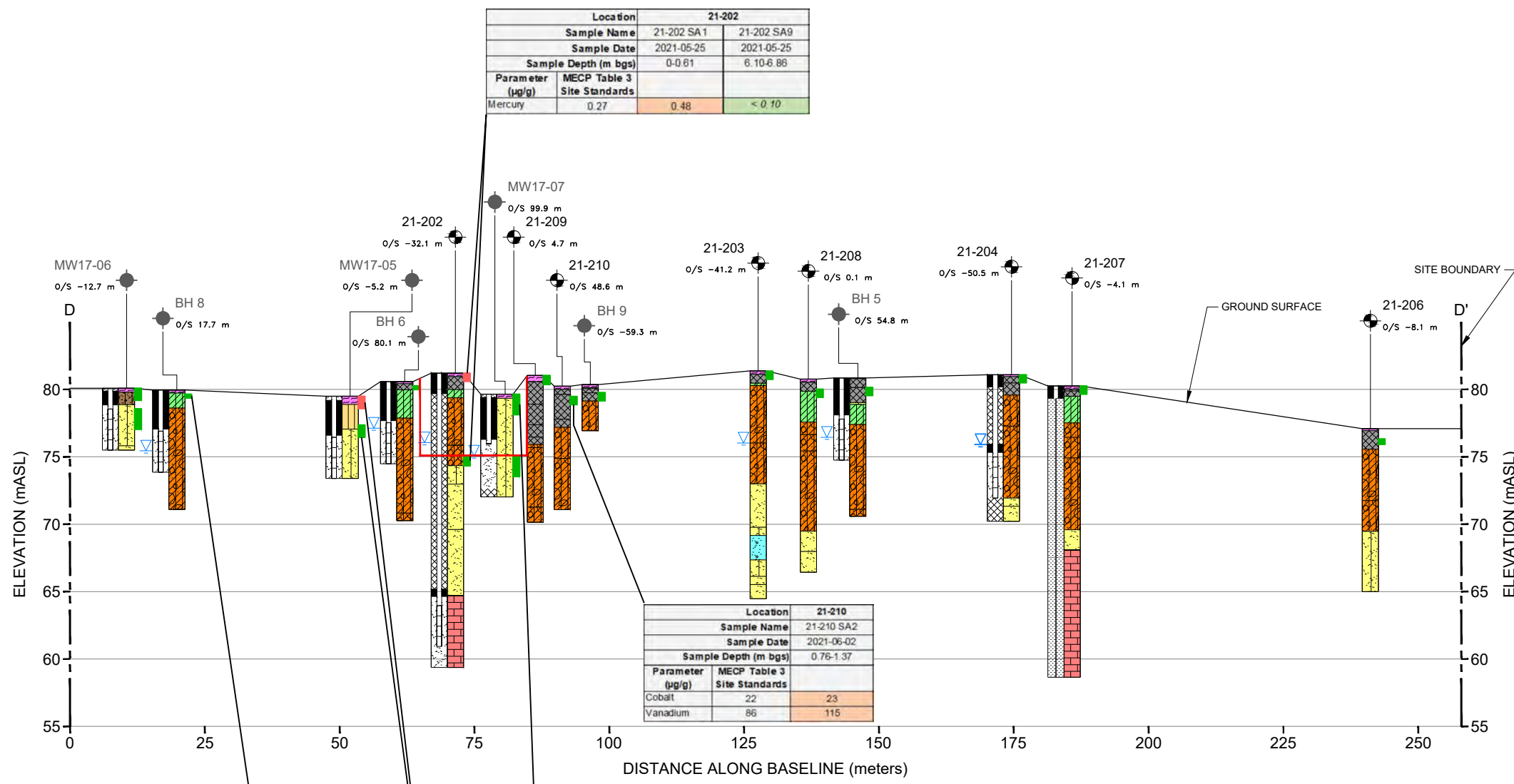
PROJECT  
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
NEW CIVIC DEVELOPMENT FOR THE OTTAWA HOSPITAL

TITLE  
**CROSS SECTION C-C' (SOIL EXCEEDANCES - POLYCYLIC AROMATIC HYDROCARBONS)**

CONSULTANT	YYYY-MM-DD	2021-09-06
	DESIGNED	RM
	PREPARED	ZS
	REVIEWED	LJ
	APPROVED	KPH

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM A3/B

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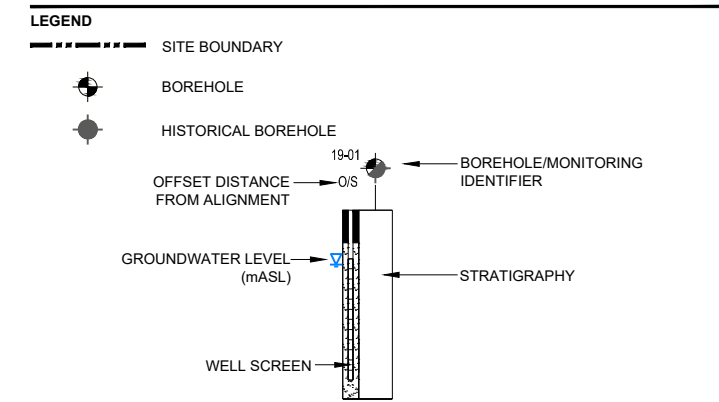
Location		21-202	
Sample Name	Sample Date	21-202 SA1	21-202 SA9
Sample Depth (m bgs)		0-0.61	6.10-6.86
Parameter (µg/g)	MECP Table 3 Site Standards		
Mercury		0.27	0.48
			< 0.10

Location		21-210	
Sample Name	Sample Date	21-210 SA1	21-210 SA2
Sample Depth (m bgs)		0.76-1.37	
Parameter (µg/g)	MECP Table 3 Site Standards		
Cobalt		22	23
Vanadium		86	115

Location		BH8	
Sample Name	Sample Date	BH8 SS2	
Sample Depth (m bgs)		0.3-0.6 m	
Parameter (µg/g)	MECP Table 3 Site Standards		
Vanadium		86	89.3

Location		MW17-07	
Sample Name	Sample Date	MW17-07-SS01	MW17-07-SS05
Sample Depth (m bgs)		0-1.52	4.57-6.1 m
Parameter (µg/g)	MECP Table 3 Site Standards		
Mercury		0.27	0.43
			< 0.050

Location		MW17-05	
Sample Name	Sample Date	MW17-05-SS01	MW17-05-SS04
Sample Depth (m bgs)		0-0.91	2.13-3.05 m
Parameter (µg/g)	MECP Table 3 Site Standards		
Vanadium		86	87
			31



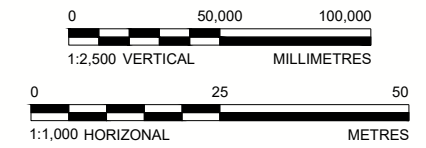
**SOIL STRATIGRAPHY**

	CONCRETE		SANDY SILT
	FILL		SILTY SAND
	TOPSOIL		SILTY CLAY
	SAND		GLACIAL TILL
	SAND AND GRAVEL		LIMESTONE
	SILT		

**ANALYTICAL LEGEND**

- SAMPLE ANALYZED - MEETS SOIL STANDARDS.
- SAMPLE ANALYZED - EXCEEDS SOIL STANDARDS.
- DELINEATION OF METALS IMPACTS

- NOTE(S)**
- COBALT AND VANADIUM ARE OF NATURAL ORIGIN IN THE MARINE CLAYS OF THE OTTAWA REGION AND DO NOT REPRESENT AN EXCEEDANCE OF MECP TABLE 3 SITE STANDARDS.
  - GEODETIC ELEVATION WAS ESTIMATED FOR 17-SERIES BOREHOLES.



CLIENT  
PARSONS INC.

PROJECT  
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT  
NEW CIVIC DEVELOPMENT FOR THE OTTAWA HOSPITAL

TITLE  
**CROSS SECTION D-D' (SOIL EXCEEDANCES - METALS, HYDRIDE FORMING METALS, AND MERCURY)**

CONSULTANT	YYYY-MM-DD	2021-09-06
DESIGNED	RM	
PREPARED	ZS	
REVIEWED	LJ	
APPROVED	KPH	

PROJECT NO. 21451149 CONTROL 0006 REV. 0 FIGURE 7

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM A3/B

**APPENDIX A**

# Sampling and Analysis Plan

## MEMORANDUM

**DATE** September 21, 2021

**Project No.** 21451149-M01

**TO** Robert Ireland, Field Staff  
Golder

**CC** Keith Holmes, Kim MacDonald, Lobke Rotteveel, Rochelle Mathew

**FROM** Laura Jones

**EMAIL** Laura\_Jones@golder.com

### SAMPLING ANALYSIS PLAN – NEW OTTAWA CIVIC HOSPITAL CAMPUS

#### OBJECTIVE

The intent of the current investigation is to further characterize the lateral and vertical extent of soil and groundwater impacts identified at the Site to support filing a Record of Site Condition.

#### SITE BACKGROUND

The new Ottawa Hospital campus was formerly occupied by a number of properties owned by the Crown which previously operated for commercial land uses. As part of redevelopment to a hospital campus (residential land use) a Record of Site Condition will be required.

A Phase One ESA was completed in 2019 and identified the following Areas of Potential Environmental Concern (APECs) on Site:

**APEC 3** Building demolition debris in fill at the location of the former Sir John Carling Building (SJCB)

**APEC 4** Concrete pad-mounted transformers

**APEC 5** Gasoline and associated products storage in fixed tanks – former hydrail oil elevator located in west annex of SJCB.

**APEC 6** Reported glycol leak from parking ramp system of SJCB

**APEC 7** Three former diesel ASTs reportedly associated with SJCB

**APEC 8** Imported fill materials associated with various building construction and site development activities across the site.

**APEC 9** Application of pesticides associated with former farming activities.

The surficial geology consists of fill overlying silt/silty sand or silty clay. Bedrock is inferred to be present between 6 and 7 metres below ground surface based previous investigations by others. Relevant borehole logs by others are attached for reference.

Shallow groundwater in the vicinity of the site varies significantly due to the elevation differences across the Site.

## GENERAL REQUIREMENTS

- Follow standard operating procedures. A Record of Site Condition will be required.
- Complete a Daily Log for every day of field work. Use standard field forms.
- 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.
- Clean disposable Nitrile™ gloves will be used at each sampling location to prevent cross-contamination.
- All non-dedicated sampling equipment (e.g., water level meters, split spoons) will be decontaminated between sampling locations. Sampling equipment in contact with soil, groundwater, or sediment 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, WELL INSTALLATION AND WELL DEVELOPMENT

- **\*\* Confirm that every drilling location has been cleared by the private locator. \*\***
- A detailed description of the drilling scope and well construction details is provided in the driller work order.
- Screen soil samples at 2.5 foot intervals (1 split spoon per 2.5 feet) using an RKI eagle calibrated to hexane and isobutylene
- At each drilling location collect samples at 2.5 foot intervals for the parameters listed in Table 1 below.
- 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.

## 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.

**Table 1: Borehole and soil sampling plan**

Borehole ID	APEC	COCs	Well Installed (Y/N)	Depth (m bgs)	Soil Samples	Duplicate Samples
21-201	APEC 8 and APEC 9	PHCs, BTEX, PAHs, Metals, As, Se, Sb, Cr(VI), Hg, B-HWS, OC Pesticides	Y for Hydro G	Env sampling to 5' below fill	PHCs, BTEX, PAHs, Metals, As, Se, Sb, Cr(VI), Hg, B-HWS in fill. Collect samples from first 5' of native.	Duplicate Samples
21-202	APEC 8 and APEC 9	PHCs, BTEX, PAHs, Metals, As, Se, Sb, Cr(VI), Hg, B-HWS, OC Pesticides	Y for Hydro G	Env sampling to 5' below fill	PHCs, BTEX, PAHs, Metals, As, Se, Sb, Cr(VI), Hg, B-HWS in fill. Collect samples from first 5' of native.	
21-203	APEC 8 and APEC 9	PHCs, BTEX, PAHs, Metals, As, Se, Sb, Cr(VI), Hg, B-HWS, OC Pesticides	N	Env sampling to 5' below fill	PHCs, BTEX, PAHs, Metals, As, Se, Sb, Cr(VI), Hg, B-HWS in fill. Collect samples from first 5' of native.	
21-204	APEC 8 and APEC 9	PHCs, BTEX, PAHs, Metals, As, Se, Sb, Cr(VI), Hg, B-HWS, OC Pesticides	Y for hydro G	Env sampling to 5' below fill	PHCs, BTEX, PAHs, Metals, As, Se, Sb, Cr(VI), Hg, B-HWS in fill. Collect samples from first 5' of native.	
21-205	APEC 8 and APEC 9	PHCs, BTEX, PAHs, Metals, As, Se, Sb, Cr(VI), Hg, B-HWS, OC Pesticides	N	Env sampling to 5' below fill	PHCs, BTEX, PAHs, Metals, As, Se, Sb, Cr(VI), Hg, B-HWS in fill. Collect samples from first 5' of native.	
21-206	APEC 8 and APEC 9	PHCs, BTEX, PAHs, Metals, As, Se, Sb, Cr(VI), Hg, B-HWS, OC Pesticides	N	Env sampling to 5' below fill	PHCs, BTEX, PAHs, Metals, As, Se, Sb, Cr(VI), Hg, B-HWS in fill. Collect samples from first 5' of native.	
21-207	APEC 8 and APEC 9	PHCs, BTEX, PAHs, Metals, As, Se, Sb, Cr(VI), Hg, B-HWS, OC Pesticides	N	Env sampling to 5' below fill	PHCs, BTEX, PAHs, Metals, As, Se, Sb, Cr(VI), Hg, B-HWS in fill. Collect samples from first 5' of native.	
21-208	APEC 8 and APEC 9	PHCs, BTEX, PAHs, Metals, As, Se, Sb, Cr(VI), Hg, B-HWS, OC Pesticides	N	Env sampling to 5' below fill	PHCs, BTEX, PAHs, Metals, As, Se, Sb, Cr(VI), Hg, B-HWS in fill. Collect samples from first 5' of native.	
21-209	APEC 8 and APEC 9	PHCs, BTEX, PAHs, Metals, As, Se, Sb, Cr(VI), Hg, B-HWS, OC Pesticides	N	Env sampling to 5' below fill	PHCs, BTEX, PAHs, Metals, As, Se, Sb, Cr(VI), Hg, B-HWS in fill. Collect samples from first 5' of native.	

Borehole ID	APEC	COCs	Well Installed (Y/N)	Depth (m bgs)	Soil Samples	Duplicate Samples
21-210	APEC 8 and APEC 9	PHCs, BTEX, PAHs, Metals, As, Se, Sb, Cr(VI), Hg, B-HWS, OC Pesticides	N	Env sampling to 5' below fill	PHCs, BTEX, PAHs, Metals, As, Se, Sb, Cr(VI), Hg, B-HWS in fill. Collect samples from first 5' of native.	
21-211	Geotechnical Borehole		N	NA	Environmental Sampling not required	
21-212	APEC 8 and APEC 9	PHCs, BTEX, PAHs, Metals, As, Se, Sb, Cr(VI), Hg, B-HWS, OC Pesticides	N	Env sampling to 5' below fill	PHCs, BTEX, PAHs, Metals, As, Se, Sb, Cr(VI), Hg, B-HWS in fill. Collect samples from first 5' of native.	
21-213	APEC 3, APEC 6, APEC 7, APEC 8 and APEC 9	PHCs, BTEX, VOCs, PAHs, Metals, As, Se, Sb, Cr(VI), Hg, B-HWS, Phenol, Glycol OC Pesticides	Y Deep well for hydro G	4.5 mbgs for env sampling	Sample from water table (should be ~ 7 feet) for PHC and VOC and 12.5-14.5 for PHC and VOC	
21-214	APEC 3, APEC 6, APEC 7, APEC 8 and APEC 9	PHCs, BTEX, VOCs, PAHs, Metals, As, Se, Sb, Cr(VI), Hg, B-HWS, Phenol, Glycol OC Pesticides	N	Env sampling to greater of 5' below fill or 5' below water table	PHCs, BTEX, VOCs, PAHs, Metals, As, Se, Sb, Cr(VI), Hg, B-HWS in shallow fill, at water table and 5' below fill or 5' below WT	
21-215	APEC 8 and APEC 9	PHCs, BTEX, PAHs, Metals, As, Se, Sb, Cr(VI), Hg, B-HWS, OC Pesticides	Y for hydro G	Env sampling to 5' below fill	PHCs, BTEX, PAHs, Metals, As, Se, Sb, Cr(VI), Hg, B-HWS in fill. Deeper sample collected for depth delineation if required	
21-216	APEC 8 and APEC 9	PHCs, BTEX, PAHs, Metals, As, Se, Sb, Cr(VI), Hg, B-HWS, OC Pesticides	N	Env sampling to 5' below fill	PHCs, BTEX, PAHs, Metals, As, Se, Sb, Cr(VI), Hg, B-HWS in fill. Collect samples from first 5' of native.	
21-217	APEC 8 and APEC 9	PHCs, BTEX, PAHs, Metals, As, Se, Sb, Cr(VI), Hg, B-HWS, OC Pesticides	N	Env sampling to 5' below fill	PHCs, BTEX, PAHs, Metals, As, Se, Sb, Cr(VI), Hg, B-HWS in fill. Collect samples from first 5' of native.	



Borehole ID	APEC	COCs	Well Installed (Y/N)	Depth (m bgs)	Soil Samples	Duplicate Samples
21-218	APEC 3, APEC 7, APEC 8 and APEC 9	PHCs, BTEX, VOCs, PAHs, Metals, As, Se, Sb, Cr(VI), Hg, B-HWS, Phenol, OC Pesticides	Y	Env sampling to greater of 5' below fill or 5' below water table	PHCs, BTEX, VOCs, PAHs, Metals, As, Se, Sb, Cr(VI), Hg, B-HWS in shallow fill, at water table and 5' below fill or 5' below WT	
21-219	APEC 4, APEC 8 and APEC 9	PCBs, PHCs, BTEX, PAHs, Metals, As, Se, Sb, Cr(VI), Hg, B-HWS, OC Pesticides	Y	Env sampling to greater of 5' below fill or 5' below water table	PCBs, PHCs, BTEX, VOCs, PAHs, Metals, As, Se, Sb, Cr(VI), Hg, B-HWS in shallow fill, at water table and 5' below fill or 5' below WT	
21-220	To be completed post demolition					
21-221	APEC 4, APEC 8 and APEC 9	PCBs, PHCs, BTEX, PAHs, Metals, As, Se, Sb, Cr(VI), Hg, B-HWS, OC Pesticides	Y shallow and Deep well for Hydro G	Env sampling to greater of 5' below fill or 5' below water table	PCBs, PHCs, BTEX, VOCs, PAHs, Metals, As, Se, Sb, Cr(VI), Hg, B-HWS in shallow fill, at water table and 5' below fill or 5' below WT	Duplicate all samples
21-222	APEC 3, APEC 7, APEC 8 and APEC 9	PCBs, PHCs, BTEX, VOCs, PAHs, Metals, As, Se, Sb, Cr(VI), Hg, B-HWS, OC Pesticides	Y (shallow and deep)	Env sampling to greater of 5' below fill or 5' below water table	PHCs, BTEX, VOCs, PAHs, Metals, As, Se, Sb, Cr(VI), Hg, B-HWS in shallow fill, at water table and 5' below fill or 5' below WT	Duplicate all samples
21-223	APEC 4, APEC 8 and APEC 9	PCBs, PHCs, BTEX, VOCs, PAHs, Metals, As, Se, Sb, Cr(VI), Hg, B-HWS, OC Pesticides	N	5 feet	PHCs, BTEX, VOCs, PAHs, Metals, As, Se, Sb, Cr(VI), Hg, B-HWS in shallow fill and native, if encountered	
21-224	APEC 3, APEC 7, APEC 8 and APEC 9	PCBs, PHCs, BTEX, VOCs, PAHs, Metals, As, Se, Sb, Cr(VI), Hg, B-HWS, OC Pesticides	Y	Env sampling to 5' below fill	PAHs, Metals, As, Se, Sb, in shallow fill, at water table and 5' below fill or 5' below WT	

Borehole ID	APEC	COCs	Well Installed (Y/N)	Depth (m bgs)	Soil Samples	Duplicate Samples
21-225	APEC 3, APEC 7, APEC 8 and APEC 9	PCBs, PHCs, BTEX, VOCs, PAHs, Metals, As, Se, Sb, Cr(VI), Hg, B-HWS, OC Pesticides	Y	Env sampling to greater of 5' below fill or 5' below water table	PHCs, BTEX, VOCs, PAHs, Metals, As, Se, Sb, Cr(VI), Hg, B-HWS in shallow fill, at water table and 5' below fill or 5' below WT	
21-226	APEC 3, APEC 7, APEC 8 and APEC 9	PCBs, PHCs, BTEX, VOCs, PAHs, Metals, As, Se, Sb, Cr(VI), Hg, B-HWS, OC Pesticides	Y	Env sampling to greater of 5' below fill or 5' below water table	PHCs, BTEX, VOCs, PAHs, Metals, As, Se, Sb, Cr(VI), Hg, B-HWS in shallow fill, at water table and 5' below fill or 5' below WT	

**Notes:**

\*Locations provided on Figure 1

PHCs – Petroleum Hydrocarbon Fractions F1-F4

BTEX – Benzene, toluene, ethylbenzene, xylene

PAHs – Polycyclic Aromatic Hydrocarbons

B-HWS – Hot water soluble boron

VOCs – Volatile Organic Compounds

PCBs – Polychlorinated biphenyls

**Table 2: Monitoring Well Construction**

Borehole ID	Depth of screen base (m bgs)	Screen length (m)	Well diameter (cm)	Protective Casing Type
21-201	Confirm with Caitlin during drilling – target shallow bedrock			
21-202	Confirm with Caitlin during drilling			
21-204	Confirm with Caitlin during drilling			
21-213	21-213S 4.5 confirm with Laura during drilling	3	5	
	21-213D – Confirm with Caitlin during drilling			
21-215	Confirm with Caitlin during drilling			
21-218	4.5 confirm with Laura during drilling	3	5	
21-219	4.5 confirm with Laura during drilling	3	5	
21-221	21-221S 4.5 confirm with Laura during drilling	3	5	
	21-221D – confirm with Caitlin during drilling			
21-222	21-222S 6.1 confirm with Laura during drilling	3	5	
	21-222D 12.2	1.5	5	
21-224	6.1 confirm with Laura during drilling	3	5	
21-225	Confirm with Laura during drilling	3	5	
21-226	Confirm with Laura during drilling	3	5	

- Collect a round of water level measurements using the water level meter. Use the “Static Water Level Field Form”.
- Collect groundwater samples from monitoring wells following SOP10 (Low Flow Sample Collection) using a peristaltic pump for the parameters in Table 3. Allow the water level to stabilize in the monitoring well before starting measurement of field parameters.
- If drawdown in the well exceeds 0.3 metres during purging, then complete purging in accordance with the SOP9 procedure for low-yield monitoring wells.
- The multi-parameter meter should be initially calibrated the equipment supplier and thereafter at the start of each day. Check calibration to known pH, conductivity, ORP and DO concentration at mid-day. If equipment is out of calibration (i.e., reading is off by more than 10%), call Laura.
- If field parameters do not stabilize during low flow purging, do not purge longer than 30 minutes before collecting a groundwater sample.
- 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 Tables 1 and 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 Laura 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 3: Groundwater sampling plan**

Borehole ID	Field Parameter Measurements	Groundwater Analyses to be Requested	QA/QC samples
MW16-1A, MW16-3, MW16-6, MW16-7, MW16-8, MW16-9, MW16-10, MW16-14, BH21-213S, BH21-218, BH21-219, BH21-221S, BH21-222S/D, 21-224, 21-225, 21-226	pH; EC; temp; DO; ORP	PHCs, BTEX, VOCs, PAHs, Metals, As, Se, Sb, Cr(VI), Hg  PCBs at BH21-219 and BH21-221S	Collect duplicate samples from monitoring wells MW16-1A and BH21-219  Trip blank during 2 sampling events

## SURVEYING

- **To be completed on Day 4;** direct 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). Surveyor will be provided your contact information.

## CHAIN-OF-CUSTODY

Chain-of-Custody Item	Information
Analytical Laboratory	AGAT
Generic Site Condition Standards	Table 3 Residential, coarse textured soil
Use Record of Site Condition analytical procedures?	Yes
Turn-around Time	Regular
Golder Reporting Contact	Laura_Jones@golder.com, Environmental Lead Gal_Equis@golder.com
Project-Specific Quote Number (if applicable)	None
Golder Billing Contact	Laura Jones Ljones@golder.com
Is an EQuIS EDD Required?	Yes – Facility ID - 229413340

## MANAGEMENT OF INVESTIGATION DERIVED WASTE

- Keep waste soil and water segregated into separate drums
- Label drums for waste management purposes, include Golder Associates, project number, date and drum contents (soil, purge water)
- Leave drums in an easily accessible location by vehicle)
- Record inventory of waste containers on Daily Log

## SPECIAL INSTRUCTIONS

- Check in with Laura and Caitlin prior to well installation as indicated

### Golder Associates Ltd.

Laura Jones, MSc, PEng  
Senior Environmental Engineer

Keith Holmes, MSc, PGeo  
Associate

[https://golderassociates.sharepoint.com/sites/140130/project files/6 deliverables/02 - environmental/01 - sap 1/appendix a - sampling and analysis plan/21451149-m01 sap 1 hospital property.docx](https://golderassociates.sharepoint.com/sites/140130/project%20files/6%20deliverables/02%20-%20environmental/01%20-%20sap%201/appendix%20a%20-%20sampling%20and%20analysis%20plan/21451149-m01%20sap%201%20hospital%20property.docx)LJ/KH/sg

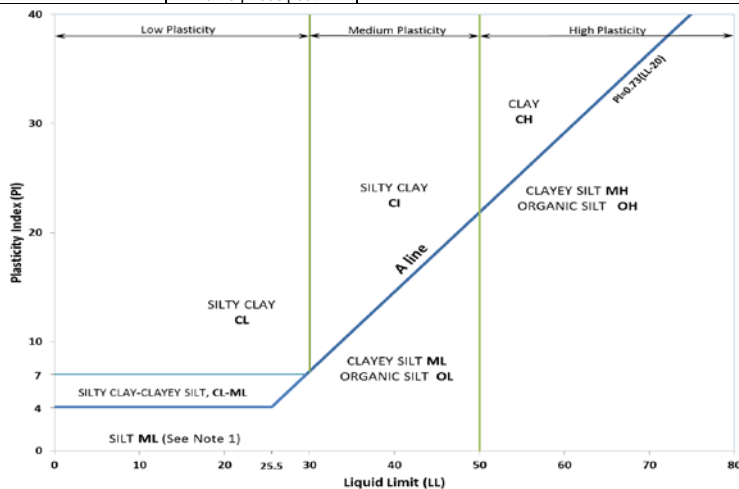
**APPENDIX B**

# Record of Borehole Sheets

# METHOD OF SOIL CLASSIFICATION

The Golder Associates Ltd. Soil Classification System is based on the Unified Soil Classification System (USCS)

Organic or Inorganic	Soil Group	Type of Soil	Gradation or Plasticity	$Cu = \frac{D_{60}}{D_{10}}$	$Cc = \frac{(D_{30})^2}{D_{10} \times D_{60}}$	Organic Content	USCS Group Symbol	Group Name							
									INORGANIC (Organic Content ≤30% by mass)	COARSE-GRAINED SOILS (>50% by mass is larger than 0.075 mm)	GRAVELS (>50% by mass of coarse fraction is larger than 4.75 mm)	Poorly Graded	<4	≤1 or ≥3	≤30%
Well Graded	≥4	1 to 3	GW	GRAVEL											
Below A Line	n/a		GM	SILTY GRAVEL											
Above A Line	n/a		GC	CLAYEY GRAVEL											
SANDS (≥50% by mass of coarse fraction is smaller than 4.75 mm)	Poorly Graded	<6	≤1 or ≥3	SP	SAND										
	Well Graded	≥6	1 to 3	SW	SAND										
	Below A Line	n/a		SM	SILTY SAND										
	Above A Line	n/a		SC	CLAYEY SAND										
	Organic or Inorganic	Soil Group	Type of Soil	Laboratory Tests	Field Indicators						Organic Content	USCS Group Symbol	Primary Name		
					Dilatancy	Dry Strength	Shine Test	Thread Diameter						Toughness (of 3 mm thread)	
INORGANIC (Organic Content ≤30% by mass)	FINE-GRAINED SOILS (≥50% by mass is smaller than 0.075 mm)	SILTS (Non-Plastic or PI and LL plot below A-Line on Plasticity Chart below)	Liquid Limit <50	Rapid	None	None	>6 mm	N/A (can't roll 3 mm thread)			<5%	ML	SILT		
				Slow	None to Low	Dull	3mm to 6 mm	None to low			<5%	ML	CLAYEY SILT		
			Liquid Limit ≥50	Slow to very slow	Low to medium	Dull to slight	3mm to 6 mm	Low	5% to 30%	OL	ORGANIC SILT				
				Slow to very slow	Low to medium	Slight	3mm to 6 mm	Low to medium	<5%	MH	CLAYEY SILT				
			CLAYS (PI and LL plot above A-Line on Plasticity Chart below)	Liquid Limit <30	None	Low to medium	Slight to shiny	~ 3 mm	Low to medium	0% to 30%  (see Note 2)	CL	SILTY CLAY			
					None	Medium to high	Slight to shiny	1 mm to 3 mm	Medium		CI	SILTY CLAY			
		None			High	Shiny	<1 mm	High	CH		CLAY				
		Liquid Limit 30 to 50		None	Low to medium	Slight to shiny	~ 3 mm	Low to medium	0% to 30%  (see Note 2)	CL	SILTY CLAY				
				None	Medium to high	Slight to shiny	1 mm to 3 mm	Medium		CI	SILTY CLAY				
				None	High	Shiny	<1 mm	High		CH	CLAY				
		HIGHLY ORGANIC SOILS (Organic Content >30% by mass)	Peat and mineral soil mixtures						30% to 75%	PT	SILTY PEAT, SANDY PEAT				
				Predominantly peat, may contain some mineral soil, fibrous or amorphous peat					75% to 100%		PEAT				



**Note 1** – Fine grained materials with PI and LL that plot in this area are named (ML) SILT with slight plasticity. Fine-grained materials which are non-plastic (i.e. a PL cannot be measured) are named SILT.  
**Note 2** – For soils with <5% organic content, include the descriptor “trace organics” for soils with between 5% and 30% organic content include the prefix “organic” before the Primary name.

**Dual Symbol** — A dual symbol is two symbols separated by a hyphen, for example, GP-GM, SW-SC and CL-ML. For non-cohesive soils, the dual symbols must be used when the soil has between 5% and 12% fines (i.e. to identify transitional material between “clean” and “dirty” sand or gravel). For cohesive soils, the dual symbol must be used when the liquid limit and plasticity index values plot in the CL-ML area of the plasticity chart (see Plasticity Chart at left).

**Borderline Symbol** — A borderline symbol is two symbols separated by a slash, for example, CL/CI, GM/SM, CL/ML. A borderline symbol should be used to indicate that the soil has been identified as having properties that are on the transition between similar materials. In addition, a borderline symbol may be used to indicate a range of similar soil types within a stratum.

# ABBREVIATIONS AND TERMS USED ON RECORDS OF BOREHOLES AND TEST PITS

## PARTICLE SIZES OF CONSTITUENTS

Soil Constituent	Particle Size Description	Millimetres	Inches (US Std. Sieve Size)
BOULDERS	Not Applicable	>300	>12
COBBLES	Not Applicable	75 to 300	3 to 12
GRAVEL	Coarse	19 to 75	0.75 to 3
	Fine	4.75 to 19	(4) to 0.75
SAND	Coarse	2.00 to 4.75	(10) to (4)
	Medium	0.425 to 2.00	(40) to (10)
	Fine	0.075 to 0.425	(200) to (40)
SILT/CLAY	Classified by plasticity	<0.075	< (200)

## MODIFIERS FOR SECONDARY AND MINOR CONSTITUENTS

Percentage by Mass	Modifier
>35	Use 'and' to combine major constituents (i.e., SAND and GRAVEL)
> 12 to 35	Primary soil name prefixed with "gravelly, sandy, SILTY, CLAYEY" as applicable
> 5 to 12	some
≤ 5	trace

## PENETRATION RESISTANCE

### Standard Penetration Resistance (SPT), N:

The number of blows by a 63.5 kg (140 lb) hammer dropped 760 mm (30 in.) required to drive a 50 mm (2 in.) split-spoon sampler for a distance of 300 mm (12 in.). Values reported are as recorded in the field and are uncorrected.

### Cone Penetration Test (CPT)

An electronic cone penetrometer with a 60° conical tip and a project end area of 10 cm<sup>2</sup> pushed through ground at a penetration rate of 2 cm/s. Measurements of tip resistance (q<sub>t</sub>), porewater pressure (u) and sleeve frictions are recorded electronically at 25 mm penetration intervals.

### Dynamic Cone Penetration Resistance (DCPT); N<sub>d</sub>:

The number of blows by a 63.5 kg (140 lb) hammer dropped 760 mm (30 in.) to drive uncased a 50 mm (2 in.) diameter, 60° cone attached to "A" size drill rods for a distance of 300 mm (12 in.).

**PH:** Sampler advanced by hydraulic pressure

**PM:** Sampler advanced by manual pressure

**WH:** Sampler advanced by static weight of hammer

**WR:** Sampler advanced by weight of sampler and rod

## SAMPLES

AS	Auger sample
BS	Block sample
CS	Chunk sample
DD	Diamond Drilling
DO or DP	Seamless open ended, driven or pushed tube sampler – note size
DS	Denison type sample
GS	Grab Sample
MC	Modified California Samples
MS	Modified Shelby (for frozen soil)
RC	Rock core
SC	Soil core
SS	Split spoon sampler – note size
ST	Slotted tube
TO	Thin-walled, open – note size (Shelby tube)
TP	Thin-walled, piston – note size (Shelby tube)
WS	Wash sample

## SOIL TESTS

w	water content
PL , w <sub>p</sub>	plastic limit
LL , w <sub>L</sub>	liquid limit
C	consolidation (oedometer) test
CHEM	chemical analysis (refer to text)
CID	consolidated isotropically drained triaxial test <sup>1</sup>
CIU	consolidated isotropically undrained triaxial test with porewater pressure measurement <sup>1</sup>
D <sub>R</sub>	relative density (specific gravity, G <sub>s</sub> )
DS	direct shear test
GS	specific gravity
M	sieve analysis for particle size
MH	combined sieve and hydrometer (H) analysis
MPC	Modified Proctor compaction test
SPC	Standard Proctor compaction test
OC	organic content test
SO <sub>4</sub>	concentration of water-soluble sulphates
UC	unconfined compression test
UU	unconsolidated undrained triaxial test
V (FV)	field vane (LV-laboratory vane test)
γ	unit weight

1. Tests anisotropically consolidated prior to shear are shown as CAD, CAU.

## NON-COHESIVE (COHESIONLESS) SOILS

### Compactness<sup>2</sup>

Term	SPT 'N' (blows/0.3m) <sup>1</sup>
Very Loose	0 to 4
Loose	4 to 10
Compact	10 to 30
Dense	30 to 50
Very Dense	>50

1. SPT 'N' in accordance with ASTM D1586, uncorrected for the effects of overburden pressure.

2. Definition of compactness terms are based on SPT 'N' ranges as provided in Terzaghi, Peck and Mesri (1996). Many factors affect the recorded SPT 'N' value, including hammer efficiency (which may be greater than 60% in automatic trip hammers), overburden pressure, groundwater conditions, and grain size. As such, the recorded SPT 'N' value(s) should be considered only an approximate guide to the soil compactness. These factors need to be considered when evaluating the results, and the stated compactness terms should not be relied upon for design or construction.

### Field Moisture Condition

Term	Description
Dry	Soil flows freely through fingers.
Moist	Soils are darker than in the dry condition and may feel cool.
Wet	As moist, but with free water forming on hands when handled.

## COHESIVE SOILS

### Consistency

Term	Undrained Shear Strength (kPa)	SPT 'N' <sup>1,2</sup> (blows/0.3m)
Very Soft	<12	0 to 2
Soft	12 to 25	2 to 4
Firm	25 to 50	4 to 8
Stiff	50 to 100	8 to 15
Very Stiff	100 to 200	15 to 30
Hard	>200	>30

1. SPT 'N' in accordance with ASTM D1586, uncorrected for overburden pressure effects; approximate only.

2. SPT 'N' values should be considered ONLY an approximate guide to consistency; for sensitive clays (e.g., Champlain Sea clays), the N-value approximation for consistency terms does NOT apply. Rely on direct measurement of undrained shear strength or other manual observations.

### Water Content

Term	Description
w < PL	Material is estimated to be drier than the Plastic Limit.
w ~ PL	Material is estimated to be close to the Plastic Limit.
w > PL	Material is estimated to be wetter than the Plastic Limit.



## LIST OF SYMBOLS

Unless otherwise stated, the symbols employed in the report are as follows:

### I. GENERAL

$\pi$	3.1416
$\ln x$	natural logarithm of x
$\log_{10} x$	x or log x, logarithm of x to base 10
g	acceleration due to gravity
t	time

### II. STRESS AND STRAIN

$\gamma$	shear strain
$\Delta$	change in, e.g. in stress: $\Delta \sigma$
$\varepsilon$	linear strain
$\varepsilon_v$	volumetric strain
$\eta$	coefficient of viscosity
$\nu$	Poisson's ratio
$\sigma$	total stress
$\sigma'$	effective stress ( $\sigma' = \sigma - u$ )
$\sigma'_{vo}$	initial effective overburden stress
$\sigma_1, \sigma_2, \sigma_3$	principal stress (major, intermediate, minor)
$\sigma_{oct}$	mean stress or octahedral stress $= (\sigma_1 + \sigma_2 + \sigma_3)/3$
$\tau$	shear stress
u	porewater pressure
E	modulus of deformation
G	shear modulus of deformation
K	bulk modulus of compressibility

### III. SOIL PROPERTIES

#### (a) Index Properties

$\rho(\gamma)$	bulk density (bulk unit weight)*
$\rho_d(\gamma_d)$	dry density (dry unit weight)
$\rho_w(\gamma_w)$	density (unit weight) of water
$\rho_s(\gamma_s)$	density (unit weight) of solid particles
$\gamma'$	unit weight of submerged soil ( $\gamma' = \gamma - \gamma_w$ )
$D_R$	relative density (specific gravity) of solid particles ( $D_R = \rho_s / \rho_w$ ) (formerly $G_s$ )
e	void ratio
n	porosity
S	degree of saturation

#### (a) Index Properties (continued)

w	water content
$w_l$ or LL	liquid limit
$w_p$ or PL	plastic limit
$I_p$ or PI	plasticity index = $(w_l - w_p)$
NP	non-plastic
$w_s$	shrinkage limit
$I_L$	liquidity index = $(w - w_p) / I_p$
$I_C$	consistency index = $(w_l - w) / I_p$
$e_{max}$	void ratio in loosest state
$e_{min}$	void ratio in densest state
$I_D$	density index = $(e_{max} - e) / (e_{max} - e_{min})$ (formerly relative density)

#### (b) Hydraulic Properties

h	hydraulic head or potential
q	rate of flow
v	velocity of flow
i	hydraulic gradient
k	hydraulic conductivity (coefficient of permeability)
j	seepage force per unit volume

#### (c) Consolidation (one-dimensional)

$C_c$	compression index (normally consolidated range)
$C_r$	recompression index (over-consolidated range)
$C_s$	swelling index
$C_\alpha$	secondary compression index
$m_v$	coefficient of volume change
$C_v$	coefficient of consolidation (vertical direction)
$C_h$	coefficient of consolidation (horizontal direction)
$T_v$	time factor (vertical direction)
U	degree of consolidation
$\sigma'_p$	pre-consolidation stress
OCR	over-consolidation ratio = $\sigma'_p / \sigma'_{vo}$

#### (d) Shear Strength

$\tau_p, \tau_r$	peak and residual shear strength
$\phi'$	effective angle of internal friction
$\delta$	angle of interface friction
$\mu$	coefficient of friction = $\tan \delta$
$c'$	effective cohesion
$c_u, s_u$	undrained shear strength ( $\phi = 0$ analysis)
p	mean total stress $(\sigma_1 + \sigma_3)/2$
$p'$	mean effective stress $(\sigma'_1 + \sigma'_3)/2$
q	$(\sigma_1 - \sigma_3)/2$ or $(\sigma'_1 - \sigma'_3)/2$
$q_u$	compressive strength $(\sigma_1 - \sigma_3)$
$S_t$	sensitivity

\* Density symbol is  $\rho$ . Unit weight symbol is  $\gamma$  where  $\gamma = \rho g$  (i.e. mass density multiplied by acceleration due to gravity)

Notes: 1  
2

$$\tau = c' + \sigma' \tan \phi'$$

$$\text{shear strength} = (\text{compressive strength})/2$$

# LITHOLOGICAL AND GEOTECHNICAL ROCK DESCRIPTION TERMINOLOGY

## WEATHERINGS STATE

**Fresh:** no visible sign of rock material weathering.

**Faintly weathered:** weathering limited to the surface of major discontinuities.

**Slightly weathered:** penetrative weathering developed on open discontinuity surfaces but only slight weathering of rock material.

**Moderately weathered:** weathering extends throughout the rock mass but the rock material is not friable.

**Highly weathered:** weathering extends throughout rock mass and the rock material is partly friable.

**Completely weathered:** rock is wholly decomposed and in a friable condition but the rock and structure are preserved.

## BEDDING THICKNESS

<u>Description</u>	<u>Bedding Plane Spacing</u>
Very thickly bedded	Greater than 2 m
Thickly bedded	0.6 m to 2 m
Medium bedded	0.2 m to 0.6 m
Thinly bedded	60 mm to 0.2 m
Very thinly bedded	20 mm to 60 mm
Laminated	6 mm to 20 mm
Thinly laminated	Less than 6 mm

## JOINT OR FOLIATION SPACING

<u>Description</u>	<u>Spacing</u>
Very wide	Greater than 3 m
Wide	1 m to 3 m
Moderately close	0.3 m to 1 m
Close	50 mm to 300 mm
Very close	Less than 50 mm

## GRAIN SIZE

<u>Term</u>	<u>Size*</u>
Very Coarse Grained	Greater than 60 mm
Coarse Grained	2 mm to 60 mm
Medium Grained	60 microns to 2 mm
Fine Grained	2 microns to 60 microns
Very Fine Grained	Less than 2 microns

Note: \* Grains greater than 60 microns diameter are visible to the naked eye.

## CORE CONDITION

### Total Core Recovery (TCR)

The percentage of solid drill core recovered regardless of quality or length, measured relative to the length of the total core run.

### Solid Core Recovery (SCR)

The percentage of solid drill core, regardless of length, recovered at full diameter, measured relative to the length of the total core run.

### Rock Quality Designation (RQD)

The percentage of solid drill core, greater than 100 mm length, as measured along the centerline axis of the core, relative to the length of the total core run. RQD varies from 0% for completely broken core to 100% for core in solid segments.

## DISCONTINUITY DATA

### Fracture Index

A count of the number of naturally occurring discontinuities (physical separations) in the rock core. Mechanically induced breaks caused by drilling are not included.

### Dip with Respect to Core Axis

The angle of the discontinuity relative to the axis (length) of the core. In a vertical borehole a discontinuity with a 90° angle is horizontal.

### Description and Notes

An abbreviation description of the discontinuities, whether naturally occurring separations such as fractures, bedding planes and foliation planes and mechanically separated bedding or foliation surfaces. Additional information concerning the nature of fracture surfaces and infillings are also noted.

### Abbreviations

JN Joint	PL Planar
FLT Fault	CU Curved
SH Shear	UN Undulating
VN Vein	IR Irregular
FR Fracture	K Slickensided
SY Stylolite	PO Polished
BD Bedding	SM Smooth
FO Foliation	SR Slightly Rough
CO Contact	RO Rough
AXJ Axial Joint	VR Very Rough
KV Karstic Void	
MB Mechanical Break	

PROJECT: 21451149

# RECORD OF BOREHOLE: 22-109

SHEET 1 OF 2

LOCATION: N 5028410.9 ; E 366670.1

BORING DATE: March 30, 2022

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION		
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	SHEAR STRENGTH				WATER CONTENT PERCENT					
								20 40 60 80		nat V. + Q - rem V. ⊕ U - ○		10 <sup>-6</sup> 10 <sup>-5</sup> 10 <sup>-4</sup> 10 <sup>-3</sup>				Wp  -----  W  -----  Wi	
0		GROUND SURFACE		76.78													
		FILL - (CI/CL) SILTY CLAY; brown, trace organics; cohesive, w-PL, firm		0.00													
		FILL - (SW) gravelly SAND, some silt; grey to brown, contains debris; non-cohesive, moist, compact		76.55	1	SS	19										
				0.23													
1		FILL - (SM/ML) sandy SILT to SILTY SAND, some clay; grey brown; non-cohesive, moist, dense		76.02	2	SS	44										
				0.76													
2		(SM) gravelly SILTY SAND, some clay; grey (GLACIAL TILL); slightly cohesive, moist to wet, very loose to compact		75.26	3	SS	6										
				1.52													
					4	SS	8										
					5	SS	3										
					6	SS	3										
					7	SS	2										
					8	SS	7										
					9	SS	15										
					10	SS	20										
					11	SS	1										
					12	SS	18										
					13	SS	12										
		- Wet below 9.14 m depth															
				67.03													
10	DCPT	Dynamic Cone Penetration Test (DCPT)		9.75													

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MIS-BHS 001 21451149.GPJ GAL-MIS.GDT 6/16/22

DEPTH SCALE

1 : 50



LOGGED: JS

CHECKED: BB

PROJECT: 21451149

# RECORD OF BOREHOLE: 22-109

SHEET 2 OF 2

LOCATION: N 5028410.9 ;E 366670.1

BORING DATE: March 30, 2022

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	SHEAR STRENGTH Cu, kPa		WATER CONTENT PERCENT		WATER CONTENT PERCENT			
								nat V. +	rem V. ⊕	Q - ●	U - ○	Wp	W		
10	DCPT	--- CONTINUED FROM PREVIOUS PAGE --- Dynamic Cone Penetration Test (DCPT)													
11				65.65 11.13											
12		End of Borehole DCPT Refusal													
13															
14															
15															
16															
17															
18															
19															
20															

MIS-BHS 001 21451149.GPJ GAL-MIS.GDT 6/16/22

DEPTH SCALE

1 : 50



LOGGED: JS

CHECKED: BB

PROJECT: 21451149

# RECORD OF BOREHOLE: 22-110

SHEET 1 OF 2

LOCATION: N 5028453.1 ;E 366678.7

BORING DATE: April 1, 2022

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m				WATER CONTENT PERCENT					
							SHEAR STRENGTH Cu, kPa		nat V. + rem V. ⊕ ⊙		10 <sup>-6</sup> 10 <sup>-5</sup> 10 <sup>-4</sup> 10 <sup>-3</sup>		Wp			Wi
0	Power Auger 200 mm Diam. (Hollow Stem)	GROUND SURFACE		75.74												
		TOPSOIL - (ML) sandy SILT, some clay; black, contains organics; moist		0.00	1	SS	2									
		FILL - (SW) gravelly SAND, some silt; dark brown to grey; non-cohesive, moist, very loose to compact		0.08												
1					2	SS	10									
		(GM/SM) SILTY GRAVEL and SAND; grey; non-cohesive, moist to wet, loose		74.22	3	SS	6							○	M	
				1.52												
2					4	SS	4									
		(SM) SILTY SAND, some gravel, trace to some low plasticity fines; grey, contains cobbles and boulders (GLACIAL TILL); moist to wet, loose to dense		72.84	5	SS	28							○		
				2.90												
3					6	SS	6							○	M	
					7	SS	8									
4					8	SS	5									
					9	SS	7									
5				10	SS	13										
				11	SS	37										
6				12	SS	28										
				13	SS	28										
7																
8																
9																
10	DCPT	Dynamic Cone Penetration Test (DCPT)		65.99												
				9.75												

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MIS-BHS 001 21451149.GPJ GAL-MIS.GDT 6/16/22

DEPTH SCALE

1 : 50



LOGGED: KG

CHECKED: BB

PROJECT: 21451149

# RECORD OF BOREHOLE: 22-110

SHEET 2 OF 2

LOCATION: N 5028453.1 ;E 366678.7

BORING DATE: April 1, 2022

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	SHEAR STRENGTH Cu, kPa		WATER CONTENT PERCENT					
								20	40	60	80	10 <sup>-6</sup>	10 <sup>-5</sup>		
10		-- CONTINUED FROM PREVIOUS PAGE --													
		Dynamic Cone Penetration Test (DCPT)													
		End of Borehole DCPT Refusal		65.53 10.21											
11															
12															
13															
14															
15															
16															
17															
18															
19															
20															

MIS-BHS 001 21451149.GPJ GAL-MIS.GDT 6/16/22

DEPTH SCALE

1 : 50



LOGGED: KG

CHECKED: BB

PROJECT: 21451149

# RECORD OF BOREHOLE: 22-111

SHEET 1 OF 1

LOCATION: N 5028484.1 ;E 366691.3

BORING DATE: March 29, 2022

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION		
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	SHEAR STRENGTH				WATER CONTENT PERCENT					
								20 40 60 80		nat V. + Q - rem V. ⊕ U - ⊙		10 <sup>-6</sup> 10 <sup>-5</sup> 10 <sup>-4</sup> 10 <sup>-3</sup>				Wp  -----  W  -----  Wl	
0		GROUND SURFACE		75.13													
		TOPSOIL - (ML) sandy SILT, some clay; black, contains organics; non-cohesive, moist		0.00 0.08	1	SS	13										
		FILL - (SW) gravelly SAND, some silt; dark grey, contains bricks; non-cohesive, moist, compact		74.52 0.61													
1		FILL - (SP/SM) SAND, fine, some silt to silty, trace to some clay; dark grey; non-cohesive, moist, compact			2	SS	19										
		(CH) CLAY; brown, mottled, fissured (WEATHERED CRUST); cohesive, w<PL, firm to stiff		73.76 1.37	3	SS	8							MH			
2		(CL) SILTY CLAY, trace gravel; brown, mottled (WEATHERED CRUST); cohesive moist to wet, soft		73.00 2.13	4	SS	3							M			
3	Power Auger 200 mm Diam. (Hollow Stem)	(ML/SM) sandy SILT to SILTY SAND, some clay, some gravel; brown (GLACIAL TILL); slightly cohesive, moist to wet, compact		72.23 2.90	5	SS	14										
4					6	SS	16										
5					7	SS	18										
		End of Borehole		69.95 5.18													

MIS-BHS 001 21451149.GPJ GAL-MIS.GDT 6/16/22

DEPTH SCALE

1 : 50



LOGGED: JS

CHECKED: BB

PROJECT: 21451149

# RECORD OF BOREHOLE: 22-112

SHEET 1 OF 1

LOCATION: N 5028510.1 ;E 366728.4

BORING DATE: March 29, 2022

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	SHEAR STRENGTH				WATER CONTENT PERCENT					
								Cu, kPa		nat V. + rem V. ⊕	Q - U - ⊙	Wp		W			Wi
0		GROUND SURFACE		73.59													
		TOPSOIL - (SM) SILTY SAND, trace clay, trace gravel; dark brown; non-cohesive, moist		73.29	1	SS	17										
		FILL - (SP) SAND, fine; grey to brown; non-cohesive, moist, compact		72.98													
		(CH) CLAY, some to trace sand; brown (WEATHERED CRUST); cohesive, w<PL, soft to stiff		0.61													
1					2	SS	8										
2	Power Auger 200 mm Diam. (Hollow Stem)																
		(CL-ML) SILTY CLAY to CLAYEY SILT, some sand; brown; cohesive, w>PL, wet, soft		71.30													
				2.29	4	SS	3									MH	
3		(ML) sandy SILT, some clay, some gravel; brown (GLACIAL TILL); slightly cohesive, wet, compact		70.69													
				2.90													
4		End of Borehole		69.80													
				3.79													
5																	
6																	
7																	
8																	
9																	
10																	

MIS-BHS 001 21451149.GPJ GAL-MIS.GDT 6/16/22

DEPTH SCALE

1 : 50



LOGGED: JS

CHECKED: BB



PROJECT: 21451149

# RECORD OF BOREHOLE: 22-112A

SHEET 1 OF 2

LOCATION: N 5028510.1 ;E 366728.4

BORING DATE: March 31, 2021

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION		
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	SHEAR STRENGTH Cu, kPa				WATER CONTENT PERCENT					
								20	40	60	80	nat V. +	rem V. ⊕			Q - ●	U - ○
0		GROUND SURFACE		73.59													
		For soil stratigraphy refer to Record of Borehole 22-112		0.00													
1																	
2																	
3																	
4																	
		Borehole continued on RECORD OF DRILLHOLE 22-112A		69.58													
5																	
6																	
7																	
8																	
9																	
10																	

MIS-BHS 001 21451149.GPJ GAL-MIS.GDT 6/16/22

DEPTH SCALE

1 : 50



LOGGED: JS

CHECKED: BB

PROJECT: 21451149

# RECORD OF DRILLHOLE: 22-112A

SHEET 2 OF 2

LOCATION: N 5028510.1 ;E 366728.4

DRILLING DATE: March 31, 2021

DATUM: NAD 1983

INCLINATION: -90° AZIMUTH: ---

DRILL RIG: CME 75

DRILLING CONTRACTOR: Downing Drilling

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	COLOUR % RETURN	RECOVERY			FRACT. INDEX PER 0.25 m	DIP w.r.t. CORE AXIS	DISCONTINUITY DATA			HYDRAULIC CONDUCTIVITY			Diametral Point Load Index (MPa)	RMC -Q' AVG.
							TOTAL CORE %	SOLID CORE %	R.Q.D. %			TYPE AND SURFACE DESCRIPTION			K, cm/sec				
							FLUSH	RECOVERY	R.Q.D.			Jo	on	Jr	Ja	10	5		
		BEDROCK SURFACE		69.58															
		Fresh, thinly bedded, grey to dark grey, fine to medium grained, slightly porous, strong LIMESTONE bedrock with shale interbedded		4.01	1														
5																			
6	Rotary Drill NQ Core				2														
7					3														
		End of Drillhole		65.74														UCS = 108 MPa	
8				7.85															
9																			
10																			
11																			
12																			
13																			
14																			

MIS-RCK 004 21451149.GPJ GAL-MISS.GDT 6/16/22

DEPTH SCALE

1 : 50



LOGGED: JS

CHECKED: BB

PROJECT: 21451149

# RECORD OF BOREHOLE: 22-113

SHEET 1 OF 2

LOCATION: N 5028442.6 ;E 366704.3

BORING DATE: March 30-31, 2021

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	SHEAR STRENGTH Cu, kPa				WATER CONTENT PERCENT					
								20	40	60	80	nat V. +	Q -	rem V. ⊕			U -
0		GROUND SURFACE		76.05													
		FILL - (CI/CL) SILTY CLAY; brown, contains organics; cohesive, w-PL, firm		0.00													
		FILL - (SW) SAND, some to trace clay and silt, some gravel, some asphalt; brown; non-cohesive, moist, compact		0.13	1	SS	12										
1		FILL - (ML) CLAYEY SILT, some sand, some gravel; grey; cohesive, stiff		74.98	2	SS	7										
		(SM) gravelly SILTY SAND, some clay; brown (GLACIAL TILL); slightly cohesive, wet, compact to loose		1.07													
		(SM) gravelly SILTY SAND, some clay; brown (GLACIAL TILL); slightly cohesive, wet, compact to loose		74.53	3	SS	14										
2		(SM) gravelly SILTY SAND, some clay; grey brown (GLACIAL TILL); slightly cohesive, wet, compact to loose		1.52													
		(SM) gravelly SILTY SAND, some clay; grey brown (GLACIAL TILL); slightly cohesive, wet, compact to loose		73.31	4	SS	5										
3		(SM) gravelly SILTY SAND, some clay; grey brown (GLACIAL TILL); slightly cohesive, wet, compact to loose		2.74													
		(SM) gravelly SILTY SAND, some clay; grey brown (GLACIAL TILL); slightly cohesive, wet, compact to loose		73.31	5	SS	7										
4	Power Auger 200 mm Diam. (Hollow Stem)	(SM) gravelly SILTY SAND, some clay; grey brown (GLACIAL TILL); slightly cohesive, wet, compact to loose		73.31	6	SS	9										
		(SM) gravelly SILTY SAND, some clay; grey brown (GLACIAL TILL); slightly cohesive, wet, compact to loose		73.31	7	SS	10										
5		(SM/ML) SILTY SAND to sandy SILT, some clay, some gravel; grey (GLACIAL TILL); slightly cohesive, loose to compact		70.87													
		(SM/ML) SILTY SAND to sandy SILT, some clay, some gravel; grey (GLACIAL TILL); slightly cohesive, loose to compact		5.18	8	SS	14										
6		(SM/ML) SILTY SAND to sandy SILT, some clay, some gravel; grey (GLACIAL TILL); slightly cohesive, loose to compact		70.87	9	SS	14										
		(SM/ML) SILTY SAND to sandy SILT, some clay, some gravel; grey (GLACIAL TILL); slightly cohesive, loose to compact		70.87	10	SS	9										
7		(SM/ML) SILTY SAND to sandy SILT, some clay, some gravel; grey (GLACIAL TILL); slightly cohesive, loose to compact		70.87	11	SS	10										
8		(SM/ML) SILTY SAND to sandy SILT, some clay, some gravel; grey (GLACIAL TILL); slightly cohesive, loose to compact		70.87													
		(SM/ML) SILTY SAND to sandy SILT, some clay, some gravel; grey (GLACIAL TILL); slightly cohesive, loose to compact		70.87													
9		Borehole continued on RECORD OF DRILLHOLE 22-113		67.69													
		Borehole continued on RECORD OF DRILLHOLE 22-113		8.36													

MIS-BHS 001 21451149.GPJ GAL-MIS.GDT 6/16/22

DEPTH SCALE

1 : 50



LOGGED: JS

CHECKED: BB

PROJECT: 21451149

# RECORD OF DRILLHOLE: 22-113

SHEET 2 OF 2

LOCATION: N 5028442.6 ; E 366704.3

DRILLING DATE: March 30-31, 2021

DATUM: NAD 1983

INCLINATION: -90° AZIMUTH: ---

DRILL RIG: CME 75

DRILLING CONTRACTOR: Downing Drilling

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	FLUSH	COLOUR % RETURN	RECOVERY		R.Q.D. %	FRACT. INDEX PER 0.25 m	DIP w.r.t. CORE AXIS	DISCONTINUITY DATA			HYDRAULIC CONDUCTIVITY			Diametral Point Load Index (MPa)	RMC -Q' AVG.
								TOTAL CORE %	SOLID CORE %				TYPE AND SURFACE DESCRIPTION			K, cm/sec				
								JOON	JR				JA	10	5	10	10	2		
		BEDROCK SURFACE		67.69																
		Fresh to Slightly weathered, thinly to medium bedded, grey to dark grey, slightly porous, strong LIMESTONE with shale interbedded		8.36																
9					1															
10	Relay Drill NQ Core				2															
11					3															
12		End of Drillhole		63.87																
				12.18																
13																				
14																				
15																				
16																				
17																				
18																				

UCS = 107 MPa

MIS-RCK 004 21451149.GPJ GAL-MISS.GDT 6/16/22



PROJECT: 21451149

# RECORD OF BOREHOLE: 22-301

SHEET 1 OF 4

LOCATION: N 5028264.4 ;E 366704.1

BORING DATE: March 3, 2022

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	SHEAR STRENGTH				WATER CONTENT PERCENT					
								20 40 60 80		nat V. + Q - rem V. ⊕ U - ○		10 <sup>-6</sup> 10 <sup>-5</sup> 10 <sup>-4</sup> 10 <sup>-3</sup>		Wp  -----  W  -----  WI			
0		GROUND SURFACE		84.60													
		TOPSOIL - (SM) SILTY SAND, some plastic fines; brown, contains organic matter (rootlets); non-cohesive, moist, loose		84.30 0.30	1	SS	6										
1		FILL - (SM) SILTY SAND, some plastic fines, trace gravel; brown, mottled; white/grey and black; non-cohesive, moist, loose			2	SS	8										
		FILL - (SM) SILTY SAND; brown, mottled black and grey, contains large gravel seams; non-cohesive, moist, compact to dense		83.23 1.37	3	SS	18										
2					4	SS	33										
3		(SM) gravelly SILTY SAND; brown to grey, possible cobbles and boulders (GLACIAL TILL); non-cohesive, moist to wet, loose to very dense		81.55 3.05	5	SS	16										
4					6	SS	15										
5	Wash Bore NWINQ Casing				7	SS	10										
6					8	SS	16										
7					9	SS	33										
					10	SS	15										
8					11	SS	9										
					12	SS	9										
9					13	SS	20										
10					14	SS	26										

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MIS-BHS 001 21451149.GPJ GAL-MIS.GDT 6/16/22

DEPTH SCALE

1 : 50



LOGGED: JS

CHECKED: BB

PROJECT: 21451149

# RECORD OF BOREHOLE: 22-301

SHEET 2 OF 4

LOCATION: N 5028264.4 ; E 366704.1

BORING DATE: March 3, 2022

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION		
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	SHEAR STRENGTH Cu, kPa				WATER CONTENT PERCENT						
							20	40	60	80	10 <sup>-6</sup>	10 <sup>-5</sup>	10 <sup>-4</sup>			10 <sup>-3</sup>	
10	Wash Bore NWING Casing	-- CONTINUED FROM PREVIOUS PAGE -- (SM) gravelly SILTY SAND; brown to grey, possible cobbles and boulders (GLACIAL TILL); non-cohesive, moist to wet, loose to very dense			14	SS	26										
11				15	SS	6											
12				16	SS	9											
13				17	SS	30											
14				18	SS	60											
15				19	SS	10											
16				20	SS	17											
17				21	SS	17											
18				22	SS	47											
19				23	SS	>50											
20				24	SS	>50											
			(SM) SILTY SAND, some clay and gravel; grey, contains cobbles and boulders (GLACIAL TILL); non-cohesive, wet, very dense		66.31 18.29												
			CONTINUED NEXT PAGE														

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MIS-BHS 001 21451149.GPJ GAL-MIS.GDT 6/16/22

DEPTH SCALE

1 : 50



LOGGED: JS

CHECKED: BB

PROJECT: 21451149

# RECORD OF BOREHOLE: 22-301

SHEET 3 OF 4

LOCATION: N 5028264.4 ; E 366704.1

BORING DATE: March 3, 2022

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	SHEAR STRENGTH				WATER CONTENT PERCENT					
							20 40 60 80		nat V. + Q - rem V. ⊕ U - ○		10 <sup>-6</sup> 10 <sup>-5</sup> 10 <sup>-4</sup> 10 <sup>-3</sup>		Wp  -----  W  -----  WI			
20	Wash Bore NW/NQ Casing	-- CONTINUED FROM PREVIOUS PAGE --														
		(SM) SILTY SAND, some clay and gravel; grey, contains cobbles and boulders (GLACIAL TILL); non-cohesive, wet, very dense														
21				25	SS	>50										
22				26	SS	>50										
23			No Recovery Possible (SM) SILTY SAND, with cobbles and boulders (GLACIAL TILL); very dense	61.89 22.71												
24				27	SS	>50										
25				28	SS	>50										
26			(ML/SM) sandy SILT to SILTY SAND, some clay and gravel; grey, contains cobbles and boulders (GLACIAL TILL); slightly cohesive, moist, very dense	58.39 26.24												
27				29	SS	58										
28				30	SS	>50										
29			31	SS	51											
30		CONTINUED NEXT PAGE														

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MIS-BHS 001 21451149.GPJ GAL-MIS.GDT 6/16/22

DEPTH SCALE

1 : 50



LOGGED: JS

CHECKED: BB

PROJECT: 21451149

# RECORD OF BOREHOLE: 22-301

SHEET 4 OF 4

LOCATION: N 5028264.4 ;E 366704.1

BORING DATE: March 3, 2022

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	SHEAR STRENGTH Cu, kPa				WATER CONTENT PERCENT					
							20	40	60	80	10 <sup>-6</sup>	10 <sup>-5</sup>	10 <sup>-4</sup>			10 <sup>-3</sup>
30	Wash Bore NW/NO Casing	-- CONTINUED FROM PREVIOUS PAGE -- (ML/SM) sandy SILT to SILTY SAND, some clay and gravel; grey, contains cobbles and boulders (GLACIAL TILL); slightly cohesive, moist, very dense		53.20 31.4	31	SS	51									
31		Borehole continued on RECORD OF DRILLHOLE 22-301														
32																
33																
34																
35																
36																
37																
38																
39																
40																

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MIS-BHS 001 21451149.GPJ GAL-MIS.GDT 6/16/22



PROJECT: 21451149

# RECORD OF DRILLHOLE: 22-301

SHEET 4 OF 4

LOCATION: N 5028264.4 ; E 366704.1

DRILLING DATE: March 3, 2022

DATUM: NAD 1983

INCLINATION: -90° AZIMUTH: ---

DRILL RIG: CME 75

DRILLING CONTRACTOR: Downing Drilling

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	FLUSH	COLOUR	% RETURN	RECOVERY		R.Q.D. %	FRACT. INDEX PER 0.25 m	DIP w.r.t. CORE AXIS	DISCONTINUITY DATA		HYDRAULIC CONDUCTIVITY			Diametral Point Load Index (MPa)	RMC -Q' AVG.
									TOTAL CORE %	SOLID CORE %				TYPE AND SURFACE DESCRIPTION		Joon	Jr	Ja		
									Ⓢ	Ⓢ				Ⓢ	Ⓢ	Ⓢ	Ⓢ	Ⓢ		
		BEDROCK SURFACE		53.20																
		Moderately weathered, thinly to medium bedded, grey to dark grey, medium to fine grained, slightly porous, medium strong LIMESTONE with shale interbedded		31.40	1															
32																				
33					2															
34	Rotary Drill NQ Core																			
35					3															
36		End of Drillhole		49.24 35.36																
37																				
38																				
39																				
40																				
41																				

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MIS-RCK 004 21451149.GPJ GAL-MISS.GDT 6/16/22

DEPTH SCALE

1 : 50



LOGGED: JS

CHECKED: BB

PROJECT: 21451149

# RECORD OF BOREHOLE: 22-302

SHEET 1 OF 4

LOCATION: N 5028297.1 ; E 366679.0

BORING DATE: May 3 & 4, 2022

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	SHEAR STRENGTH				WATER CONTENT PERCENT					
								Cu, kPa		nat V. rem V.		+ Q - U		Wp			W
0		GROUND SURFACE		83.23													
		TOPSOIL - (SM/ML) SILTY SAND to sandy SILT, some clay; reddish dark brown, contains organics; non-cohesive, moist, loose		0.00													
		FILL - (SP) SAND, fine to medium; brown, mottled orange; non-cohesive, moist, loose		0.25	1	SS	5										
		(SW/SM) SAND to SILTY SAND, some clay and gravel; brown, contains cobbles and boulders (GLACIAL TILL); non-cohesive, moist, compact		0.61													
1					2	SS	23										
2																	
3					3	SS	21										
4		(SM/SW) SILTY SAND to SAND, some clay and gravel; grey brown to grey, contains cobbles and boulders (GLACIAL TILL); non-cohesive, wet, compact		3.81													
5	Wash Bore HW/HQ Casing																
6					5	SS	22										
7																	
8																	
9					6	SS	10										
10																	

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MIS-BHS 001 21451149.GPJ GAL-MIS.GDT 6/16/22

DEPTH SCALE

1 : 50



LOGGED: JS

CHECKED: BB

PROJECT: 21451149

# RECORD OF BOREHOLE: 22-302

SHEET 2 OF 4

LOCATION: N 5028297.1 ;E 366679.0

BORING DATE: May 3 & 4, 2022

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	SHEAR STRENGTH Cu, kPa				WATER CONTENT PERCENT					
							20	40	60	80	nat V. +	rem V. ⊕	Q - ●			U - ○
10	Wash Bore HW/HQ Casing	-- CONTINUED FROM PREVIOUS PAGE --														
		(SM/SW) SILTY SAND to SAND, some clay and gravel; grey brown to grey, contains cobbles and boulders (GLACIAL TILL); non-cohesive, wet, compact														
11		(SM/SW) SILTY SAND to SAND, some clay, silt and gravel; grey brown to grey, contains cobbles and boulders (GLACIAL TILL); non-cohesive, wet, very dense		72.26												
				10.97												
12					7	SS	>50									
13																
14																
15						8	SS	>50								
16																
17																
18					9	SS	>50									
19																
20																
		CONTINUED NEXT PAGE														

DRAFT

MIS-BHS 001 21451149.GPJ GAL-MIS.GDT 6/16/22

DEPTH SCALE

1 : 50



LOGGED: JS

CHECKED: BB

PROJECT: 21451149

# RECORD OF BOREHOLE: 22-302

SHEET 3 OF 4

LOCATION: N 5028297.1 ; E 366679.0

BORING DATE: May 3 & 4, 2022

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	SHEAR STRENGTH				WATER CONTENT PERCENT					
							20 40 60 80		nat V. + Q - rem V. ⊕ U - ●		10 <sup>-6</sup> 10 <sup>-5</sup> 10 <sup>-4</sup> 10 <sup>-3</sup>		Wp  -----  W  -----  WI			
20	Wash Bore HW/HC Casing	-- CONTINUED FROM PREVIOUS PAGE -- (SM/SW) SILTY SAND to SAND, some clay, silt and gravel; grey brown to grey, contains cobbles and boulders (GLACIAL TILL); non-cohesive, wet, very dense														
21				10	SS	>50										
22																
23																
24																
25																
26																
27				56.08 27.15	12	SS	>50									
28		Borehole continued on RECORD OF DRILLHOLE 22-302														
29																
30																

DRAFT

MIS-BHS 001 21451149.GPJ GAL-MIS.GDT 6/16/22

DEPTH SCALE

1 : 50



LOGGED: JS

CHECKED: BB

PROJECT: 21451149

# RECORD OF DRILLHOLE: 22-302

SHEET 4 OF 4

LOCATION: N 5028297.1 ; E 366679.0

DRILLING DATE: May 3 & 4, 2022

DATUM: NAD 1983

INCLINATION: -90° AZIMUTH: ---

DRILL RIG: CME 75

DRILLING CONTRACTOR: Downing Drilling

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	COLOUR % RETURN		RECOVERY			R.Q.D. %	FRACT. INDEX PER 0.25 m	DIP W.R.L. CORE AXIS	DISCONTINUITY DATA				ROCK STRENGTH INDEX				WEATHERING INDEX				Q. AVG.			
						FLUSH	COR	TOTAL CORE %	SOLID CORE %	TYPE AND SURFACE DESCRIPTION				Joon	Jr	Ja	R4	R3	R2	R1	W1	W2	W3	W4					
																									NOTE: For additional abbreviations refer to list of abbreviations & symbols.				
		BEDROCK SURFACE		56.08																									
	Rotary Drill HQ Core	Slightly to moderately weathered, medium bedded, grey to dark grey, fine to medium grained, slightly to non-porous, weak to medium strong LIMESTONE, with laminations of shale		27.15	1																								
		End of Drillhole		54.56																									
28				28.67																									
29																													
30																													
31																													
32																													
33																													
34																													
35																													
36																													
37																													

DRAFT

MIS-RCK 004 21451149.GPJ GAL-MISS.GDT 6/16/22

DEPTH SCALE

1 : 50



LOGGED: JS

CHECKED: BB

PROJECT: 21451149

# RECORD OF BOREHOLE: 22-303

SHEET 1 OF 3

LOCATION: N 5028341.5 ; E 366652.0

BORING DATE: April 5, 2022

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	SHEAR STRENGTH				WATER CONTENT PERCENT					
								20 40 60 80		nat V. + Q - rem V. ⊕ U - ⊙		10 <sup>-6</sup> 10 <sup>-5</sup> 10 <sup>-4</sup> 10 <sup>-3</sup>		Wp  -----  W  -----  WI			
0		GROUND SURFACE		80.57													
		TOPSOIL - (ML/CL) SILTY CLAY to CLAYEY SILT, trace sand; brown, contains organic matter; slightly cohesive		0.00 0.10	1	SS	8										
1		FILL - (ML/CL) CLAYEY SILT to SILTY CLAY, trace sand; brown; slightly cohesive, w<PL, firm to stiff			2	SS	8										
2					3	SS	10										
3		(ML/SM) sandy SILT to SILTY SAND, with to some clay, some gravel; brown (GLACIAL TILL); slightly cohesive, wet, loose to dense		78.13 2.44	4	SS	8										
4					5	SS	28										
5					6	SS	25										
6					7	SS	51										
7					8	SS	30										
8					9	SS	12										
9					10	SS	23										
10					11	SS	20										

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MIS-BHS 001 21451149.GPJ GAL-MIS.GDT 6/16/22

DEPTH SCALE

1 : 50



LOGGED: JS

CHECKED: BB

PROJECT: 21451149

# RECORD OF BOREHOLE: 22-303

SHEET 2 OF 3

LOCATION: N 5028341.5 ;E 366652.0

BORING DATE: April 5, 2022

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	SHEAR STRENGTH				WATER CONTENT PERCENT					
							20 40 60 80		nat V. + Q - rem V. ⊕ U - ⊙		10 <sup>-6</sup> 10 <sup>-5</sup> 10 <sup>-4</sup> 10 <sup>-3</sup>		Wp  -----  W  -----  WI			
10	Wash Boring HW Casing	-- CONTINUED FROM PREVIOUS PAGE -- (SM) SILTY SAND, some clay, some gravel; grey, contains cobbles and goulders (GLACIAL TILL); non-cohesive, wet, compact to very dense														
11				12	SS	83										
12																
13					13	SS	>100									
14					14	SS	>50									
15					15	SS	48									
17		Borehole continued on RECORD OF DRILLHOLE 22-303		63.55	16	SS	>50									
18				17.02												
19																
20																

DRAFT

MIS-BHS 001 21451149.GPJ GAL-MIS.GDT 6/16/22

DEPTH SCALE

1 : 50



LOGGED: JS

CHECKED: BB

PROJECT: 21451149

# RECORD OF DRILLHOLE: 22-303

SHEET 3 OF 3

LOCATION: N 5028341.5 ;E 366652.0

DRILLING DATE: April 5, 2022

DATUM: NAD 1983

INCLINATION: -90° AZIMUTH: ---

DRILL RIG: CME 75

DRILLING CONTRACTOR: Downing Drilling

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	FLUSH	COLOUR % RETURN	RECOVERY		R.Q.D. %	FRACT. INDEX PER 0.25 m	DIP w.r.t. CORE AXIS	DISCONTINUITY DATA			HYDRAULIC CONDUCTIVITY			Diametral Point Load Index (MPa)	RMC -Q' AVG.
								TOTAL CORE %	SOLID CORE %				TYPE AND SURFACE DESCRIPTION			K, cm/sec				
								JOON	JR				JA	10	5	10	10	2		
		BEDROCK SURFACE		63.55																
		Slightly weathered to fresh, thinly to medium bedded, fine grained, slightly porous, strong LIMESTONE with shale interbedded		17.02	1															
18					2															
19					3															
20	Rotary Drill NQ Core	End of Drillhole		60.35																
				20.22																
21																				
22																				
23																				
24																				
25																				
26																				
27																				

DRAFT

MIS-RCK 004 21451149.GPJ GAL-MISS.GDT 6/16/22

DEPTH SCALE

1 : 50



LOGGED: JS

CHECKED: BB



PROJECT: 21451149

# RECORD OF BOREHOLE: 22-304

SHEET 1 OF 2

LOCATION: N 5028379.9 ; E 366670.3

BORING DATE: May 6, 2022

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m				WATER CONTENT PERCENT					
							SHEAR STRENGTH Cu, kPa		nat V. + rem V. ⊕ ⊙		10 <sup>-6</sup> 10 <sup>-5</sup> 10 <sup>-4</sup> 10 <sup>-3</sup>		Wp			W
0		GROUND SURFACE		77.64												
		TOPSOIL - (ML) CLAYEY SILT, some sand; dark brown, contains organics; cohesive		0.00	1A	SS										
		FILL - (ML/CL) CLAYEY SILT to SILTY CLAY, some sand and gravel; brown, fissured; cohesive, w<PL stiff		0.10	1B	SS	4									
		(ML/CL) CLAYEY SILT to SILTY CLAY; brown; cohesive, w<PL, stiff		77.03												
		(SM) SILTY SAND, some clay and gravel; brown to brown grey (GLACIAL TILL); non-cohesive, moist, compact		0.61												
1		(ML/CL) CLAYEY SILT to SILTY CLAY; brown; cohesive, w<PL, stiff		76.73	2A	SS										
		(SM) SILTY SAND, some clay and gravel; brown to brown grey (GLACIAL TILL); non-cohesive, moist, compact		0.91	2B	SS	12									
		(SW/SM) SAND, some silt to SILTY SAND, some clay and gravel; grey, contains cobbles and boulders (GLACIAL TILL); non-cohesive, moist, loose to compact		76.12												
				1.52												
2					3	SS	17									
					4	SS	20									
3					5	SS	19									
					6	SS	19									
4					7	SS	9									
					8	SS	7									
5					9	SS	5									
					10	SS	7									
6					11	SS	15									
7																
8																
9																
10																

- wet from about 4.7 m depth

Power Auger  
200 mm Diam. (Hollow Stem)

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DRAFT

MIS-BHS 001 21451149.GPJ GAL-MIS.GDT 6/16/22

PROJECT: 21451149

# RECORD OF BOREHOLE: 22-304

SHEET 2 OF 2

LOCATION: N 5028379.9 ;E 366670.3

BORING DATE: May 6, 2022

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	SHEAR STRENGTH Cu, kPa				WATER CONTENT PERCENT					
							20	40	60	80	nat V. +	rem V. ⊕	Q - ●			U - ○
10	Power Auger 200 mm Diam. (Hollow Stem)	-- CONTINUED FROM PREVIOUS PAGE -- (SW/SM) SAND, some silt to SILTY SAND, some clay and gravel; grey, contains cobbles and boulders (GLACIAL TILL); non-cohesive, moist, loose to compact		66.87 10.77	12	SS	47	20	40	60	80	10 <sup>-6</sup>	10 <sup>-5</sup>	10 <sup>-4</sup>	10 <sup>-3</sup>	
11		- Becomes dense from 10.70 m depth (SW) SAND, some silt; grey; non-cohesive, wet, dense						20	40	60	80	20	40	60	80	
12		Dynamic Cone Penetration Test (DCPT)		65.44 12.20												
13		End of Borehole DCPT Refusal		64.61 13.03												
14																
15																
16																
17																
18																
19																
20																

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MIS-BHS 001 21451149.GPJ GAL-MIS.GDT 6/16/22

DEPTH SCALE

1 : 50



LOGGED: JS

CHECKED: BB

PROJECT: 21451149

# RECORD OF BOREHOLE: 22-305

SHEET 1 OF 2

LOCATION: N 5028359.6 ;E 366683.8

BORING DATE: May 6, 2022

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	SHEAR STRENGTH				WATER CONTENT PERCENT					
								20 40 60 80		nat V. + Q - rem V. ⊕ U - ⊙		10 <sup>-6</sup> 10 <sup>-5</sup> 10 <sup>-4</sup> 10 <sup>-3</sup>		Wp  -----  W  -----  Wl			
0		GROUND SURFACE		78.37													
		TOPSOIL/FILL - (SM/ML) SILTY SAND to SAND, some silt and clay; dark brown, mottled, contains organics; moist, loose		0.00	1	SS	9										
1		FILL - (SM/SW) SILTY SAND to SAND, some silt, clay and gravel; brown, mottled; non-cohesive, moist, compact		77.76 0.61	2	SS	24										
2		(SM/SW) SILTY SAND to SAND, some silt, clay and gravel; grey, contains cobbles and boulders (GLACIAL TILL); moist to wet, loose to compact		76.85 1.52	3	SS	9										
3					4	SS	13										
4					5	SS	5										
5	Power Auger 200 mm Diam. (Hollow Stem)	(SM/SW) SILTY SAND to SAND, some silt, clay and gravel; grey, contains cobbles and boulders (GLACIAL TILL); wet, compact to very dense		73.19 5.18	6	SS	20										
6					7	SS	12										
7					8	SS	52										
8																	
9																	
10																	

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MIS-BHS 001 21451149.GPJ GAL-MIS.GDT 6/16/22

DEPTH SCALE

1 : 50



LOGGED: JS

CHECKED: BB

PROJECT: 21451149

# RECORD OF BOREHOLE: 22-305

SHEET 2 OF 2

LOCATION: N 5028359.6 ;E 366683.8

BORING DATE: May 6, 2022

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	SHEAR STRENGTH				WATER CONTENT PERCENT					
							20 40 60 80		nat V. + Q - rem V. ⊕ U - ○		10 <sup>-6</sup> 10 <sup>-5</sup> 10 <sup>-4</sup> 10 <sup>-3</sup>		Wp  -----  W  -----  WI			
10	Power Auger 200 mm Diam. (Hollow Stem)	--- CONTINUED FROM PREVIOUS PAGE --- (SM/SW) SILTY SAND to SAND, some silt, clay and gravel; grey, contains cobbles and boulders (GLACIAL TILL); wet, compact to very dense		67.70 10.67												
11		Dynamic Cone Penetration Test (DCPT)														
12																
13																
14		End of Borehole DCPT Refusal		64.73 13.64												
15																
16																
17																
18																
19																
20																

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MIS-BHS 001 21451149.GPJ GAL-MIS.GDT 6/16/22

DEPTH SCALE

1 : 50



LOGGED: JS

CHECKED: BB

PROJECT: 21451149

# RECORD OF BOREHOLE: 22-306

SHEET 1 OF 3

LOCATION: N 5028318.0 ; E 366714.1

BORING DATE: March 24 & 25, 2022

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	SHEAR STRENGTH				WATER CONTENT PERCENT					
							20 40 60 80		nat V. + Q - rem V. ⊕ U - ○		10 <sup>-6</sup> 10 <sup>-5</sup> 10 <sup>-4</sup> 10 <sup>-3</sup>		Wp  -----  W  -----  WI			
0	Wash Bore HWHQ Casing	GROUND SURFACE		82.80												
		TOPSOIL - (SM) SILTY SAND, some clay; dark brown, contains organics; non-cohesive, wet, loose		82.34	1	SS	4									
1		FILL - (SM/SW) SILTY SAND to SAND, some silt, clay, and gravel; brown, slightly mottled; non-cohesive, wet, very loose		81.28	2	SS	3									
2		(SM/SW) SILTY SAND to SAND, some clay, silt and gravel; brown, contains cobbles and boulders (GLACIAL TILL); non-cohesive, moist to wet, compact to very dense		1.52	3	SS	18									
					4	SS	54									
3					5	SS	15									
4					6	SS	16									
5					7	SS	18									
6					8	SS	>50									
7		(SM/SW) SILTY SAND to SAND, some clay, silt, and gravel; grey (GLACIAL TILL); non-cohesive to slightly cohesive, wet, loose to compact		76.09	9	SS	23									
				6.71												
				10	SS	3										
9				11	SS	10										
10																

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DEPTH SCALE

1 : 50

LOGGED: JS

CHECKED: BB

MIS-BHS 001 21451149.GPJ GAL-MIS.GDT 6/16/22

PROJECT: 21451149

# RECORD OF BOREHOLE: 22-306

SHEET 2 OF 3

LOCATION: N 5028318.0 ; E 366714.1

BORING DATE: March 24 & 25, 2022

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	SHEAR STRENGTH				WATER CONTENT PERCENT					
								20 40 60 80		nat V. + Q - rem V. ⊕ U - ⊙		10 <sup>-6</sup> 10 <sup>-5</sup> 10 <sup>-4</sup> 10 <sup>-3</sup>		Wp  -----  W  -----  WI			
10	Wash Bore HW/HQ Casing	-- CONTINUED FROM PREVIOUS PAGE -- (SM/SW) SILTY SAND to SAND, some clay, silt, and gravel; grey (GLACIAL TILL); non-cohesive to slightly cohesive, wet, loose to compact - dense															
11			(SM/SW) SILTY SAND to SAND, some clay and gravel; grey (GLACIAL TILL); non-cohesive, wet, compact to very dense	71.83 10.97	12	SS	32										
12					13	SS	>50										
13																	
14					14	SS	29										
15					15	SS	>80										
16																	
17				16	SS	27											
18		Borehole continued on RECORD OF DRILLHOLE 22-306		65.22 17.58													
19																	
20																	

DRAFT

MIS-BHS 001 21451149.GPJ GAL-MIS.GDT 6/16/22

DEPTH SCALE

1 : 50



LOGGED: JS

CHECKED: BB

PROJECT: 21451149

# RECORD OF DRILLHOLE: 22-306

SHEET 3 OF 3

LOCATION: N 5028318.0 ; E 366714.1

DRILLING DATE: March 24 & 25, 2022

DATUM: NAD 1983

INCLINATION: -90° AZIMUTH: ---

DRILL RIG: CME 75

DRILLING CONTRACTOR: Downing Drilling

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	COLOUR % RETURN	RECOVERY		FRACT. INDEX PER 0.25 m	DIP w.r.t. CORE AXIS	DISCONTINUITY DATA			HYDRAULIC CONDUCTIVITY			Diametral Point Load Index (MPa)	RMC -Q' AVG.
							TOTAL CORE %	SOLID CORE %			TYPE AND SURFACE DESCRIPTION			K, cm/sec				
							FLUSH	NON-FLUSH			Ir	Jr	Ja	10 <sup>0</sup>	10 <sup>1</sup>	10 <sup>2</sup>		
		BEDROCK SURFACE		65.22														
18		Moderately weathered to fresh, fine to medium bedded, grey to dark grey, fine grained, slightly porous, strong LIMESTONE, with shale bedding, some beds have nodular sections		17.58	1													
19					2													
20					3													
21					4													
22	Rotary Drill HQ Core				5													
23					6													
24					7													
25																		
26																		
27		End of Drillhole		55.88 26.92														



DEPTH SCALE

1 : 50

LOGGED: JS

CHECKED: BB

MIS-RCK 004 21451149.GPJ GAL-MISS.GDT 6/16/22

PROJECT: 21451149

# RECORD OF BOREHOLE: 22-307

SHEET 1 OF 4

LOCATION: N 5028283.4 ;E 366737.4

BORING DATE: May 2, 2022

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	SHEAR STRENGTH				WATER CONTENT PERCENT					
								20 40 60 80		10 <sup>-6</sup> 10 <sup>-5</sup> 10 <sup>-4</sup> 10 <sup>-3</sup>		nat V. + Q -		rem V. ⊕ U -			Wp
0		GROUND SURFACE		83.57													
		TOPSOIL - (SM) SILTY SAND, fine; dark brown, contains organics; non-cohesive, moist, loose		0.00													
		FILL - (SM/ML) SILTY SAND to sandy SILT, some clay, trace gravel; brown, contains organics; non-cohesive, moist, loose		0.15	1	SS	4										
1		(SM) SILTY SAND, some clay and gravel; brown, contains cobbles and boulders (GLACIAL TILL); non-cohesive, moist to wet, very loose to compact		82.66													
				0.91	2	SS	1										
2																	
3																	
					3	SS	29										
4		(SM) SILTY SAND, some clay and gravel; grey, contains cobbles and boulders (GLACIAL TILL); non-cohesive, wet, compact		79.76													
				3.81	4	SS	19										
5	Wash Bore HW/HQ Casing																
6																	
					5	SS	12										
7																	
8																	
9																	
					6	SS	11										
10																	
					7	SS	15										

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DRAFT

MIS-BHS 001 21451149.GPJ GAL-MIS.GDT 6/16/22

DEPTH SCALE

1 : 50



LOGGED: JS

CHECKED: BB



PROJECT: 21451149

RECORD OF BOREHOLE: 22-307

SHEET 2 OF 4

LOCATION: N 5028283.4 ;E 366737.4

BORING DATE: May 2, 2022

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	SHEAR STRENGTH Cu, kPa				WATER CONTENT PERCENT					
								20 40 60 80		nat V. + Q - rem V. ⊕ U - ⊙		10 <sup>-6</sup> 10 <sup>-5</sup> 10 <sup>-4</sup> 10 <sup>-3</sup>		Wp  -----  W  -----  Wi			
10	Wash Bore HWHQ Casing	-- CONTINUED FROM PREVIOUS PAGE --															
		(SM) SILTY SAND, some clay and gravel; grey, contains cobbles and boulders (GLACIAL TILL); non-cohesive, wet, compact	[Strata Plot: Diagonal Hatching]														
11		(SM) SILTY SAND, some clay and gravel; grey, contains cobbles and boulders (GLACIAL TILL); non-cohesive, wet to moist, compact to very dense		72.60	10.97												
12				8	SS	21											
13																	
14																	
15				9	SS	60											
16																	
17																	
18				10	SS	>50											
19																	
20																	
		CONTINUED NEXT PAGE															

DRAFT

MIS-BHS 001 21451149.GPJ GAL-MIS.GDT 6/16/22

DEPTH SCALE

1 : 50



LOGGED: JS

CHECKED: BB

PROJECT: 21451149

# RECORD OF BOREHOLE: 22-307

SHEET 3 OF 4


LOCATION: N 5028283.4 ;E 366737.4

BORING DATE: May 2, 2022

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	SHEAR STRENGTH Cu, kPa				WATER CONTENT PERCENT					
							20	40	60	80	10 <sup>-6</sup>	10 <sup>-5</sup>	10 <sup>-4</sup>			10 <sup>-3</sup>
20		-- CONTINUED FROM PREVIOUS PAGE --														
				63.22 20.35												
		Borehole continued on RECORD OF DRILLHOLE 22-307														
21																
22																
23																
24																
25																
26																
27																
28																
29																
30																

DRAFT

MIS-BHS 001 21451149.GPJ GAL-MIS.GDT 6/16/22

DEPTH SCALE

1 : 50



LOGGED: JS

CHECKED: BB

PROJECT: 21451149

# RECORD OF DRILLHOLE: 22-307

SHEET 4 OF 4

LOCATION: N 5028283.4 ;E 366737.4

DRILLING DATE: May 2, 2022

DATUM: NAD 1983

INCLINATION: -90° AZIMUTH: ---

DRILL RIG: CME 75

DRILLING CONTRACTOR: Downing Drilling

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	FLUSH	COLOUR % RETURN	RECOVERY		R.Q.D. %	FRACT. INDEX PER 0.25 m	DIP w.r.t. CORE AXIS	DISCONTINUITY DATA			HYDRAULIC CONDUCTIVITY			Diametral Point Load Index (MPa)	RMC -Q' AVG.
								TOTAL CORE %	SOLID CORE %				TYPE AND SURFACE DESCRIPTION			K, cm/sec				
								00000000	00000000				Jo	on	Jr	Ja	10	0		
		BEDROCK SURFACE		63.22																
		Slightly weathered, bedded, grey to dark grey, fine to medium grained, slightly porous, strong SHALEY LIMESTONE		20.35	1															
21	Rotary Drill HQ Core				2															
22		End of Drillhole		61.30																
				22.27																
23																				
24																				
25																				
26																				
27																				
28																				
29																				
30																				

DRAFT

MIS-RCK 004 21451149.GPJ GAL-MISS.GDT 6/16/22

DEPTH SCALE

1 : 50



LOGGED: JS

CHECKED: BB

PROJECT: 21451149

# RECORD OF BOREHOLE: 22-308

SHEET 1 OF 3

LOCATION: N 5028305.1 ;E 366766.9

BORING DATE: April 28 & 29, 2022

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m										
								SHEAR STRENGTH Cu, kPa				WATER CONTENT PERCENT					
0		GROUND SURFACE		82.93													
		TOPSOIL - (SM) SILTY SAND, some plastic fines; brown, contains rootlets, trace to some organics; non-cohesive, moist, very loose		0.00													
		(SM) SILTY SAND, some plastic fines; brown (GLACIAL TILL); non-cohesive, wet, very loose		0.10	1	SS	3									Bentonite Seal	
1		(SM) gravelly SILTY SAND, trace plastic fines; brown, mottled black and orange, contains rock fragments, potential cobbles and boulders (GLACIAL TILL); non-cohesive, wet, compact to dense		82.17													
				0.76	2	SS	16										
2					3	SS	27										
3					4	SS	38										
4					5	SS	20										
5	Wash Bore HW Casing				6	SS	17									Silica Sand & Bentonite	
6		(SM) gravelly SILTY SAND, trace plastic fines; grey, contains rock fragments, potential cobbles and boulders (GLACIAL TILL); non-cohesive, wet, loose to very dense		76.83													
				6.10	9	SS	7										
7																	
8					10	SS	29									Bentonite Seal	
9																Silica Sand	
10					11	SS	30									Bentonite Seal	
																51 mm Diam. PVC #10 Slot Screen	

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CONTINUED NEXT PAGE

DEPTH SCALE

1 : 50



LOGGED: BW

CHECKED: BB

MIS-BHS 001 21451149.GPJ GAL-MIS.GDT 6/16/22

PROJECT: 21451149

# RECORD OF BOREHOLE: 22-308

SHEET 2 OF 3

LOCATION: N 5028305.1 ; E 366766.9

BORING DATE: April 28 & 29, 2022

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	SHEAR STRENGTH				WATER CONTENT PERCENT					
							20 40 60 80		nat V. + Q - rem V. ⊕ U - ○		10 <sup>-6</sup> 10 <sup>-5</sup> 10 <sup>-4</sup> 10 <sup>-3</sup>		Wp  -----  W  -----  WI			
10	Wash Bore HW Casing	-- CONTINUED FROM PREVIOUS PAGE -- (SM) gravelly SILTY SAND, trace plastic fines; grey, contains rock fragments, potential cobbles and boulders (GLACIAL TILL); non-cohesive, wet, loose to very dense														
11				12	SS	24								51 mm Diam. PVC #10 Slot Screen		
12				13	SS	14										
13				14	SS	33										
14				15	SS	46										
15				16	SS	55										
16			65.66		17.27											
17		Borehole continued on RECORD OF DRILLHOLE 22-308												Bentonite Seal		
18															Bentonite & Pellets	
19																
20																

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MIS-BHS 001 21451149.GPJ GAL-MIS.GDT 6/16/22

DEPTH SCALE

1 : 50



LOGGED: BW

CHECKED: BB

PROJECT: 21451149

# RECORD OF DRILLHOLE: 22-308

SHEET 3 OF 3

LOCATION: N 5028305.1 ;E 366766.9

DRILLING DATE: April 28 & 29, 2022

DATUM: NAD 1983

INCLINATION: -90° AZIMUTH: ---

DRILL RIG: CME 75

DRILLING CONTRACTOR: Downing Drilling

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	RECOVERY		R.Q.D. %	FRACT. INDEX PER 0.25 m	DIP W.R.T. CORE AXIS	DISCONTINUITY DATA				ROCK STRENGTH INDEX				WEATHERING INDEX				Q. AVG.				
						TOTAL CORE %	SOLID CORE %				TYPE AND SURFACE DESCRIPTION		Jr	Jr	Jr	Jr	R4	R3	R2	R1	W1	W2		W3	W4		
						FLUSH	COLOUR				FLT	SHR	VN	CJ	BD	FO	CO	OR	CL	PL	CJ	UN		ST	IR	PO	K
		BEDROCK SURFACE		65.66																							
18	Rotary Drill HQ Core	Fresh to slightly weathered, thinly to medium bedded, light to dark grey, fine to medium grained, non to slightly porous, medium strong to strong LIMESTONE, with thin to medium beds of shale  - vertical joint from 19.20 to 19.27 m depth - vertical joint from 19.41 to 19.47 m depth	[Symbolic Log: Brick pattern]	17.27	1	[Solid]	[Solid]	[Solid]	[Solid]	[Solid]																	
19				2	[Solid]	[Solid]	[Solid]	[Solid]	[Solid]	[Solid]	[Solid]																
20				3	[Solid]	[Solid]	[Solid]	[Solid]	[Solid]	[Solid]	[Solid]	[Solid]															
21		End of Drillhole		62.64 20.29	4	[Solid]	[Solid]	[Solid]	[Solid]	[Solid]																	

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Bentonite & Pellets

Silica Sand

MIS-RCK 004 21451149.GPJ GAL-MISS.GDT 6/16/22

DEPTH SCALE

1 : 50



LOGGED: BW

CHECKED: BB

PROJECT: 21451149

# RECORD OF BOREHOLE: 22-309

SHEET 1 OF 3

LOCATION: N 5028348.8 ;E 366737.3

BORING DATE: May 5, 2022

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	SHEAR STRENGTH Cu, kPa				WATER CONTENT PERCENT				
							20	40	60	80	10 <sup>-6</sup>	10 <sup>-5</sup>	10 <sup>-4</sup>	10 <sup>-3</sup>		
							nat V. + Q - ● rem V. ⊕ U - ○				Wp  -----  W  -----  WI					
							20	40	60	80	20	40	60	80		
0		GROUND SURFACE		81.69												
		TOPSOIL - (ML/CL) CLAYEY SILT to SILTY CLAY, some sand, trace gravel; dark brown, contains organics; cohesive, w<PL, stiff		0.00 81.49 0.20	1	SS	9									
1		(SM) SILTY SAND, some clay and gravel; brown, contains cobbles and boulders (GLACIAL TILL); non-cohesive, moist, compact			2	SS	10									
2																
3					3	SS	18									
4		(SM) SILTY SAND, some clay and gravel; grey, contains cobbles and boulders (GLACIAL TILL); non-cohesive, wet, compact		77.88 3.81	4	SS	19									
5	Wash Bore HW/HQ Casing															
6		(SM) SILTY SAND, some clay and gravel; brown, contains cobbles and boulders (GLACIAL TILL); non-cohesive, moist, very dense		75.90 5.79	5	SS	>50									
7																
8																
9		(SM) SILTY SAND, some clay and gravel; brown, contains cobbles and boulders (GLACIAL TILL); non-cohesive, moist, very loose		72.85 8.84	6	SS	1									
10																
		CONTINUED NEXT PAGE														

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MIS-BHS 001 21451149.GPJ GAL-MIS.GDT 6/16/22

DEPTH SCALE

1 : 50



LOGGED: JS

CHECKED: BB

PROJECT: 21451149

# RECORD OF BOREHOLE: 22-309

SHEET 2 OF 3

LOCATION: N 5028348.8 ;E 366737.3

BORING DATE: May 5, 2022

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	SHEAR STRENGTH Cu, kPa				WATER CONTENT PERCENT					
							20	40	60	80	10 <sup>-6</sup>	10 <sup>-5</sup>	10 <sup>-4</sup>			10 <sup>-3</sup>
10	Wash Bore HW/HQ Casing	-- CONTINUED FROM PREVIOUS PAGE --														
		(SM) SILTY SAND, some clay and gravel; brown, contains cobbles and boulders (GLACIAL TILL); non-cohesive, moist, very loose														
11				70.72 10.97												
		(SM) SILTY SAND, some clay and gravel; grey, contains cobbles and boulders (GLACIAL TILL); non-cohesive, wet, compact to very dense														
12					7	SS	19									
13																
14																
15					8	SS	81									
16																
17																
18		Borehole continued on RECORD OF DRILLHOLE 22-309		64.10 17.59												
19																
20																

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MIS-BHS 001 21451149.GPJ GAL-MIS.GDT 6/16/22

DEPTH SCALE

1 : 50



LOGGED: JS

CHECKED: BB



PROJECT: 21451149

# RECORD OF DRILLHOLE: 22-309

SHEET 3 OF 3

LOCATION: N 5028348.8 ; E 366737.3

DRILLING DATE: May 5, 2022

DATUM: NAD 1983

INCLINATION: -90° AZIMUTH: ---

DRILL RIG: CME 75

DRILLING CONTRACTOR: Downing Drilling

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	FLUSH	RECOVERY		R.Q.D. %	FRACT. INDEX PER 0.25 m	DIP w.r.t. CORE AXIS	DISCONTINUITY DATA			HYDRAULIC CONDUCTIVITY			Diametral Point Load Index (MPa)	RMC -Q' AVG.
							TOTAL CORE %	SOLID CORE %				TYPE AND SURFACE DESCRIPTION			K, cm/sec				
							00000000	00000000				Jo	on	Jr	Ja	10	0		
		BEDROCK SURFACE		64.10															
18	Rotary Drill HQ Core	Slightly weathered, thinly to medium bedded, grey, medium to fine grained, slightly porous, medium strong to strong SHALEY LIMESTONE		17.59	1														
19					2														
		End of Drillhole		62.39															
				19.30															

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MIS-RCK 004 21451149.GPJ GAL-MISS.GDT 6/16/22

DEPTH SCALE

1 : 50



LOGGED: JS

CHECKED: BB

PROJECT: 21451149

# RECORD OF BOREHOLE: 22-310

SHEET 1 OF 3

LOCATION: N 5028376.9 ;E 366714.5

BORING DATE: April 6-8, 2022

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	SHEAR STRENGTH				WATER CONTENT PERCENT					
								20 40 60 80		nat V. + Q - ●	rem V. ⊕ U - ○	10 <sup>-6</sup> 10 <sup>-5</sup> 10 <sup>-4</sup> 10 <sup>-3</sup>		Wp  -----  W  -----  WI			
0		GROUND SURFACE		80.54													
		TOPSOIL - (ML) sandy SILT, some clay; dark brown, contains organic matter; slightly cohesive, w~PL/frozen, compact		80.18	1	SS	14										
		(CI/CL) SILTY CLAY; brown; cohesive, w<PL, stiff to very stiff		80.36													
1					2	SS	12										
2					3	SS	15										
3					4	SS	12										
	Power Auger 200 mm Diam. (Hollow Stem)	(ML) sandy SILT, some clay, some gravel; brown to grey brown (GLACIAL TILL); slightly cohesive, compact		77.49	5	SS	21										
		(SM) SILTY SAND, some clay, some gravel; grey brown to grey (GLACIAL TILL); non-cohesive, wet, compact to loose		76.88	6	SS	14										
4					7	SS	6										
5		(SM) SILTY SAND, some clay, some gravel; grey (GLACIAL TILL); slightly cohesive, wet, loose		75.36	8	SS	9										
6					9	SS	9										
7		(SM/ML) SILTY SAND to sandy SILT, some clay, some gravel; grey (GLACIAL TILL); slightly cohesive, wet, loose		73.83													
8	Wash Boring HW Casing				10	SS	9										
9					11	SS	4										
10																	

CONTINUED NEXT PAGE

MIS-BHS 001 21451149.GPJ GAL-MIS.GDT 6/16/22

DEPTH SCALE

1 : 50



LOGGED: JS

CHECKED: BB

PROJECT: 21451149

# RECORD OF BOREHOLE: 22-310

SHEET 2 OF 3

LOCATION: N 5028376.9 ; E 366714.5

BORING DATE: April 6-8, 2022

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	SHEAR STRENGTH Cu, kPa				WATER CONTENT PERCENT					
								20	40	60	80	10 <sup>-6</sup>	10 <sup>-5</sup>	10 <sup>-4</sup>			10 <sup>-3</sup>
10	Wash Boring HW Casing	-- CONTINUED FROM PREVIOUS PAGE --															
		(SM/ML) SILTY SAND to sandy SILT, some clay, some gravel; grey (GLACIAL TILL); slightly cohesive, wet, loose															
11			(SM/ML) SILTY SAND to sandy SILT, some clay, some gravel; grey (GLACIAL TILL); slightly cohesive, wet, loose to compact	69.87 10.67	12	SS	11										
12																	
13																	
14																	
15		(SM/ML) SILTY SAND to sandy SILT, some clay and gravel; grey (GLACIAL TILL); slightly cohesive, wet, very dense	66.21 14.33	14	SS	46											
16																	
17		Borehole continued on RECORD OF DRILLHOLE 22-310	64.29 16.15	15	SS	55											
18																	
19																	
20																	

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MIS-BHS 001 21451149.GPJ GAL-MIS.GDT 6/16/22

PROJECT: 21451149

# RECORD OF DRILLHOLE: 22-310

SHEET 3 OF 3

LOCATION: N 5028376.9 ;E 366714.5

DRILLING DATE: April 6-8, 2022

DATUM: NAD 1983

INCLINATION: -90° AZIMUTH: ---

DRILL RIG: CME 75

DRILLING CONTRACTOR: Downing Drilling

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV.		RUN No.	FLUSH	COLOUR % RETURN	RECOVERY			R.Q.D. %	FRACT. INDEX PER 0.25 m	DIP w.r.t. CORE AXIS	DISCONTINUITY DATA			HYDRAULIC CONDUCTIVITY			Diametral Point Load Index (MPa)	RMC -Q' AVG.	
				DEPTH (m)	ELEV.				TOTAL CORE %	SOLID CORE %	TYPE AND SURFACE DESCRIPTION				Joon	Jr	Ja	K, cm/sec	10	10			10
									00000000	00000000													
		BEDROCK SURFACE		64.39																			
		Fresh, thinly to medium bedded, grey, medium to fine grained, slightly porous, medium strong to strong LIMESTONE with shale interbedded		16.15																			
17	Rotary Drill HQ Core				1																		
18					2																		
19		End of Drillhole		61.36	19.18																		
20																							
21																							
22																							
23																							
24																							
25																							
26																							

DRAFT

MIS-RCK 004 21451149.GPJ GAL-MISS.GDT 6/16/22

PROJECT: 21451149

# RECORD OF BOREHOLE: 22-401

SHEET 1 OF 2

LOCATION: N 5028655.7 ;E 366449.5

BORING DATE: March 16-17, 2022

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	SHEAR STRENGTH				WATER CONTENT PERCENT					
							20 40 60 80		nat V. + Q - rem V. ⊕ U - ⊙		10 <sup>-6</sup> 10 <sup>-5</sup> 10 <sup>-4</sup> 10 <sup>-3</sup>		Wp  -----  W  -----  Wi			
0	Power Auger 200 mm Diam. (Hollow Stem)	GROUND SURFACE		68.56												
		TOPSOIL/FILL - (SP) SAND, fine, some silt; dark brown, contains organics; non-cohesive, moist		0.00	1	SS	12									
		FILL - (SW) SAND, some silt, some gravel, trace clay; brown, contains brick, concrete and cinders; non-cohesive, moist, loose to very dense		0.08	2	SS	25									
1					3	SS	6									
					4	SS	>50									
2				65.82												
			TOPSOIL - (SP) SAND, fine, some silt; black, contains rootlets; non-cohesive, moist, loose		2.74											
3				65.21	5	SS	9									
			(SW/SM) SAND, some silt to SILTY SAND, some low plasticity fines; grey (GLACIAL TILL); non-cohesive to slightly cohesive, moist to wet, very loose to loose		3.35											
4					6	SS	2									
5					7	SS	6									
			(SW/SM) SAND to SILTY SAND, some low plasticity fines, some gravel; grey (GLACIAL TILL); slightly cohesive, wet, loose to dense		63.38											
6				5.18	8	SS	7									
7				9	SS	45										
				10	SS	28										
8			60.94													
		(SW) SAND, some silt, some gravel, trace low plasticity fines; grey (GLACIAL TILL); non-cohesive, moist, compact to very dense		7.62												
9			60.03													
		(SW/SM) SILTY SAND, some gravel, some low plasticity fines; grey (GLACIAL TILL); non-cohesive, moist, compact		8.53												
				11	SS	28										
				12	SS	>50										
				13	SS	28										
10			58.83													
		Borehole continued on RECORD OF DRILLHOLE 22-401		9.73												

DRAFT

MIS-BHS 001 21451149.GPJ GAL-MIS.GDT 6/16/22

DEPTH SCALE

1 : 50



LOGGED: JS

CHECKED: BB

PROJECT: 21451149

# RECORD OF DRILLHOLE: 22-401

SHEET 2 OF 2

LOCATION: N 5028655.7 ;E 366449.5

DRILLING DATE: March 16-17, 2022

DATUM: NAD 1983

INCLINATION: -90° AZIMUTH: ---

DRILL RIG: CME 75

DRILLING CONTRACTOR: Downing Drilling

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV.		RUN No.	FLUSH	COLOUR % RETURN	RECOVERY		R.Q.D. %	FRACT. INDEX PER 0.25 m	DIP w.r.t. CORE AXIS	DISCONTINUITY DATA			HYDRAULIC CONDUCTIVITY			Diametral Point Load Index (MPa)	RMC -Q' AVG.		
				DEPTH (m)	ELEV.				TOTAL CORE %	SOLID CORE %				TYPE AND SURFACE DESCRIPTION	Joon	Jr	Ja	K, cm/sec	10			10	10
									88888888	88888888													
		BEDROCK SURFACE		58.83																			
10		Slightly weathered to fresh, thinly to medium bedded, grey to dark grey, fine grained, slightly porous, strong LIMESTONE with shale interbedded		9.73																			
		- Broken core from 9.73 m to 9.74 m																					
		- Broken core from 10.76 m to 10.88 m																					
11																							
12	Rotary Drill NG Core																						
13																							
		End of Drillhole		54.94	13.62																		
14																							
15																							
16																							
17																							
18																							
19																							

DRAFT

MIS-RCK 004 21451149.GPJ GAL-MISS.GDT 6/16/22

DEPTH SCALE

1 : 50



LOGGED: JS

CHECKED: BB

PROJECT: 21451149

# RECORD OF BOREHOLE: 22-402

SHEET 1 OF 1

LOCATION: N 5028686.9 ;E 366502.4

BORING DATE: March 7, 2022

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m				WATER CONTENT PERCENT					
							SHEAR STRENGTH Cu, kPa		nat V. + rem V. Q - U		Wp		Wi			
0		GROUND SURFACE		66.73												
		TOPSOIL/FILL - (SP) SAND, fine, some silt; dark brown, contains organics; non-cohesive, frozen		0.00												
		FILL - (SW) gravelly SAND to SAND, some silt, some gravel, some low plasticity fines; brown; non-cohesive, moist, compact		0.15	1	SS	17									
1					2	SS	19									
		FILL - (SM) SILTY SAND, some low plasticity fines; brown; non-cohesive, moist, loose		65.21												
				1.52	3	SS	6									
2		(PT) Fibrous PEAT		64.44												
		(SM) SILTY SAND, some low plasticity fines, some gravel; grey, contains cobbles and boulders (GLACIAL TILL); non-cohesive to slightly cohesive, wet, loose to very dense		2.20 64.24												
				2.49	4	SS	8									
3					5	SS	75									
4				62.51	6	SS	>58									
		End of Borehole Auger Refusal		4.22												
5																
6																
7																
8																
9																
10																

DRAFT

MIS-BHS 001 21451149.GPJ GAL-MIS.GDT 6/16/22

DEPTH SCALE

1 : 50



LOGGED: JS

CHECKED: BB

PROJECT: 21451149

# RECORD OF BOREHOLE: 22-403

SHEET 1 OF 2

LOCATION: N 5028704.0 ; E 366527.3

BORING DATE: February 28, 2022

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION		
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	SHEAR STRENGTH				WATER CONTENT PERCENT					
								20 40 60 80		nat V. + Q - rem V. ⊕ U - ⊙		10 <sup>-6</sup> 10 <sup>-5</sup> 10 <sup>-4</sup> 10 <sup>-3</sup>				Wp  -----  W  -----  WI	
0	Power Auger 200 mm Diam. (Hollow Stem)	GROUND SURFACE		65.74													
		FILL/TOPSOIL - (SM) SILTY SAND, trace gravel; dark brown, contains organic matter (rootlets); non-cohesive, moist/frozen, dense		65.36	1	SS	42										
		FILL - (SM) gravelly SILTY SAND, angular; grey brown; non-cohesive, moist, dense		65.18													
1		FILL - (SM) gravelly SILTY SAND; dark brown to black, contains ash and coal; non-cohesive, moist, loose		64.52	2	SS	9										
		(PT) Amorphous PEAT; black; non-cohesive, moist, loose		64.06													
2		(SM) gravelly SILTY SAND; grey brown, possible cobbles (GLACIAL TILL); non-cohesive, wet, loose		63.61	3	SS	9										
		(SM) gravelly SILTY SAND; grey, possible cobbles (GLACIAL TILL); non-cohesive, wet, very loose		63.13													
3				62.69	4	SS	3										
			Borehole continued on RECORD OF DRILLHOLE 22-403		3.05												

DRAFT

MIS-BHS 001 21451149.GPJ GAL-MIS.GDT 6/16/22

DEPTH SCALE

1 : 50



LOGGED: RI

CHECKED: BB



PROJECT: 21451149

# RECORD OF DRILLHOLE: 22-403

SHEET 2 OF 2

LOCATION: N 5028704.0 ; E 366527.3

DRILLING DATE: February 28, 2022

DATUM: NAD 1983

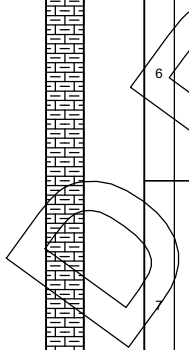
INCLINATION: -90° AZIMUTH: ---

DRILL RIG: CME 75

DRILLING CONTRACTOR: Downing Drilling

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV.		RUN No.	FLUSH	COLOUR % RETURN	RECOVERY		R.Q.D. %	FRACT. INDEX PER 0.25 m	DIP W.R.T. CORE AXIS	DISCONTINUITY DATA				ROCK STRENGTH INDEX				WEATHERING INDEX				Q. AVG.			
				DEPTH (m)	ELEV.				TOTAL CORE %	SOLID CORE %				J1	J2	J3	J4	R4	R3	R2	R1	W1	W2	W3	W4				
		BEDROCK SURFACE		62.69																									
		Fresh, thinly to medium bedded, medium grey to brownish grey, fine to medium grained, non-porous, medium strong SHALEY LIMESTONE		3.05																									
4		- Broken core from 3.15 m to 3.17 m																											
4		- Broken/lost core from 3.56 m to 3.62 m																											
5		- Broken core from 3.99 m to 4.08 m																											
5		- Broken core from 4.29 m to 4.32 m																											
5		- Broken core from 4.45 m to 4.46 m																											
6		- Broken core from 5.28 m to 5.29 m																											
7	Rotary Drill NO Core	- Broken/lost core from 6.15 m to 6.19 m																											
7		- Broken/lost core from 6.88 m to 7.65 m																											
8		- Lost core from 7.62 m to 7.97 m																											
9		- Broken core from 8.73 m to 8.74 m																											
10		- Broken core from 9.77 m to 9.79 m																											
10		- Broken core from 10.36 m to 10.38 m																											
11		End of Drillhole		55.02	10.72																								

DRAFT



MIS-RCK 004 21451149.GPJ GAL-MISS.GDT 6/16/22

PROJECT: 21451149

# RECORD OF BOREHOLE: 22-404

SHEET 1 OF 1

LOCATION: N 5028735.4 ;E 366573.4

BORING DATE: March 1, 2022

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	SHEAR STRENGTH Cu, kPa				WATER CONTENT PERCENT					
							20	40	60	80	10 <sup>-6</sup>	10 <sup>-5</sup>	10 <sup>-4</sup>			10 <sup>-3</sup>
0	Power Auger 200 mm Diam. (Hollow Stem)	GROUND SURFACE		65.53												
		TOPSOIL/FILL - (SM) SILTY SAND, trace gravel; brown to dark brown, contains organic matter (rootlets); non-cohesive, moist/frozen, very dense		0.00	1	SS	65									
		FILL - (SM) gravelly SILTY SAND; brown; non-cohesive, moist/frozen, very dense		0.20												
				65.00												
				0.53												
1			FILL - (SM) SILTY SAND, trace to some gravel, black, contains ash/slag; non-cohesive, moist, very dense to compact		64.62	2	SS	24								
				0.91												
		FILL - (SM) gravelly SILTY SAND; brown; non-cohesive, moist, compact		64.31												
			1.22													
		(PT) Amorphous PEAT; black; non-cohesive, moist, loose		64.01	3	SS	6									
2		(SM) gravelly SILTY SAND; grey, possible cobbles and boulders (GLACIAL TILL); non-cohesive, wet, very loose to dense		1.52												
				60.96												
			4.57													
		(SM) gravelly SAND, fine to coarse, some silt; grey, possible cobbles and boulders; non-cohesive, wet, very dense		60.65	7	SS	>50									
5		End of Borehole		4.88												

DRAFT

MIS-BHS 001 21451149.GPJ GAL-MIS.GDT 6/16/22

DEPTH SCALE

1 : 50



LOGGED: RI

CHECKED: BB

PROJECT: 21451149

# RECORD OF BOREHOLE: 22-405

SHEET 1 OF 2

LOCATION: N 5028745.9 ;E 366607.5

BORING DATE: February 25, 2022

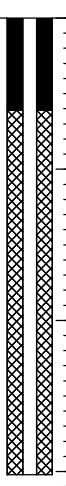
DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	SHEAR STRENGTH				WATER CONTENT PERCENT					
							20 40 60 80		nat V. + Q - rem V. ⊕ U - ○		10 <sup>-6</sup> 10 <sup>-5</sup> 10 <sup>-4</sup> 10 <sup>-3</sup>		Wp  -----  W  -----  WI			
0	Power Auger 200 mm Diam. (Hollow Stem)	GROUND SURFACE		67.19												
		TOPSOIL - (SM/ML) SILTY SAND to sandy SILT; brown, contains organic matter (rootlets); non-cohesive, moist/frozen, compact		0.00 0.08	1	SS	21									Bentonite Seal
1		FILL - (CI/CH) SILTY CLAY to CLAY; brown; cohesive, w<PL to w~PL, frozen to thawed, firm to very stiff			2	SS	3									
		FILL - (SP) SAND, fine to medium, trace silt, trace clay; brown, mottled reddish black; non-cohesive, moist, compact		65.67 1.52	3	SS	12									Backfill
2					4	SS	22									
3		Borehole continued on RECORD OF DRILLHOLE 22-405		64.17 3.02												
4																
5																
6																
7																
8																
9																
10																

DRAFT



MIS-BHS 001 21451149.GPJ GAL-MIS.GDT 6/16/22

PROJECT: 21451149

# RECORD OF DRILLHOLE: 22-405

SHEET 2 OF 2

LOCATION: N 5028745.9 ;E 366607.5

DRILLING DATE: February 25, 2022

DATUM: NAD 1983

INCLINATION: -90° AZIMUTH: ---

DRILL RIG: CME 75

DRILLING CONTRACTOR: Downing Drilling

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	RECOVERY		FRACT. INDEX PER 0.25 m	DISCONTINUITY DATA				ROCK STRENGTH INDEX				WEATHERING INDEX				Q. AVG.		
						FLUSH	TOTAL CORE %		SOLID CORE %	R.Q.D. %	TYPE AND SURFACE DESCRIPTION				R4	R3	R2	R1	W1	W2		W3	W4
											Jo	on	Jr	Ja									
		BEDROCK SURFACE		64.17																			
		Fresh to slightly weathered, thinly to medium bedded, pale grey to black, fine to medium grained, non to slightly porous, medium strong SHALEY LIMESTONE		3.02																			
1																					Backfill		
2																					Bentonite Seal		
3																					Silica Sand		
4																							
5																							
6																					PVC #10 Slot Screen		
6		End of Drillhole		61.10																			
6				6.09																			
7																							
8																							
9																							
10																							
11																							
12																							
13																							

DRAFT

MIS-RCK 004 21451149.GPJ GAL-MISS.GDT 6/16/22

DEPTH SCALE

1 : 50



LOGGED: BW

CHECKED: BB

PROJECT: 21451149

# RECORD OF BOREHOLE: 22-406

SHEET 1 OF 1

LOCATION: N 5028716.8 ;E 366617.5

BORING DATE: March 1, 2022

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m				WATER CONTENT PERCENT					
							SHEAR STRENGTH Cu, kPa		nat V. + rem V. Q - U		10 <sup>-6</sup> 10 <sup>-5</sup> 10 <sup>-4</sup> 10 <sup>-3</sup>		Wp			W
0	Power Auger 200 mm Diam. (Hollow Stem)	GROUND SURFACE		66.23												
		TOPSOIL - (ML/SM) sandy SILT to SILTY SAND, trace gravel; dark brown, contains organic matter (rootlets); non-cohesive, moist/frozen, compact		0.00 66.03 0.20	1	SS	14									
		FILL - (CL) SILTY CLAY, some sand, trace gravel; grey brown, contains brick; cohesive, w-PL, stiff		65.47 0.76												
1		FILL - (SM) gravelly SILTY SAND, angular, brown, non-cohesive, moist, compact		65.16 1.07	2	SS	28									
		FILL - (SM/ML) gravelly SILTY SAND to sandy SILT; dark brown, contains concrete, brick and ash; non-cohesive, moist, compact to loose		63.94 2.29 63.59	3 4	SS	8 >55									
2		(SM) gravelly SILTY SAND; grey brown, possible cobbles (GLACIAL TILL); non-cohesive, moist to wet, very dense		2.64												
3		End of Borehole Auger Refusal														

DRAFT

MIS-BHS 001 21451149.GPJ GAL-MIS.GDT 6/16/22

DEPTH SCALE

1 : 50



LOGGED: RI

CHECKED: BB

PROJECT: 21451149

# RECORD OF BOREHOLE: 22-407

SHEET 1 OF 1

LOCATION: N 5028700.7 ;E 366579.9

BORING DATE: March 7, 2022

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	SHEAR STRENGTH				WATER CONTENT PERCENT					
							20 40 60 80		nat V. + Q - rem V. ⊕ U - ⊙		10 <sup>-6</sup> 10 <sup>-5</sup> 10 <sup>-4</sup> 10 <sup>-3</sup>		Wp  -----  W  -----  Wl			
0	Power Auger 200 mm Diam. (Hollow Stem)	GROUND SURFACE		66.96												
		FILL - (SW) SAND, some silt, some gravel; dark brown, contains brick; non-cohesive, moist/frozen, compact		0.00	1	SS	14									
1		FILL - (Cl/CH) SILTY CLAY to CLAY, some sand, some gravel; grey; cohesive, w-PL, stiff		0.61	2	SS	6									
2		FILL - (SW) SAND, some silt, some gravel; brown, with layers of black asphalt; non-cohesive, moist to wet, dense to loose		1.52	3	SS	41									
3					4	SS	8									
4					5	SS	4									
4		(SW) SAND, some silt, some clay, some gravel; grey, contains cobbles (GLACIAL TILL); non-cohesive, wet, dense		3.66	6	SS	3									
5	End of Borehole Auger Refusal		4.57	7	SS	>50										

DRAFT

MIS-BHS 001 21451149.GPJ GAL-MIS.GDT 6/16/22

DEPTH SCALE

1 : 50



LOGGED: JS

CHECKED: BB

PROJECT: 21451149

# RECORD OF BOREHOLE: 22-408

SHEET 1 OF 2

LOCATION: N 5028677.3 ; E 366555.2

BORING DATE: March 3, 2022

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m				WATER CONTENT PERCENT					
							SHEAR STRENGTH Cu, kPa		nat V. + rem V. ⊕ - ⊙		10 <sup>-6</sup> 10 <sup>-5</sup> 10 <sup>-4</sup> 10 <sup>-3</sup>		Wp			Wi
0	Power Auger 200 mm Diam. (Hollow Stem)	GROUND SURFACE		66.02												
		TOPSOIL/FILL - (SM/ML) SILTY SAND to sandy SILT, trace gravel; dark brown, contains organic matter (rootlets); non-cohesive, moist/frozen, compact			0.00	1	SS	12								
		FILL - (CL) SILTY CLAY, some sand, trace gravel; grey brown; cohesive, w~PL, stiff			0.23											
					65.79											
					0.46											
1			FILL - (SM) gravelly SILTY SAND, sub-rounded to sub-angular; brown; non-cohesive, moist, compact			2	SS	15								
			FILL - (SM) gravelly SILTY SAND; black, contains ash, slag and brick; non-cohesive, moist, compact						65.11							
					0.91											
					1.07											
2			FILL - (SM) SILTY SAND, trace to some gravel; grey, contains organic matter; non-cohesive, moist, compact to loose			3	SS	3								
		(SM) gravelly SILTY SAND; grey brown (GLACIAL TILL); non-cohesive, moist to wet, very loose			64.50											
				1.52												
				1.68												
3		(SM) gravelly SILTY SAND; grey, possible cobbles and boulders (GLACIAL TILL); non-cohesive, wet, very loose to loose			4	SS	4									
								62.30								
4		Borehole continued on RECORD OF DRILLHOLE 22-408		3.72												
5																
6																
7																
8																
9																
10																

DRAFT

MIS-BHS 001 21451149.GPJ GAL-MIS.GDT 6/16/22

DEPTH SCALE

1 : 50



LOGGED: RI

CHECKED: BB

PROJECT: 21451149

# RECORD OF DRILLHOLE: 22-408

SHEET 2 OF 2

LOCATION: N 5028677.3 ; E 366555.2

DRILLING DATE: March 3, 2022

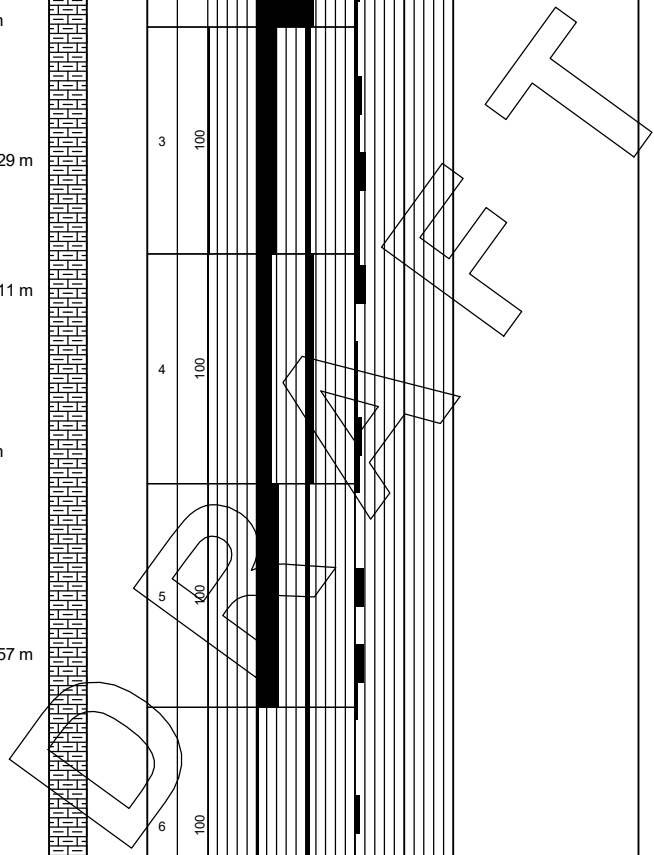
DATUM: NAD 1983

INCLINATION: -90° AZIMUTH: ---

DRILL RIG: CME 75

DRILLING CONTRACTOR: Downing Drilling

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	COLOUR % RETURN	RECOVERY		R.Q.D. %	FRACT. INDEX PER 0.25 m	DIP W.R.T. CORE AXIS	DISCONTINUITY DATA				ROCK STRENGTH INDEX				WEATHERING INDEX				Q. AVG.		
							TOTAL CORE %	SOLID CORE %				TYPE AND SURFACE DESCRIPTION		Jc	Jo	Jr	Ja	R4	R3	R2	R1	W1	W2		W3	W4
							FLUSH	NON-FLUSH				Ir	U	St	Co	Sh	Pl	Br	Q	Q	Q	Q	Q		Q	Q
		BEDROCK SURFACE		62.30																						
4		(SM) gravelly SILTY SAND; grey, contains cobbles and boulders (GLACIAL TILL); non-cohesive, wet		62.12	1	100																				
5		Slightly weathered to fresh, thinly to medium bedded, medium grey to brownish grey, fine to medium grained, non-porous, medium strong SHALEY LIMESTONE		3.90	2	100																				
		- Broken core from 3.84 m to 3.90 m																								
		- Broken core from 4.38 m to 4.39 m																								
		- Broken core from 4.75 m to 4.76 m																								
6					3	100																				
		- Broken/lost core from 6.23 m to 6.29 m																								
7					4	100																				
		- Broken/lost core from 7.09 m to 7.11 m																								
8					5	100																				
		- Broken core from 8.16 m to 8.18 m																								
9					6	100																				
		- Broken/lost core from 9.55 m to 9.57 m																								
10					7	100																				
		- Broken/lost core from 10.66 m to 10.67 m																								
11																										
12																										
13		End of Drillhole		53.04 12.98																						



MIS-RCK 004 21451149.GPJ GAL-MISS.GDT 6/16/22

DEPTH SCALE

1 : 50



LOGGED: RI

CHECKED: BB



PROJECT: 21451149

# RECORD OF BOREHOLE: 22-409

SHEET 1 OF 1

LOCATION: N 5028655.4 ;E 366477.0

BORING DATE: March 7, 2022

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m				WATER CONTENT PERCENT					
							SHEAR STRENGTH Cu, kPa		nat V. + rem V. ⊕ ⊙		10 <sup>-6</sup> 10 <sup>-5</sup> 10 <sup>-4</sup> 10 <sup>-3</sup>		Wp			W
0		GROUND SURFACE		67.62												
		TOPSOIL/FILL - (SW/SM) SAND, some silt to silty sand, trace clay; brown, contains organic matter (rootlets); non-cohesive, moist, compact		0.00	1	SS	16									
		FILL - (SW/SM) SAND, some silt to silty sand, some low plastic fines, trace gravel, trace organics; brown to dark brown, mottling present; slightly cohesive, moist, very loose to loose		0.10	2	SS	7									
					3	SS	3									
				65.33												
		(SW/SM) SAND to SILTY SAND, some low plastic fines, some gravel; light brown to grey (GLACIAL TILL); slightly cohesive, wet, loose		2.29	4	SS	5									
					5	SS	7									
					6	SS	7									
				63.05												
		(SW/SM) SAND to SILTY SAND, some low plastic fines, some gravel; grey (GLACIAL TILL); loose to compact		4.57	7	SS	11									
					8	SS	9									
				61.83												
6		End of Borehole Auger Refusal		5.79												
7																
8																
9																
10																

DEPTH SCALE

1 : 50



LOGGED: JS

CHECKED: BB

MIS-BHS 001 21451149.GPJ GAL-MIS.GDT 6/16/22

PROJECT: 21451149

# RECORD OF BOREHOLE: 22-410

SHEET 1 OF 1

LOCATION: N 5028654.1 ;E 366523.2

BORING DATE: March 7, 2022

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	SHEAR STRENGTH				WATER CONTENT PERCENT					
								20 40 60 80		nat V. + Q - rem V. ⊕ U - ⊙		10 <sup>-6</sup> 10 <sup>-5</sup> 10 <sup>-4</sup> 10 <sup>-3</sup>		Wp  -----  W  -----  Wl			
0		GROUND SURFACE		66.99													
		TOPSOIL/FILL		0.00 66.79													
		FILL - (SW) SAND, some silt, some gravel; brown; non-cohesive, moist, compact		0.20	1	SS	29										
1		FILL - (ML-SM) sandy SILT to SILTY SAND, some clay, some gravel; brown; non-cohesive, moist to wet, very dense		66.23 0.76	2	SS	61										
2		(SW/SM) SAND to SILTY SAND, some low plastic fines, some silt, some gravel; grey brown to grey (GLACIAL TILL); non-cohesive, wet, compact		65.47 1.52	3	SS	16										
					4	SS	22										
					5	SS	11										
					6	SS	13										
					7	SS	>50										
5		End of Borehole Auger Refusal		62.29 4.70													

DRAFT

MIS-BHS 001 21451149.GPJ GAL-MIS.GDT 6/16/22

DEPTH SCALE

1 : 50



LOGGED: JS

CHECKED: BB

PROJECT: 21451149

# RECORD OF BOREHOLE: 22-411

SHEET 1 OF 2

LOCATION: N 5028653.8 ; E 366567.0

BORING DATE: March 2, 2022

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION		
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	SHEAR STRENGTH				WATER CONTENT PERCENT					
								20 40 60 80		nat V. + Q - rem V. ⊕ U - ○		10 <sup>-6</sup> 10 <sup>-5</sup> 10 <sup>-4</sup> 10 <sup>-3</sup>				Wp  -----  W  -----  Wi	
0		GROUND SURFACE		66.72													
		TOPSOIL - (SM) SILTY SAND, trace gravel; dark brown, contains organic matter (rootlets); non-cohesive, moist/frozen, compact		66.54													
		FILL - (CL) SILTY CLAY, some sand, trace gravel; grey brown, contains organic matter, ash and slag; cohesive, w-PL, stiff		0.18	1	SS	14								Bentonite Seal		
1		(SM) gravelly SILTY SAND; grey brown (GLACIAL TILL); non-cohesive, moist to wet, loose		65.96											Silica Sand		
				0.76	2	SS	5										
2	Power Auger 200 mm Diam. (Hollow Stem)			64.59													
		(SM) gravelly SILTY SAND; grey, possible cobbles and boulders (GLACIAL TILL); non-cohesive, wet, loose to dense		2.13	3	SS	8										
						4	SS	5									
						5	SS	30									
						6	SS	10									
					62.15												
3				4.57											32 mm Diam. PVC #10 Slot Screen		
4																	
5		Borehole continued on RECORD OF DRILLHOLE 22-411													Silica Sand		
6																	
7																	
8																	
9																	
10																	

DRAFT

MIS-BHS 001 21451149.GPJ GAL-MIS.GDT 6/16/22

DEPTH SCALE  
1 : 50



LOGGED: RI  
CHECKED: BB

PROJECT: 21451149

# RECORD OF DRILLHOLE: 22-411

SHEET 2 OF 2

LOCATION: N 5028653.8 ; E 366567.0

DRILLING DATE: March 2, 2022

DATUM: NAD 1983

INCLINATION: -90° AZIMUTH: ---

DRILL RIG: CME 75

DRILLING CONTRACTOR: Downing Drilling

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	COLOUR % RETURN	RECOVERY		R.Q.D. %	FRACT. INDEX PER 0.25 m	DIP W.r.t. CORE AXIS	DISCONTINUITY DATA				ROCK STRENGTH INDEX				WEATHERING INDEX				Q. AVG.		
							TOTAL CORE %	SOLID CORE %				TYPE AND SURFACE DESCRIPTION		Jc	Jo	Jr	Ja	R4	R3	R2	R1	W1	W2		W3	W4
							FLUSH	NON-FLUSH				PLANAR	CURVED	PLANAR	PLANAR	PLANAR	PLANAR	PLANAR	PLANAR	PLANAR	PLANAR	PLANAR	PLANAR		PLANAR	PLANAR
		BEDROCK SURFACE		62.15																						
5		(SM) gravelly SILTY SAND; grey, possible cobbles and boulders (GLACIAL TILL); non-cohesive, wet Fresh, thinly to medium bedded, medium grey to brownish grey, fine to medium grained, non-porous, medium strong SHALEY LIMESTONE		4.57 4.73	1	100																				
6		- Lost core from 4.57 m to 4.60 m - Broken/lost core from 4.69 m to 4.73 m - Broken core from 5.02 m to 5.03 m - Broken core from 5.79 m to 5.5 m			2	50																				
7	Rotary Drill NQ Core	- Broken/lost core from 6.21 m to 6.24 m - Broken/lost core from 6.57 m to 6.56 m			3	50																				
8				58.37 8.35																						
9		End of Drillhole																								
10																										
11																										
12																										
13																										
14																										

Bentonite Seal

Silica Sand

32 mm Diam. PVC #10 Slot Screen

DRIFT

MIS-RCK 004 21451149.GPJ GAL-MISS.GDT 6/16/22

DEPTH SCALE

1 : 50



LOGGED: RI

CHECKED: BB

PROJECT: 21451149

# RECORD OF BOREHOLE: 22-412

SHEET 1 OF 1

LOCATION: N 5028677.0 ; E 366602.3

BORING DATE: March 1, 2022

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	SHEAR STRENGTH				WATER CONTENT PERCENT					
								20 40 60 80		nat V. + Q - rem V. ⊕ U - ⊙		10 <sup>-6</sup> 10 <sup>-5</sup> 10 <sup>-4</sup> 10 <sup>-3</sup>		Wp  -----  W  -----  Wi			
0		GROUND SURFACE		66.38													
	Power Auger 200 mm Diam. (Hollow Stem)	TOPSOIL/FILL - (SM) SILTY SAND, trace gravel; dark brown, contains organic matter (rootlets); non-cohesive, moist/frozen, compact		66.02	1	SS	15										
		FILL - (CL) SILTY CLAY, some sand, trace gravel; grey brown; cohesive, w-PL, stiff		65.62													
1		FILL - (SM) gravelly SILTY SAND; grey brown, contains silty clay layers; non-cohesive, moist, dense		65.24	2	SS	49										
		FILL - (SM) gravelly SILTY SAND; black, contains ash and slag; non-cohesive, moist, dense		64.86													
		FILL - (SM) gravelly SILTY SAND; grey brown; non-cohesive, moist, compact		64.40	3	SS	12										
2		(PT) Amorphous PEAT; black; non-cohesive, moist		64.09													
		(SM) gravelly SILTY SAND; grey, possible cobbles and boulders (GLACIAL TILL); non-cohesive, wet, loose to very dense		64.09													
					2.29	4	SS	7									
3						5	SS	9									
4			End of Borehole Auger Refusal		62.47	6	SS	>50									
					3.91												

DRAFT

MIS-BHS 001 21451149.GPJ GAL-MIS.GDT 6/16/22

DEPTH SCALE

1 : 50



LOGGED: JS

CHECKED: BB

PROJECT: 21451149

RECORD OF BOREHOLE: 21-201

SHEET 1 OF 2

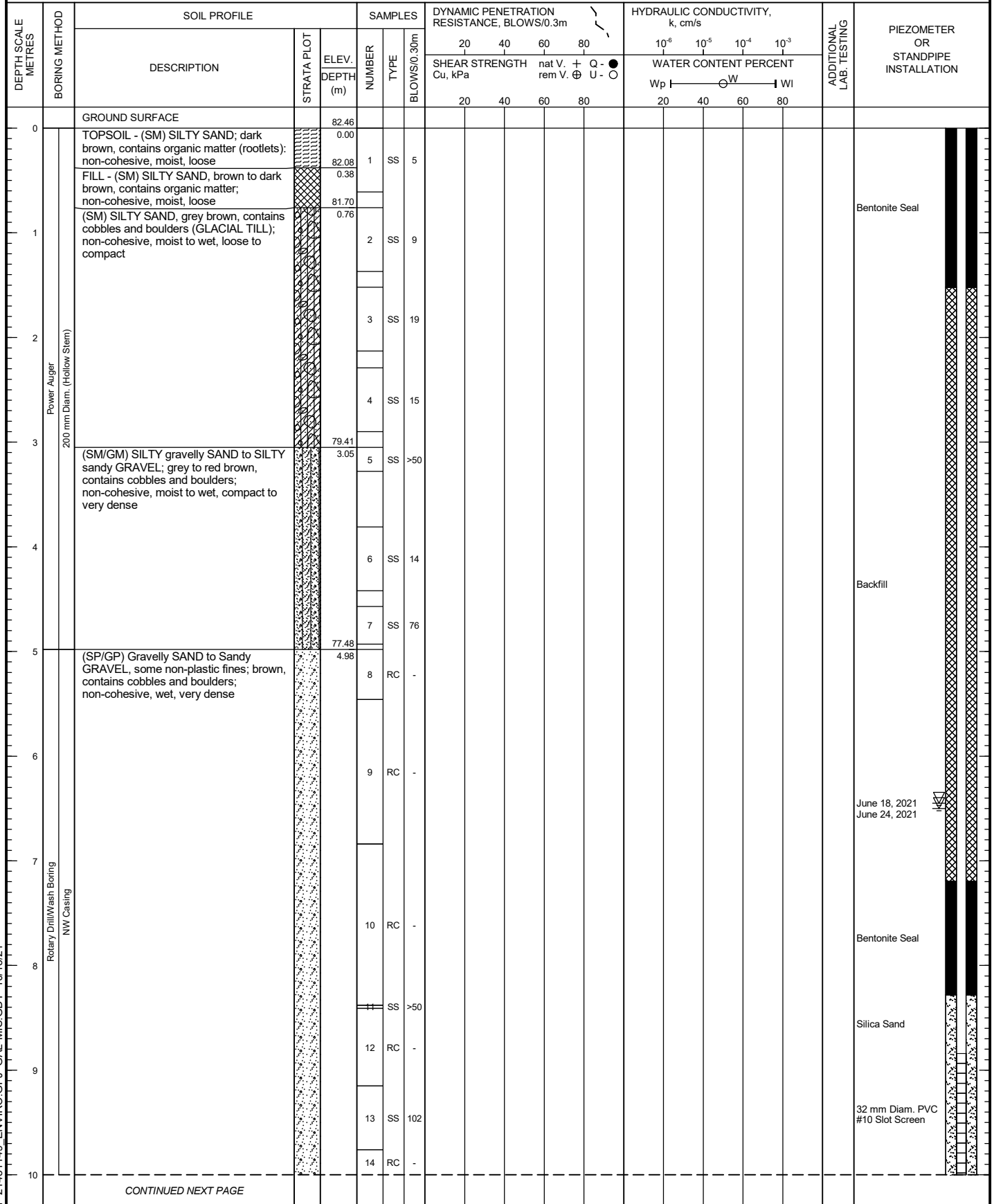
LOCATION: N 5028309.4 ;E 366459.5

BORING DATE: June 8, 2021

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm



CONTINUED NEXT PAGE

MIS-BHS 001 21451149 ENVIRO.GPJ GAL-MIS.GDT 10/13/21

DEPTH SCALE

1 : 50



LOGGED: RI

CHECKED: RM

PROJECT: 21451149

# RECORD OF BOREHOLE: 21-201

SHEET 2 OF 2

LOCATION: N 5028309.4 ;E 366459.5

BORING DATE: June 8, 2021

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION		
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	SHEAR STRENGTH Cu, kPa				WATER CONTENT PERCENT					
								20	40	60	80	nat V. +	rem V. ⊕			Q - ●	U - ○
10	Rotary Drill/Wash Boring NW Casing	-- CONTINUED FROM PREVIOUS PAGE -- (SP/GP) Gravelly SAND to Sandy GRAVEL, some non-plastic fines; brown, contains cobbles and boulders; non-cohesive, wet, very dense			14	RC	-										
11				15	SS	>50											
12				16	RC	-											
13				17	SS	89											
	DCPT	Dynamic Cone Penetration Test (DCPT)		69.78									120				
		End of Borehole DCPT Refusal		12.68													
		1. Water level in screen measured at 6.5 m (Elev. 75.95 m) on June 24, 2021 2. Water level in screen measured at 6.45 m (Elev. 76.01) on June 18, 2021		69.58													
				12.88													



MIS-BHS 001 21451149 ENVIRO.GPJ GAL-MIS.GDT 10/13/21

DEPTH SCALE

1 : 50



LOGGED: RI

CHECKED: RM

PROJECT: 21451149

# RECORD OF BOREHOLE: 21-202

SHEET 1 OF 3

LOCATION: N 5028386.4 ;E 366468.2

BORING DATE: May 25, 2021

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕		HYDRAULIC CONDUCTIVITY, k, cm/s		ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER TYPE	BLOWS/0.30m	ND = Not Detected	ND = Not Detected	Wp   W   Wi		
0		GROUND SURFACE		81.20							
		TOPSOIL - (SM) SILTY SAND; dark brown, contains organic matter (rootlets); non-cohesive, moist, very loose		0.00							
		FILL - (SM) SILTY SAND; dark brown to brown, contains organic matter; non-cohesive, moist, very loose		0.25	1	SS	3	⊕			
								ND			
1				79.98	2	SS	4	⊕			
		(CI/CH) SILTY CLAY to CLAY, trace sand; grey brown, highly fissured (WEATHERED CRUST); cohesive, w<PL, very stiff		1.22							
2				79.37	3	SS	14	⊕			
		(SM) gravelly SILTY SAND; grey brown, possible cobbles and boulders (GLACIAL TILL); non-cohesive, moist, loose to dense		1.83							
					4	SS	16	⊕			
3											
					5	SS	10	⊕			
4											
					6	SS	36	⊕			
5					7	SS	7				
				75.86							
		(SM) gravelly SILTY SAND; grey, contains cobbles and boulders (GLACIAL TILL); non-cohesive, wet, very loose		5.34	8	SS	2	⊕			
6				75.10							
		(SM) gravelly SILTY SAND; grey, contains cobbles and boulders (GLACIAL TILL); non-cohesive, wet, very loose		6.10	9	SS	WH	⊕			
				74.34							
7				6.86	10	SS	45				
		(SM/GM) gravelly SILTY SAND to SILTY sandy GRAVEL; brown, contains cobbles and boulders; non-cohesive, wet, dense									
8					11	SS	34				
				72.97							
		(SW) gravelly SAND, fine to coarse, trace to some silt; grey brown, possible cobbles and boulders; non-cohesive, wet, compact		8.23	12	SS	16				
9											
					13	SS	24				
10					14	SS	14				

Power Auger  
200 mm Diam. (Hollow Stem)

Bentonite Seal

June 9, 2021

Backfill

CONTINUED NEXT PAGE

MIS-BHS 001 21451149 ENVIRO.GPJ GAL-MIS.GDT 10/13/21

DEPTH SCALE  
1 : 50



LOGGED: RI  
CHECKED: RM



PROJECT: 21451149

# RECORD OF BOREHOLE: 21-202

SHEET 2 OF 3

LOCATION: N 5028386.4 ;E 366468.2

BORING DATE: May 25, 2021

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] $\oplus$				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION			
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] $\square$				WATER CONTENT PERCENT							
								ND = Not Detected				Wp  -----  W  -----  WI							
							20	40	60	80	10 <sup>-6</sup>	10 <sup>-5</sup>	10 <sup>-4</sup>	10 <sup>-3</sup>					
10	Power Auger 200 mm Diam. (Hollow Stem)	--- CONTINUED FROM PREVIOUS PAGE --- (SW) gravelly SAND, fine to coarse, trace to some silt; grey brown, possible cobbles and boulders; non-cohesive, wet, compact																	
11				14	SS	14													
12		(SW) gravelly SAND, fine to coarse, trace to some silt; brown, contains cobbles and boulders; non-cohesive, wet, compact to dense			69.61 11.59	16	SS	1											
13	Rotary Drill/Wash Boring NW Casing				17	SS	12												
				18	SS	>50													
					19	RC	DD												
					20	SS	43												
					21	SS	32												
16			64.71 16.49	22	SS	>50													
17		Borehole continued on RECORD OF DRILLHOLE 21-202																	
18																			
19																			
20																			

Backfill

Bentonite Seal

MIS-BHS 001 21451149 ENVIRO.GPJ\_GAL-MIS.GDT 10/13/21

DEPTH SCALE

1 : 50



LOGGED: RI

CHECKED: RM

PROJECT: 21451149

# RECORD OF DRILLHOLE: 21-202

SHEET 3 OF 3

LOCATION: N 5028386.4 ;E 366468.2

DRILLING DATE: May 25, 2021

DATUM: NAD 1983

INCLINATION: -90° AZIMUTH: ---

DRILL RIG: CME 75

DRILLING CONTRACTOR: Downing Drilling

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV.		RUN No.	FLUSH	RECOVERY		R.Q.D. %	FRACT. INDEX PER 0.25 m	DIP W.R.L. CORE AXIS	DISCONTINUITY DATA				ROCK STRENGTH INDEX				WEATHERING INDEX				Q. AVG.		
				DEPTH (m)	ELEV.			TOTAL CORE %	SOLID CORE %				TYPE AND SURFACE DESCRIPTION		Joon	Jr	Ja	R4	R3	R2	R1	W1	W2	W3		W4	
								88888888	88888888																		
		BEDROCK SURFACE		64.71																							
17		Slightly weathered to fresh, thickly to massive bedded, medium brownish grey, fine to coarse grained, faintly porous, strong LIMESTONE, with thin shale partings  - Broken core from 16.49 m to 16.58 m  - Broken core from 16.82 m to 16.85 m - Broken core from 17.56 m to 17.59 m	[Brick Pattern]	16.49		1	100																			Bentonite Seal  Silica Sand	
18						2	25																				
19	Rotary Drill NQ core					3	25																				32 mm Diam. PVC #10 Slot Screen
20		- Broken/lost core from 19.25 m to 19.36 m				4	25																				Silica Sand
21																											
22		End of Drillhole  Note(s):  1. Water level in screen measured at 5.15 m (Elev. 76.04 m) on June 9, 2021		59.38 21.82																							
23																											
24																											
25																											
26																											

MIS-RCK 004 21451149 ENVIRO.GPJ GAL-MISS.GDT 10/13/21

DEPTH SCALE

1 : 50



LOGGED: RI

CHECKED: RM

PROJECT: 21451149

# RECORD OF BOREHOLE: 21-203

SHEET 1 OF 2

LOCATION: N 5028375.5 ;E 366524.0

BORING DATE: May 19, 2021

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕		HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION					
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	ND = Not Detected	20	40	60			80	10 <sup>-6</sup>	10 <sup>-5</sup>	10 <sup>-4</sup>	10 <sup>-3</sup>
0	Power Auger 200 mm Diam. (Hollow Stem)	GROUND SURFACE		81.36														
		TOPSOIL - (SM) SILTY SAND, trace gravel; dark brown, contains organic matter (rootlets); non-cohesive, moist, loose			0.00													
		FILL - (SM) SILTY SAND; brown; non-cohesive, moist, compact			81.11													
					0.25	1	SS	31	ND	⊕								
1			(CI/CH) SILTY CLAY to CLAY, trace sand; grey brown, highly fissured, contains organic matter (WEATHERED CRUST); cohesive, w>PL, very stiff to stiff		80.45													
					0.91													
			(SM) gravelly SILTY SAND; grey brown, contains cobbles and boulders (GLACIAL TILL); non-cohesive, moist to wet, very loose to compact		1.07	2	SS	4	ND	⊕								
2																		
3																		
4																		
5																		
6		(SM) gravelly SILTY SAND; grey, contains cobbles and boulders (GLACIAL TILL); non-cohesive, wet, very loose to dense		76.02														
				5.34	8	SS	4	ND	⊕									
7																		
8																		
9		(SW) SAND, fine to coarse, trace to some gravel; grey; non-cohesive, wet, loose to compact		72.98														
				8.38	12	SS	5	ND	⊕									
10																		

CONTINUED NEXT PAGE

MIS-BHS 001 21451149 ENVIRO.GPJ GAL-MIS.GDT 10/13/21

DEPTH SCALE

1 : 50



LOGGED: RI

CHECKED: RM

PROJECT: 21451149

# RECORD OF BOREHOLE: 21-203

SHEET 2 OF 2

LOCATION: N 5028375.5 ;E 366524.0

BORING DATE: May 19, 2021

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] $\oplus$				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] $\square$				WATER CONTENT PERCENT					
								ND = Not Detected				Wp  -----  W  -----  WI					
		-- CONTINUED FROM PREVIOUS PAGE --															
10	Power Auger 200 mm Diam. (Hollow Stem)			14	SS	17											
11					15	SS	29										
12				69.77 11.59	16	SS	100										
13				69.16 12.20	17	SS	74										
14				67.34 14.02	18	SS	13										
15				66.12 15.24	19	SS	41										
16			DCPT	65.51 15.85													
17				64.46 16.90													
18																	
19																	
20																	

MIS-BHS 001 21451149 ENVIRO.GPJ GAL-MIS.GDT 10/13/21

DEPTH SCALE

1 : 50



LOGGED: RI

CHECKED: RM

PROJECT: 21451149

## RECORD OF BOREHOLE: 21-204

SHEET 1 OF 2

LOCATION: N 5028364.7 ; E 366570.7

BORING DATE: June 9, 2021

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	SHEAR STRENGTH Cu, kPa				WATER CONTENT PERCENT					
								20	40	60	80	nat V. +	rem V. ⊕	Q - ●			U - ○
0	Power Auger 200 mm Diam. (Hollow Stem)	GROUND SURFACE		81.09													
		TOPSOIL -(SM) SILTY SAND; dark brown, contains organic matter (rootlets); non-cohesive, moist, loose		0.00													
		FILL - (SP) SAND, fine to medium, some silt; brown to dark brown, contains organic matter; non-cohesive, moist, loose		0.15	1	SS	5										Bentonite Seal
				80.48													
				0.61													
1		FILL - (SM) SILTY SAND, trace gravel; brown to dark brown, contains organic matter; non-cohesive, moist, loose			2	SS	6										
				79.57													
		(SM) gravelly SILTY SAND; grey brown, contains cobbles and boulders (GLACIAL TILL); non-cohesive, moist to wet, loose to compact		1.52	3	SS	6										
2					4	SS	11										
				77.28													
3				3.81	5	SS	19										Backfill
4		(SM) gravelly SILTY SAND; grey, contains cobbles and boulders (GLACIAL TILL); non-cohesive, wet, compact			6	SS	15										
					7	SS	25										
5				8	SS	>50										June 18, 2021 June 24, 2021	
				9	SS	18										Bentonite Seal	
6				10	SS	11										Silica Sand	
				11	SS	16											
7				12	SS	21										50 mm Diam. PVC #10 Slot Screen	
8				13	SS	24											
				14	SS												
9		(SW) gravelly SAND, fine to coarse, some silt; grey; non-cohesive, wet, compact		15	SS												
			71.94														
			9.15														
10	DCPT	Dynamic Cone Penetration Test (DCPT)														Cave	
			71.33														
			9.76														

CONTINUED NEXT PAGE

MIS-BHS 001 21451149 ENVIRO.GPJ GAL-MIS.GDT 10/13/21

DEPTH SCALE

1 : 50



LOGGED: RI

CHECKED: RM

PROJECT: 21451149

# RECORD OF BOREHOLE: 21-204

SHEET 2 OF 2

LOCATION: N 5028364.7 ;E 366570.7

BORING DATE: June 9, 2021

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION		
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	SHEAR STRENGTH				WATER CONTENT PERCENT					
								Cu, kPa		nat V. rem V.	+ ⊕	Q - U	● ○			Wp	W
10	DCPT	--- CONTINUED FROM PREVIOUS PAGE --- Dynamic Cone Penetration Test (DCPT)															
11		End of Borehole DCPT Refusal		70.21 10.88											Cave		
11		Note(s): 1. Water level in screen measured at 5.21 m (Elev. 75.88 m) on June 24, 2021 2. Water level in screen measured at 5.16 m (Elev. 75.93 m) on June 18, 2021															
12																	
13																	
14																	
15																	
16																	
17																	
18																	
19																	
20																	

MIS-BHS 001 21451149 ENVIRO.GPJ GAL-MIS.GDT 10/13/21

DEPTH SCALE

1 : 50



LOGGED: RI

CHECKED: RM

PROJECT: 21451149

# RECORD OF BOREHOLE: 21-205

SHEET 1 OF 2

LOCATION: N 5028354.6 ; E 366633.4

BORING DATE: June 8, 2021

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕		HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION		
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] □		WATER CONTENT PERCENT					
								ND = Not Detected		Wp	W			Wi	
0		GROUND SURFACE		81.68											
		TOPSOIL - (SM/ML) SILTY SAND to sandy SILT, trace gravel; dark brown, contains organic matter (rootlets); non-cohesive, moist, loose		0.00											
		FILL - (SM) SILTY SAND; dark brown to brown, contains organic matter; non-cohesive, moist, compact		81.38	1	SS	1	ND	⊕						
1				0.30											
				80.46	2	SS	10	ND	⊕						
		(CI/CH) SILTY CLAY to CLAY, trace sand; grey brown, highly fissured (WEATHERED CRUST); cohesive, w<PL, very stiff		1.22											
2					3	SS	17	ND	⊕						
				78.94	4	SS	12	ND	⊕						
3		(SM) gravelly SILTY SAND; grey brown, contains cobbles and boulders (GLACIAL TILL); non-cohesive, moist to wet, compact		2.74											
					5	SS	16	ND	⊕						
4					6	SS	12	ND	⊕						
				76.80	7	SS	16	ND	⊕						
5		(SM) gravelly SILTY SAND; grey, contains cobbles and boulders (GLACIAL TILL); non-cohesive, wet, compact		4.88											
				76.34	8	SS	8	ND	⊕						
6		(SW) gravelly SAND, fine to coarse; grey; non-cohesive, wet, wet, compact		5.34											
					9	SS	4	ND	⊕						
7					10	SS	4								
					11	SS	14								
8					12	SS	24								
					13	SS	17								
9					14	SS	12								
10															

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MIS-BHS 001 21451149 ENVIRO.GPJ GAL-MIS.GDT 10/13/21

DEPTH SCALE

1 : 50



LOGGED: RI

CHECKED: RM

PROJECT: 21451149

# RECORD OF BOREHOLE: 21-205

SHEET 2 OF 2

LOCATION: N 5028354.6 ;E 366633.4

BORING DATE: June 8, 2021

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] $\oplus$				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] $\square$				WATER CONTENT PERCENT					
								ND = Not Detected 20 40 60 80				Wp  -----  W  -----  WI 20 40 60 80					
10	Power Auger 200 mm Diam. (Hollow Stem)	-- CONTINUED FROM PREVIOUS PAGE --															
		(SW) gravelly SAND, fine to coarse; grey; non-cohesive, wet, wet, compact			14	SS	12										
11					15	SS	67										
12					16	SS	4										
13					17	SS	62										
	Rotary Drill NW Casing	(SW) gravelly SAND, fine to coarse, some silt; grey non-cohesive; wet, very dense		69.18 12.50													
14		(SM/GM) SILTY sandy GRAVEL to SILTY gravelly SAND; grey; non-cohesive, wet, very dense		67.96 13.72	19	SS	79										
15				67.05 14.63													
16																	
17																	
18																	
19																	
20																	

MIS-BHS 001 21451149 ENVIRO.GPJ\_GAL-MIS.GDT 10/13/21

DEPTH SCALE

1 : 50



LOGGED: RI

CHECKED: RM



PROJECT: 21451149

# RECORD OF BOREHOLE: 21-205A

SHEET 1 OF 2

LOCATION: N ;E

BORING DATE: June 8, 2021

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION		
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	SHEAR STRENGTH Cu, kPa		WATER CONTENT PERCENT		Wp				Wi	
								nat V. +	rem V. ⊕	Q - ●	U - ○	Wp	Wi			Wp	Wi
0	Power Auger 200 mm Diam. (Hollow Stem)	GROUND SURFACE		0.00													
10		For soil stratigraphy refer to record of borehole 21-205															

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MIS-BHS 001 21451149 ENVIRO.GPJ GAL-MIS.GDT 10/13/21

DEPTH SCALE

1 : 50



LOGGED: RI

CHECKED: RM

PROJECT: 21451149

# RECORD OF BOREHOLE: 21-205A

SHEET 2 OF 2

LOCATION: N ;E

BORING DATE: June 8, 2021

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	20 40 60 80				10 <sup>-6</sup> 10 <sup>-5</sup> 10 <sup>-4</sup> 10 <sup>-3</sup>					
							SHEAR STRENGTH Cu, kPa		nat V. + rem V. ⊕		Q - U - ● ○		WATER CONTENT PERCENT Wp   W   Wi			
10	DCPT	-- CONTINUED FROM PREVIOUS PAGE -- For soil stratigraphy refer to record of borehole 21-205														
10.59		End of Borehole DCPT Refusal														
11																
12																
13																
14																
15																
16																
17																
18																
19																
20																

MIS-BHS 001 21451149 ENVIRO.GPJ GAL-MIS.GDT 10/13/21

DEPTH SCALE

1 : 50



LOGGED: RI

CHECKED: RM

PROJECT: 21451149

# RECORD OF BOREHOLE: 21-206

SHEET 1 OF 2

LOCATION: N 5028404.8 ;E 366638.6

BORING DATE: May 19, 2021

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] □				WATER CONTENT PERCENT					
								ND = Not Detected				Wp  -----  W  -----  WI					
0		GROUND SURFACE		77.09													
		TOPSOIL - (SM) SILTY SAND; dark brown, contains organic matter; non-cohesive, moist, loose		0.00													
		FILL -(SM) gravelly SILTY SAND; grey brown, contains cobbles and boulders; non-cohesive, moist, compact to very dense		0.15	1	SS	9	⊕	ND								
1					2	SS	>50	⊕	ND								
		(SM) gravelly SILTY SAND; grey, contains cobbles and boulders (GLACIAL TILL); non-cohesive, moist to wet, loose to compact		75.57													
				1.52	3	SS	7	⊕	ND								
2					4	SS	8	⊕	ND								
3					5	SS	10	⊕	ND								
4					6	SS	13	⊕	ND								
5					7	SS	9	⊕	ND								
		(SM) gravelly SILTY SAND; grey, contains cobbles and boulders (GLACIAL TILL); non-cohesive, wet, compact to very dense		71.75													
				5.34	8	SS	10	⊕	ND								
6					9	SS	13										
7					10	SS	13										
		(SP/SM) gravelly SAND to SILTY SAND, some gravel; grey; non-cohesive, moist to wet, compact to very loose		69.47													
				7.62	11	SS	23										
8					12	SS	16										
9					13	SS	3										
10					14	SS	7										

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MIS-BHS 001 21451149 ENVIRO.GPJ\_GAL-MIS.GDT 10/13/21

DEPTH SCALE

1 : 50



LOGGED: BW

CHECKED: RM

PROJECT: 21451149

# RECORD OF BOREHOLE: 21-206

SHEET 2 OF 2

LOCATION: N 5028404.8 ;E 366638.6

BORING DATE: May 19, 2021

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] $\oplus$	HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION			
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	ND = Not Detected								
								20	40	60	80			10 <sup>-6</sup>	10 <sup>-5</sup>	10 <sup>-4</sup>
							ND = Not Detected	Wp  -----  W  -----  WI								
							20	40	60	80	20	40	60	80		
10	Power Auger 200 mm Diam. (Hollow Stem)	-- CONTINUED FROM PREVIOUS PAGE -- (SP/SM) gravelly SAND to SILTY SAND, some gravel; grey; non-cohesive, moist to wet, compact to very loose														
				14	SS	7										
11				15	SS	10										
				16	SS	>50										
12		End of Borehole Auger Refusal														
				65.00												
				12.09												
13		Note(s): 1. Methane gas noted at a depth of 9.90 mbgs														
14																
15																
16																
17																
18																
19																
20																

MIS-BHS 001 21451149 ENVIRO.GPJ GAL-MIS.GDT 10/13/21

DEPTH SCALE

1 : 50



LOGGED: BW

CHECKED: RM

PROJECT: 21451149

# RECORD OF BOREHOLE: 21-207

SHEET 1 OF 3

LOCATION: N 5028410.7 ;E 366583.4

BORING DATE: June 4, 2021

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕	HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] □	WATER CONTENT PERCENT			
						ND = Not Detected	10 <sup>-6</sup>	10 <sup>-5</sup>	10 <sup>-4</sup>	10 <sup>-3</sup>		
						ND = Not Detected	Wp	W	Wi			
						20 40 60 80	20	40	60	80		
0		GROUND SURFACE		80.26								
		TOPSOIL - (SM) SILTY SAND, trace gravel; dark brown, contains organic matter (rootlets); non-cohesive, moist, loose		0.00 80.03 0.23 0.38	1	SS	1	⊕	ND			
		FILL - (SM) gravelly SILTY SAND, angular; grey; non-cohesive, moist, compact		79.50 0.76								
1		FILL - (SP) SAND, fine to medium, trace silt; brown; non-cohesive, moist, compact			2	SS	5	⊕	ND			
		(Cl/Ch) SILTY CLAY to CLAY, trace silt; grey brown, highly fissured (WEATHERED CRUST); cohesive, w~PL to w>PL, very stiff			3	SS	7	⊕	ND			
					4	SS	6	⊕	ND			
		(SM) gravelly SILTY SAND; brown to grey brown, contains cobbles and boulders (GLACIAL TILL); non-cohesive, moist to wet, loose		77.52 2.74								
					5	SS	9	⊕	ND			
		(SM) gravelly SILTY SAND; grey, contains cobbles and boulders (GLACIAL TILL); non-cohesive, wet, loose		76.45 3.81								
					6	SS	5	⊕	ND			
					7	SS	5	⊕	ND			
		(SM) gravelly SILTY SAND; grey, contains cobbles and boulders (GLACIAL TILL); non-cohesive, wet, loose to compact		74.92 5.34								
					8	SS	9					
					9	SS	7					
					10	SS	11					
					11	SS	10					
					12	SS	13					
					13	SS	15					

Bentonite Seal

64 mm Diam. VSP Pipe

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MIS-BHS 001 21451149 ENVIRO.GPJ GAL-MIS.GDT 10/13/21

DEPTH SCALE

1 : 50



LOGGED: RI

CHECKED: RM

PROJECT: 21451149

# RECORD OF BOREHOLE: 21-207

SHEET 2 OF 3

LOCATION: N 5028410.7 ;E 366583.4

BORING DATE: June 4, 2021

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] $\oplus$	HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	ND = Not Detected						
								20	40	60	80			10 <sup>-6</sup>
							ND = Not Detected							
							ND = Not Detected							
10	Rotary Drill/Wash Boring RW Casing	--- CONTINUED FROM PREVIOUS PAGE --- (SM) gravelly SILTY SAND; grey, contains cobbles and boulders (GLACIAL TILL); non-cohesive, wet, loose to compact		69.59										
11		(SW) gravelly SAND, trace to some silt; grey, contains cobbles and boulders; non-cohesive, wet, loose to very dense		10.67	14	SS	4							
12						15	RC	-						
12						16	SS	>50						
13		Borehole continued on RECORD OF DRILLHOLE 21-207		68.09										
14				12.17										
15														
16														
17														
18														
19														
20														

64 mm Diam. VSP Pipe

MIS-BHS 001 21451149 ENVIRO.GPJ GAL-MIS.GDT 10/13/21



PROJECT: 21451149

# RECORD OF DRILLHOLE: 21-207

SHEET 3 OF 3

LOCATION: N 5028410.7 ;E 366583.4

DRILLING DATE: June 4, 2021

DATUM: NAD 1983

INCLINATION: -90° AZIMUTH: ---

DRILL RIG: CME 75

DRILLING CONTRACTOR: Downing Drilling

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	RECOVERY		R.Q.D. %	FRACT. INDEX PER 0.25 m	DIP W.R.L. CORE AXIS	DISCONTINUITY DATA				ROCK STRENGTH INDEX				WEATHERING INDEX				Q. AVG.	
						FLUSH	TOTAL CORE %				SOLID CORE %	J1	J2	J3	J4	R4	R3	R2	R1	W1	W2	W3		W4
		BEDROCK SURFACE		68.09																				
		Fresh, thinly to medium bedded, medium bedded, medium grey to brownish grey, fine to medium grained, non-porous, medium strong to weak SHALEY NODULAR LIMESTONE		12.17	1	100																64 mm Diam. VSP Pipe		
13		- Broken/lost core from 12.17 m to 12.34 m			2	100																		
14					3	100																		
15					4	100																		
16					5	100																		
17	Rotary Drill HQ Core	- Mud seam from 16.66 m to 16.69 m			6	100																64 mm Diam. VSP Pipe		
18		- Heavy fossiliferous/bioturbated from 17.60 m to 21.61 m			7	100																		
19		- Heavy calcite veining from 18.40 m to 21.61 m																						
20																								
21		- Broken core from 20.54 m to 20.59 m																						
22		End of Drillhole Note(s): 1. Water level in screen measured at 3.32 m (Elev. 76.94 m) on June 9, 2021		58.65 21.61																				

MIS-RCK 004 21451149 ENVIRO.GPJ GAL-MISS.GDT 10/13/21

DEPTH SCALE

1 : 50



LOGGED: RI

CHECKED: RM

PROJECT: 21451149

# RECORD OF BOREHOLE: 21-208

SHEET 1 OF 2

LOCATION: N 5028416.5 ; E 366534.7

BORING DATE: June 1, 2021

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕		HYDRAULIC CONDUCTIVITY, k, cm/s		ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] □	WATER CONTENT PERCENT			
						ND = Not Detected	20 40 60 80	10 <sup>-6</sup> 10 <sup>-5</sup> 10 <sup>-4</sup> 10 <sup>-3</sup>	Wp  -----  W  -----  WI		
						ND = Not Detected	20 40 60 80	20 40 60 80			
0		GROUND SURFACE		80.77							
		TOPSOIL - (SM) SILTY SAND; dark brown, contains organic matter (rootlets); non-cohesive, moist, loose		0.00							
		FILL - (SP) SAND, fine to medium, trace silt; brown; non-cohesive, moist, loose		80.52							
				0.25	1	SS	6	ND	⊕		
1		(CI/CH) SILTY CLAY to CLAY, trace sand; grey brown, highly fissured, contains thin lamination of silty sand and very thin beds of gravelly silty sand (WEATHERED CRUST); cohesive, w~PL to w>PL, very stiff		79.86							
				0.91	2	SS	9	ND	⊕		
2					3	SS	13	ND	⊕		
					4	SS	8	ND	⊕		
3											
		(SM/ML) SILTY SAND to sandy SILT, some gravel, some low plasticity fines; grey brown, contains cobbles and boulders (GLACIAL TILL); non-cohesive, moist to wet, loose to compact		77.57							
				3.20	5	SS	8	ND	⊕		MH
4											
		(SM) gravelly SILTY SAND; grey, contains cobbles and boulders (GLACIAL TILL); non-cohesive, wet, compact to loose		76.65							
				4.12	6	SS	13	ND	⊕		
5	Power Auger 200 mm Diam. (Hollow Stem)										
		(SM) SILTY SAND, some gravel to gravelly, some low plasticity fines; grey, contains thin beds of gravelly sand, very thin beds of silty sand, cobbles and boulders (GLACIAL TILL); non-cohesive, wet, loose to dense		75.43							
				5.34	8	SS	7				
6											
					9	SS	8				MH
7											
					10	SS	9				
8											
					11	SS	21				
9											
					12	SS	9				
					13	SS	9				
10											
					14	SS	24				

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MIS-BHS 001 21451149 ENVIRO.GPJ GAL-MIS.GDT 10/13/21

DEPTH SCALE

1 : 50



LOGGED: RI

CHECKED: RM



PROJECT: 21451149

# RECORD OF BOREHOLE: 21-208

SHEET 2 OF 2

LOCATION: N 5028416.5 ;E 366534.7

BORING DATE: June 1, 2021

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] $\oplus$				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] $\square$				WATER CONTENT PERCENT					
								ND = Not Detected				Wp  -----  W  -----  WI					
							20	40	60	80	20	40	60	80			
10	Power Auger 200 mm Diam. (Hollow Stem)	-- CONTINUED FROM PREVIOUS PAGE --															
		(SM) SILTY SAND, some gravel to gravelly, some low plasticity fines; grey, contains thin beds of gravelly sand, very thin beds of silty sand, cobbles and boulders (GLACIAL TILL); non-cohesive, wet, loose to dense															
11				14	SS	24											
				15	SS	41											
		(SW) gravelly SAND, fine to coarse, trace to some silt; grey; non-cohesive, wet, compact to very dense															
				16	SS	29											
				17	SS	19											
12																	
13	DCPT	Dynamic Cone Penetration Test (DCPT)															
14																	
15		End of Borehole DCPT Refusal															
16																	
17																	
18																	
19																	
20																	

MIS-BHS 001 21451149 ENVIRO.GPJ\_GAL-MIS.GDT 10/13/21

DEPTH SCALE

1 : 50



LOGGED: RI

CHECKED: RM

PROJECT: 21451149

# RECORD OF BOREHOLE: 21-209

SHEET 1 OF 2

LOCATION: N 5028422.9 ;E 366480.2

BORING DATE: June 10, 2021

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕		HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] □		WATER CONTENT PERCENT					
								ND = Not Detected		Wp	W	Wi			
0		GROUND SURFACE		81.03											
		TOPSOIL - (SM) SILTY SAND, some gravel; dark brown, contains organic matter (rootlets); non-cohesive, moist, compact		0.00											
		FILL - (SM) gravelly SILTY SAND, some clay; dark brown to grey brown, contains clay layers and organic matter (rootlets); non-cohesive, moist, compact to loose		80.57	1	SS	14	ND							
1				0.46											
					2	SS	13								
2				78.90											
		FILL - (CL/CI) SILTY CLAY, some sand, trace gravel; grey brown, contains organic matter; cohesive, w>PL, soft to firm		2.13											
					4	SS	2	ND							
3															
					5	SS	4								
				77.37											
4		FILL - (SM) gravelly SILTY SAND; grey brown, contains clay layers and nodules; non-cohesive, wet, very loose		3.66											
					6	SS	3	ND							
				76.46											
5		FILL - (CL/CI) SILTY CLAY, trace sand; grey brown, highly fissured; cohesive, w>PL, soft to firm		4.57											
					7	SS	4	ND							
				75.92											
		(SM) gravelly SILTY SAND; grey, contains cobbles and boulders (GLACIAL TILL); non-cohesive, wet, very loose		5.11											
				75.69											
		(SM) gravelly SILTY SAND; grey, contains cobbles and boulders (GLACIAL TILL); non-cohesive, wet, very loose to very dense		5.34											
6					8	SS	7	ND							
					9	SS	4								
7															
					10	SS	5								
8															
					11	SS	11								
					12	SS	11								
9															
					13	SS	13								
10				71.27											
				9.76											

CONTINUED NEXT PAGE

MIS-BHS 001 21451149 ENVIRO.GPJ GAL-MIS.GDT 10/13/21

DEPTH SCALE

1 : 50



LOGGED: RI

CHECKED: RM

PROJECT: 21451149

# RECORD OF BOREHOLE: 21-209

SHEET 2 OF 2


LOCATION: N 5028422.9 ;E 366480.2

BORING DATE: June 10, 2021

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] $\oplus$				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] $\square$				WATER CONTENT PERCENT					
							ND = Not Detected				Wp  -----○-----  WI					
						20	40	60	80	10 <sup>-6</sup>	10 <sup>-5</sup>	10 <sup>-4</sup>	10 <sup>-3</sup>			
10	DCPT	-- CONTINUED FROM PREVIOUS PAGE -- (SM) gravelly SILTY SAND; grey, contains cobbles and boulders (GLACIAL TILL); non-cohesive, wet, dense to very dense		70.15 10.88												
11		End of Borehole DCPT Refusal														
12																
13																
14																
15																
16																
17																
18																
19																
20																

MIS-BHS 001 21451149 ENVIRO.GPJ GAL-MIS.GDT 10/13/21

DEPTH SCALE

1 : 50



LOGGED: RI

CHECKED: RM

PROJECT: 21451149

# RECORD OF BOREHOLE: 21-210

SHEET 1 OF 1

LOCATION: N 5028466.5 ; E 366489.7

BORING DATE: June 2, 2021

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕ <i>ND = Not Detected</i>	HYDRAULIC CONDUCTIVITY, k, cm/s	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION		
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m			HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] □ <i>ND = Not Detected</i>	WATER CONTENT PERCENT
										Wp	W
		GROUND SURFACE		80.23							
		TOPSOIL - (SM) SILTY SAND, trace gravel; dark brown, contains organic matter (rootlets); non-cohesive, loose		0.00 80.00 0.23	1	SS	10	⊕			
		FILL - (SM) SILTY SAND, trace gravel, some clay; dark brown, contains organic matter and silty clay layers; non-cohesive, moist, compact		79.62 0.61							
		FILL - (CI/CH) SILTY CLAY to CLAY, trace to some sand, trace gravel; grey brown, highly fissured, contains silty sand pockets/nodules/layers and organic matter; cohesive, w-PL, firm to stiff			2	SS	9	⊕			
					3	SS	4	⊕			
		FILL - (SW) SAND, fine to coarse, trace gravel; brown, contains organic matter (wood/rootlets); non-cohesive, moist, loose		77.79 2.44	4	SS	5	⊕			
		(ML/SM) sandy SILT to SILTY SAND, some gravel to gravelly, some low plastic fines; grey, contains cobbles and boulders (GLACIAL TILL); non-cohesive, wet, loose		77.18 3.05	5	SS	8	⊕	MH		
					6	SS	12	⊕			
					7	SS	25	⊕			
		(SM) SILTY SAND, some gravel to gravelly; grey, contains cobbles and boulders (GLACIAL TILL); non-cohesive, wet, compact to dense		74.89 5.34	8	SS	21				
					9	SS	27		MH		
					10	SS	23				
					11	SS	13				
					12	SS	46				
		End of Borehole Auger Refusal		71.08 9.15							

MIS-BHS 001 21451149 ENVIRO.GPJ\_GAL-MIS.GDT 10/13/21



PROJECT: 21451149

# RECORD OF BOREHOLE: 21-211

SHEET 1 OF 2

LOCATION: N 5028465.6 ;E 366539.9

BORING DATE: May 20, 2021

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	SHEAR STRENGTH Cu, kPa				WATER CONTENT PERCENT					
								20	40	60	80	nat V. +	rem V. ⊕	Q - ●			U - ○
0		GROUND SURFACE		79.60													
		TOPSOIL - (SM/ML) SILTY SAND to sandy SILT, trace gravel; dark brown, contains organic matter (rootlets); non-cohesive, moist, loose		0.00													
		FILL - (SM) SILTY SAND, trace gravel; dark brown, contains organic matter; non-cohesive, moist, compact		0.15	1	SS	10										
		FILL - (CL/C) sandy SILTY CLAY, trace gravel; grey brown to grey, contains organic matter; cohesive, w~PL to w>PL, stiff to soft		0.30													
1					2	SS	5										
					3	SS	3										
2																	
		FILL - (SM) gravelly SILTY SAND, trace to some clay; grey brown, contains organic matter; non-cohesive, moist to wet, very loose		77.31													
		FILL - (SW) SAND, fine to coarse, trace gravel; brown, contains silty clay to clayey silt lens; non-cohesive, moist, very loose		2.29	4	SS	2										
				76.86													
				2.74													
3					5	SS	3										
					6	SS	2										
4																	
					7	SS	2										
5																	
		(SM) gravelly SILTY SAND to sandy SILT; grey, contains cobbles and boulders (GLACIAL TILL); non-cohesive, moist to wet, very loose to dense		74.26													
				5.34	8	SS	3										
6																	
					9	SS	4										
7																	
					10	SS	10										
8																	
					11	SS	12										
					12	SS	3										
9																	
					13	SS	11										
10					14	SS	41										

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DEPTH SCALE

1 : 50



LOGGED: RI

CHECKED: RM

MIS-BHS 001 21451149 ENVIRO.GPJ GAL-MIS.GDT 10/13/21

PROJECT: 21451149

# RECORD OF BOREHOLE: 21-211

SHEET 2 OF 2

LOCATION: N 5028465.6 ;E 366539.9

BORING DATE: May 20, 2021

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION		
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	SHEAR STRENGTH Cu, kPa				WATER CONTENT PERCENT					
								20	40	60	80	nat V. +	rem V. ⊕			Q - ●	U - ○
10	Power Auger	<p>-- CONTINUED FROM PREVIOUS PAGE --</p> <p>(SM) gravelly SILTY SAND to sandy SILT; grey, contains cobbles and boulders (GLACIAL TILL); non-cohesive, moist to wet, very loose to dense</p>		68.83	14	SS	41										
				10.77	15	SS	>50										
11		End of Borehole Auger Refusal															
12																	
13																	
14																	
15																	
16																	
17																	
18																	
19																	
20																	

MIS-BHS 001 21451149 ENVIRO.GPJ GAL-MIS.GDT 10/13/21

DEPTH SCALE

1 : 50



LOGGED: RI

CHECKED: RM

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕ ND = Not Detected				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] □ ND = Not Detected				WATER CONTENT PERCENT				
							20	40	60	80	20	40	60	80		
0		GROUND SURFACE		79.89												
		TOPSOIL - (SM) SILTY SAND; dark brown, contains organic matter (rootlets); non-cohesive, moist, loose		0.00												
		FILL - (SP) SAND, fine to medium, trace silt; brown to dark brown, contains organic matter; non-cohesive, moist, loose		79.59	1	SS	7	□	ND	⊕						
		(CI/CH) SILTY CLAY to CLAY, trace to some sand; grey brown, highly fissured (WEATHERED CRUST); cohesive, w>PL, very stiff		79.13												
1				0.76												
					2	SS	12	□	ND	⊕						
2																
					3	SS	17	□	ND	⊕						
					4	SS	13	□	ND	⊕						MH
3																
					5	SS	8	□	ND	⊕						
		(SM) gravelly SILTY SAND; grey brown, contains cobbles and boulders (GLACIAL TILL); non-cohesive, moist, compact		76.38												
4				3.51												
					6	SS	12									
5	Power Auger 200 mm Diam. (Hollow Stem)				7	SS	13									
		(SM) SILTY SAND, some gravel to gravell; contains cobbles and boulders (GLACIAL TILL); non-cohesive, wet, loose to compact		74.55												
6				5.34												
					8	SS	6									
					9	SS	6									
7																
					10	SS	5									MH
8																
					11	SS	12									
					12	SS	15									
9																
					13	SS	11									
10	DCPT	Dynamic Cone Penetration Test (DCPT)		70.13												
				9.76												

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MIS-BHS 001 21451149 ENVIRO.GPJ GAL-MIS.GDT 10/13/21

PROJECT: 21451149

# RECORD OF BOREHOLE: 21-212

SHEET 2 OF 2

LOCATION: N 5028459.5 ;E 366591.9

BORING DATE: June 10, 2021

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] $\oplus$				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	ND = Not Detected				10 <sup>-6</sup> 10 <sup>-5</sup> 10 <sup>-4</sup> 10 <sup>-3</sup>					
							HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] $\square$				WATER CONTENT PERCENT					
						ND = Not Detected				Wp  -----  W  -----  WI						
10	DCPT	-- CONTINUED FROM PREVIOUS PAGE --														
		Dynamic Cone Penetration Test (DCPT)														
11																
12																
13																
					66.70											
					13.19											
14			End of Borehole DCPT Refusal													
			Note(s):													
			1. Water level in open hole at 7.47 m upon completion of drilling													
15																
16																
17																
18																
19																
20																

MIS-BHS 001 21451149 ENVIRO.GPJ GAL-MIS.GDT 10/13/21

DEPTH SCALE

1 : 50



LOGGED: RI

CHECKED: RM



PROJECT: 21451149

# RECORD OF BOREHOLE: 21-213

SHEET 1 OF 3

LOCATION: N 5028443.0 ; E 366650.3

BORING DATE: May 31, 2021

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕		HYDRAULIC CONDUCTIVITY, k, cm/s		ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		DESCRIPTION	STRATA PLOT	NUMBER	TYPE	VAPOUR CONCENTRATIONS [PPM]		k, cm/s			
			ELEV. DEPTH (m)			BLOWS/0.30m	ND = Not Detected	20 40 60 80	10 <sup>-6</sup> 10 <sup>-5</sup> 10 <sup>-4</sup> 10 <sup>-3</sup>		
0		GROUND SURFACE	76.11								
		TOPSOIL - (SM) SILTY SAND, trace gravel; dark brown, contains organic matter (rootlets); non-cohesive, moist, compact	0.00	1	SS	20	⊕				
			0.20								Bentonite Seal
		FILL - (SM) gravelly SILTY SAND; dark brown, contains concrete and organic matter; non-cohesive, moist, compact	75.91								
1			0.91	2	SS	33	⊕				June 9, 2021
		FILL - (SM/GM) SILTY gravelly SAND to SILTY sandy GRAVEL, angular; dark brown to grey brown; non-cohesive, moist, dense	75.20								
			74.59								
2		FILL - (SM) gravelly SILTY SAND, trace to some clay; brown to grey brown, contains silty clay layers and organic matter (rootlets/wood); non-cohesive, moist to wet, very loose to compact	1.52	3	SS	6	⊕				
				4	SS	10	⊕				Backfill
				5	SS	4	⊕				
4		FILL - (SW) gravelly SAND, fine to coarse; brown; non-cohesive, wet, very loose	72.30	6	SS	1	⊕				
			3.81								
				7	SS	1					
				8	SS	10	⊕				
				9	SS	10	⊕				
				10	SS	20					
				11	SS	24					
				12	SS	13					
				13	SS	40					
				14	SS	>50					
10											

CONTINUED NEXT PAGE

MIS-BHS 001 21451149 ENVIRO.GPJ GAL-MIS.GDT 10/13/21

DEPTH SCALE

1 : 50



LOGGED: RI

CHECKED: RM

PROJECT: 21451149

# RECORD OF BOREHOLE: 21-213

SHEET 2 OF 3

LOCATION: N 5028443.0 ;E 366650.3

BORING DATE: May 31, 2021

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] $\oplus$	HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	ND = Not Detected						
								20 40 60 80	10 <sup>-6</sup> 10 <sup>-5</sup> 10 <sup>-4</sup> 10 <sup>-3</sup>					
							ND = Not Detected	Wp  -----  W  -----  WI						
							ND = Not Detected	20 40 60 80						
10	Power Auger 200 mm Diam. (Hollow Stem)	-- CONTINUED FROM PREVIOUS PAGE --												
		(SM) gravelly SILTY SAND; grey, possible sand layer from 8.38 m to 8.99 m, contains cobbles and boulders (GLACIAL TILL); non-cohesive, wet, compact to dense		65.44										
11		(SW) gravelly SAND, fine to coarse, some silt; grey; non-cohesive, wet, dense to very loose		10.67	15	SS	40							50 mm Diam. PVC #10 Slot Screen
		(SM) gravelly SILTY SAND; grey, contains cobbles and boulders (GLACIAL TILL); non-cohesive, wet, very loose		64.52										
12			11.59	16	SS	4								
			63.91											
13		Borehole continued on RECORD OF DRILLHOLE 21-213												
		Note(s):												
		1. Methane gas noted at a depth of 11.59 mbgs												
14														
15														
16														
17														
18														
19														
20														

MIS-BHS 001 21451149 ENVIRO.GPJ GAL-MIS.GDT 10/13/21

DEPTH SCALE

1 : 50



LOGGED: RI

CHECKED: RM

PROJECT: 21451149

# RECORD OF DRILLHOLE: 21-213

SHEET 3 OF 3

LOCATION: N 5028443.0 ;E 366650.3

DRILLING DATE: May 31, 2021

DATUM: NAD 1983

INCLINATION: -90° AZIMUTH: ---

DRILL RIG: CME 75

DRILLING CONTRACTOR: Downing Drilling

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	RECOVERY		R.Q.D. %	FRACT. INDEX PER 0.25 m	DIP W.R.L. CORE AXIS	DISCONTINUITY DATA				ROCK STRENGTH INDEX				WEATHERING INDEX				Q. AVG.	
						TOTAL CORE %	SOLID CORE %				TYPE AND SURFACE DESCRIPTION		Joon	Jr	Ja	R4	R3	R2	R1	W1	W2	W3		W4
						FLUSH	COLOUR				FLT	SHR	VN	CJ	BD	FO	CO	OR	CL	PL	CJ	CU		PO
		BEDROCK SURFACE		63.91																				
		Fresh, thinly to medium bedded, medium grey to brownish grey, fine to medium grained, non-porous, medium strong to weak SHALEY LIMESTONE		12.20	1	100																		Silica Sand
13		- Broken core from 12.38 m to 12.40 m																						
14	Rotary Drill NQ Core				2	100-0																		Bentonite Seal
15					3	100																		
16		End of Drillhole  Note(s): 1. Water level in screen measured at 0.71 m (Elev. 75.40 m) on June 9, 2021		60.31 15.80																				
17																								
18																								
19																								
20																								
21																								
22																								

MIS-RCK 004 21451149 ENVIRO.GPJ GAL-MISS.GDT 10/13/21

DEPTH SCALE

1 : 50



LOGGED: RI

CHECKED: RM

PROJECT: 21451149

# RECORD OF BOREHOLE: 21-214

SHEET 1 OF 2

LOCATION: N 5028490.1 ;E 366670.1

BORING DATE: May 22, 2021

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION		
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] □				WATER CONTENT PERCENT					
								ND = Not Detected				Wp  -----  W  -----  WI					
0		GROUND SURFACE		75.83													
		TOPSOIL - (SM) SILTY SAND, trace gravel; dark brown, contains organic matter (rootlets); non-cohesive, moist, very loose		0.00													
		FILL - (SM) gravelly SILTY SAND; dark brown, contains concrete fragments, silty clay layers, organic matter and asphalt fragments; non-cohesive, moist, compact		0.15	1	SS	21	⊕	ND								
1					2	SS	>50	⊕	ND								
		FILL - (SW) SAND, fine to coarse, some gravel, some silt; brown, contains silty sand layers and silty clay layers; non-cohesive, moist to wet, compact to very loose		74.00	3	SS	18	⊕	ND								
				1.83	4	SS	7	⊕	ND								
2					5	SS	2	⊕	ND								
		FILL - (CL/CI) sandy SILTY CLAY; grey brown, contains silty sand layers; cohesive, w>PL, soft		72.02	6	SS	4	⊕	ND								
				3.81	7	SS	2	⊕	ND								
3					8	SS	49	⊕	ND								
		FILL - (SM) CLAYEY SILTY SAND, some gravel; dark grey brown, with black staining, contains organic matter; non-cohesive, wet, very loose		71.26	9	SS	>50	⊕	ND								
				4.57	10	SS	5	⊕	ND								
4					11	SS	10	⊕	ND								
		FILL - (SW) SAND, fine to coarse, some gravel, trace to some silt; brown, silty clay layers; non-cohesive, wet, dense		70.46	12	SS	14	⊕	ND								
				5.37													
		FILL - (SM) gravelly SILTY SAND; grey, with black staining and oxidation staining, contains silty clay layers, possible organic matter; non-cohesive, wet, very loose to loose		70.04													
				5.79													
5																	
		(SM) gravelly SILTY SAND; grey, contains cobbles and boulders (GLACIAL TILL); non-cohesive, wet, compact		68.97													
				6.86													
6																	
		Borehole continued on RECORD OF DRILLHOLE 21-214		67.55													
				8.28													
7																	
8																	
9																	
10																	

MIS-BHS 001 21451149 ENVIRO.GPJ GAL-MIS.GDT 10/13/21

DEPTH SCALE

1 : 50



LOGGED: RI

CHECKED: RM

PROJECT: 21451149

# RECORD OF DRILLHOLE: 21-214

SHEET 2 OF 2

LOCATION: N 5028490.1 ;E 366670.1

DRILLING DATE: May 22, 2021

DATUM: NAD 1983

INCLINATION: -90° AZIMUTH: ---

DRILL RIG: CME 75

DRILLING CONTRACTOR: Downing Drilling

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	COLOUR % RETURN	RECOVERY		R.Q.D. %	FRACT. INDEX PER 0.25 m	DIP w.r.t. CORE AXIS	DISCONTINUITY DATA				ROCK STRENGTH INDEX				WEATHERING INDEX				Q. AVG.	
							TOTAL CORE %	SOLID CORE %				TYPE AND SURFACE DESCRIPTION		Joon	Jr	Ja	R4	R3	R2	R1	W1	W2	W3		W4
							88888888	88888888				88888888	88888888	88888888	88888888	88888888	88888888	88888888	88888888	88888888	88888888	88888888	88888888		88888888
		BEDROCK SURFACE		67.55																					
		Fresh to slightly weathered, thinly to medium bedded, medium grey to brownish grey, fine to medium grained, non-porous, medium strong to weak SHALEY LIMESTONE		8.28																					
9		- Broken core from 8.51 m to 8.58 m - Broken/lost core from 9.08 m to 9.16 m - Broken/lost core from 9.25 m to 9.35 m			1	100																			
10	Rotary Drill NQ Core				2	100																			
11		- Broken/lost core from 10.57 m to 10.77 m			3	100																			
12		- Broken core from 12.16 m to 12.27 m		63.56																					
		End of Drillhole		12.27																					

MIS-RCK 004 21451149 ENVIRO.GPJ GAL-MISS.GDT 10/13/21

DEPTH SCALE

1 : 50



LOGGED: RI

CHECKED: RM

PROJECT: 21451149

# RECORD OF BOREHOLE: 21-215

SHEET 1 OF 1

LOCATION: N 5028548.6 ;E 366698.7

BORING DATE: May 28, 2021

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕		HYDRAULIC CONDUCTIVITY, k, cm/s		ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION		
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] □				WATER CONTENT PERCENT	
								ND = Not Detected				Wp	Wi
0		GROUND SURFACE		72.79									
		TOPSOIL - (SM) SILTY SAND; dark brown, contains organic matter (rootlets); non-cohesive, moist, loose		72.41	1	SS	6	ND	⊕				
		FILL - (SM) SILTY SAND, fine to medium; brown, contains organic matter (rootlets); non-cohesive, moist, loose to compact		0.38							Bentonite Seal		
1				71.57	2	SS	10	ND	⊕				
		(CI/CH) SILTY CLAY to CLAY, trace sand; grey brown, highly fissured, contains thin to thick laminations of silty sand (WEATHERED CRUST); cohesive, w>PL, very stiff		1.22							Backfill		
2				70.73	3	SS	8	ND	⊕				
		(SM) gravelly SILTY SAND; grey brown, contains cobbles and boulders (GLACIAL TILL); non-cohesive, moist to wet, loose		2.06							June 9, 2021		
3				68.22	4	SS	8	ND	⊕				
				4.57							Bentonite Seal		
4	Power Auger 200 mm Diam. (Hollow Stem)				5	SS	8	ND	⊕				
											Silica Sand		
5				68.22	6	SS	9						
		(SM) gravelly SILTY SAND; grey, contains cobbles and boulders (GLACIAL TIL); non-cohesive, wet, loose		4.57									
6					7	SS	6	ND	⊕				
											50 mm Diam. PVC #10 Slot Screen		
7					8	SS	7	ND	⊕				
7				65.73	9	SS	9						
				7.06									
8		End of Borehole Auger Refusal											
		Note(s): 1. Water level in screen measured at 2.39 m (Elev. 70.40 m) on June 9, 2021											
9													
10													

MIS-BHS 001 21451149 ENVIRO.GPJ GAL-MIS.GDT 10/13/21

DEPTH SCALE

1 : 50



LOGGED: RI

CHECKED: RM

PROJECT: 21451149

# RECORD OF BOREHOLE: 21-216

SHEET 1 OF 3

LOCATION: N 5028587.2 ;E 366636.0

BORING DATE: May 5, 2021

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕	HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION			
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	ND = Not Detected	10 <sup>-6</sup>	10 <sup>-5</sup>	10 <sup>-4</sup>			10 <sup>-3</sup>		
						HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] □	WATER CONTENT PERCENT								
						ND = Not Detected	Wp	W	WI						
						20 40 60 80	20	40	60	80					
0		GROUND SURFACE		74.34											
		TOPSOIL - (SM/ML) mixture of SILTY SAND and SILTY CLAY; dark brown; non-cohesive, loose		0.00											
		FILL - (CL/CI) SILTY CLAY, trace gravel; grey brown; cohesive, w~PL, brown		0.15	1	SS	7 ⊕								
1					2	SS	7 ⊕								
2					3	SS	6 ⊕								
		FILL - (SM) gravelly SILTY SAND, fine to medium brown, contains clay seams; non-cohesive, moist, compact		72.05											
				2.29	4	SS	16 ⊕								
3					5	SS	12 ⊕								
4		(SM/ML) SILTY SAND to sandy SILT, some gravel; grey brown to grey (GLACIAL TILL); moist to wet, very loose to very dense		70.68											
				3.66	6	SS	12 ⊕								
5	Power Auger 200 mm Diam. (Hollow Stem)				7	SS	10 □			⊕					
6					8	SS	8 □			⊕					
7					9	SS	4								
8					10	SS	6								
9					11	SS	4								
					12	SS	4								
					13	SS	6								
10					14	SS	4								

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MIS-BHS 001 21451149 ENVIRO.GPJ GAL-MIS.GDT 10/13/21

DEPTH SCALE

1 : 50



LOGGED: R/BW

CHECKED: RM

PROJECT: 21451149

# RECORD OF BOREHOLE: 21-216

SHEET 2 OF 3

LOCATION: N 5028587.2 ;E 366636.0

BORING DATE: May 5, 2021

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	ND = Not Detected				10 <sup>-6</sup> 10 <sup>-5</sup> 10 <sup>-4</sup> 10 <sup>-3</sup>					
								HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] □				WATER CONTENT PERCENT					
							20	40	60	80	20	40	60	80			
10	Power Auger	-- CONTINUED FROM PREVIOUS PAGE --															
		(SM/ML) SILTY SAND to sandy SILT, some gravel; grey brown to grey (GLACIAL TILL); moist to wet, very loose to very dense			14	SS	4										
11					15	SS	>50										
		Borehole continued on RECORD OF DRILLHOLE 21-216		63.21													
				11.13													
12																	
13																	
14																	
15																	
16																	
17																	
18																	
19																	
20																	

MIS-BHS 001 21451149 ENVIRO.GPJ GAL-MIS.GDT 10/13/21

DEPTH SCALE

1 : 50



LOGGED: R/BW

CHECKED: RM



PROJECT: 21451149

# RECORD OF DRILLHOLE: 21-216

SHEET 3 OF 3

LOCATION: N 5028587.2 ;E 366636.0

DRILLING DATE: May 5, 2021

DATUM: NAD 1983

INCLINATION: -90° AZIMUTH: ---

DRILL RIG: CME 75

DRILLING CONTRACTOR: Downing Drilling

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	COLOUR % RETURN	RECOVERY		R.Q.D. %	FRACT. INDEX PER 0.25 m	DIP W.R.L. CORE AXIS	DISCONTINUITY DATA				ROCK STRENGTH INDEX		WEATHERING INDEX				Q. AVG.		
							TOTAL CORE %	SOLID CORE %				TYPE AND SURFACE DESCRIPTION				Jr1	Jr2	Jr3	Jr4	W1	W2		W3	W4
							FLUSH	NON-FLUSH				FLY	SH	UN	ST	IR	BR	PO	K	SM	Ro		IR	W1
		BEDROCK SURFACE		63.21																				
12	Rotary Drill ING Core	Fresh, thinly to medium bedded, medium to brownish grey, fine to medium grained, non-porous, medium strong to weak SHALEY LIMESTONE - Broken core from 11.23 m to 11.25 m - Broken core from 11.5 m to 11.51 m	[Symbolic Log Pattern]	11.13	1	100																		
		- Broken/lost core from 12.13 m to 12.37 m - Broken core from 12.54 m to 12.55 m																						
13		- Broken core from 13.14 m to 13.15 m																						
14		- Mud seam from 14.03 m to 14.06 m - Mud seam from 14.28 m to 14.3 m - Mud seam from 14.41 m to 14.45 m - Mud seam from 14.55 m to 14.58 m			3	100																		
15		End of Drillhole		59.10 15.24																				

MIS-RCK 004 21451149 ENVIRO.GPJ GAL-MISS.GDT 10/13/21

DEPTH SCALE

1 : 50



LOGGED: R/BW

CHECKED: RM

PROJECT: 21451149

# RECORD OF BOREHOLE: 21-217

SHEET 1 OF 1

LOCATION: N 5028539.7 ;E 366660.8

BORING DATE: May 5, 2021

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION		
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] □				WATER CONTENT PERCENT					
								ND = Not Detected				Wp  -----  W  -----  WI					
0		GROUND SURFACE		75.19													
		TOPSOIL - (SM) SILTY SAND; dark brown, contains rootlets; moist		0.00													
		FILL - (SM) gravelly SILTY SAND; grey brown, contains clay seams; non-cohesive, moist, loose to dense		74.98	1	SS	7	⊕	ND								
				0.21													
1					2	SS	7	⊕	ND								
2					3	SS	39	⊕	ND								
		FILL - (Cl/CH) SILTY CLAY; grey brown; cohesive, w>PL, very stiff		72.90	4	SS	14	⊕	ND						MH		
				2.29													
3																	
		(SM) gravelly silty sand, grey brown to grey contains cobbles (GLACIAL TILL); non-cohesive, moist to wet, compact to loose		72.14	5	SS	19	⊕	ND								
				3.05													
4					6	SS	27	⊕	ND								
5					7	SS	8	⊕	ND								
					8	SS	8	⊕	ND								
6					9	SS	6										
7					10	SS	7										
8					11	SS	12										
					12	SS	>50										
9		End of Borehole Auger Refusal		66.35													
				8.84													
10																	

MIS-BHS 001 21451149 ENVIRO.GPJ GAL-MIS.GDT 10/13/21

DEPTH SCALE

1 : 50



LOGGED:

CHECKED: RM



PROJECT: 21451149

# RECORD OF BOREHOLE: 21-218

SHEET 2 OF 2

LOCATION: N 5028493.7 ;E 366635.3

BORING DATE: May 7, 2021

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] $\oplus$				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] $\square$				WATER CONTENT PERCENT					
								ND = Not Detected				Wp  -----  W  -----  WI					
							20	40	60	80	20	40	60	80			
10	Power Auger 200 mm Diam. (Hollow Stem)	-- CONTINUED FROM PREVIOUS PAGE -- (SM) gravelly SILTY SAND; grey, contains cobbles (GLACIAL TILL); non-cohesive, moist to wet, loose to compact															
				14	SS	7											
11					15	SS	4										
12					16	SS	5										
13					17	SS	9										
				18	SS	11											
				64.95													
				13.59													
14		End of Borehole Auger Refusal															
		Note(s):															
		1. Water level in screen measured at 6.02 m (Elev. 72.52 m) on June 9, 2021															
		2. Water level in screen measured at 5.83 m (Elev. 72.71 m) on May 28, 2021															
15																	
16																	
17																	
18																	
19																	
20																	

Bentonite Seal



MIS-BHS 001 21451149 ENVIRO.GPJ GAL-MIS.GDT 10/13/21

DEPTH SCALE

1 : 50



LOGGED: RI

CHECKED: RM

PROJECT: 21451149

# RECORD OF BOREHOLE: 21-219

SHEET 1 OF 3

LOCATION: N 5028505.1 ;E 366485.3

BORING DATE: May 6, 2021

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕		HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION		
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] □		WATER CONTENT PERCENT					
								ND = Not Detected		Wp	W			Wi	
0		GROUND SURFACE		79.40											
		TOPSOIL - (SM) SILTY SAND, some gravel; dark brown, contains organic matter (rootlets); moist, loose		0.00											
		FILL - (SM) SILTY SAND, trace gravel; brown; non-cohesive, moist, loose		0.15	1	SS	7	⊕	ND				Bentonite Seal		
1				77.88	2	SS	7	⊕	ND				Silica Sand		
		FILL - (CI/CH) SILTY CLAY, trace sand; grey brown, fissured; cohesive, w~PL, very stiff to compact		1.52	3	SS	7	⊕							
2				75.59	4	SS	8	⊕	ND						
3				3.81	5	SS	16	⊕	ND				May 28, 2021 June 9, 2021 38 mm Diam. PVC #10 Slot Screen		
4		(SW) gravelly SILTY SAND; grey, contains cobbles (GLACIAL TILL); non-cohesive, moist to wet, dense			6	SS	42	⊕	ND						
5	Power Auger 200 mm Diam. (Hollow Stem)				7	SS	5	□	⊕				Silica Sand		
6					8	SS	8	⊕	ND						
7					9	SS	7								
8					10	SS	12								
					11	SS	12						Bentonite Seal		
9					12	SS	34								
					13	SS	12								
10					14	SS	18								

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MIS-BHS 001 21451149 ENVIRO.GPJ\_GAL-MIS.GDT 10/13/21

DEPTH SCALE

1 : 50



LOGGED: R/BW

CHECKED: RM

PROJECT: 21451149

# RECORD OF BOREHOLE: 21-219

SHEET 2 OF 3

LOCATION: N 5028505.1 ;E 366485.3

BORING DATE: May 6, 2021

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] $\oplus$				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	ND = Not Detected				10 <sup>-6</sup> 10 <sup>-5</sup> 10 <sup>-4</sup> 10 <sup>-3</sup>					
							HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] $\square$				WATER CONTENT PERCENT					
						ND = Not Detected				Wp  -----○-----  WI						
10	Rotary Drill HW Casing	-- CONTINUED FROM PREVIOUS PAGE -- (SW) gravelly SILTY SAND; grey, contains cobbles (GLACIAL TILL); non-cohesive, moist to wet, dense		68.56 10.84	14 15	SS SS	18 >50									
11		Borehole continued on RECORD OF DRILLHOLE 21-219														
12																
13																
14																
15																
16																
17																
18																
19																
20																

MIS-BHS 001 21451149 ENVIRO.GPJ GAL-MIS.GDT 10/13/21

DEPTH SCALE

1 : 50



LOGGED: R/BW

CHECKED: RM

PROJECT: 21451149

# RECORD OF DRILLHOLE: 21-219

SHEET 3 OF 3

LOCATION: N 5028505.1 ;E 366485.3

DRILLING DATE: May 6, 2021

DATUM: NAD 1983

INCLINATION: -90° AZIMUTH: ---

DRILL RIG: CME 75

DRILLING CONTRACTOR: Downing Drilling

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	COLOUR % RETURN	RECOVERY				FRACT. INDEX PER 0.25 m	DIP W.R.L. CORE AXIS	DISCONTINUITY DATA				ROCK STRENGTH INDEX				WEATHERING INDEX				Q. AVG.			
							TOTAL CORE %	SOLID CORE %	R.Q.D. %				TYPE AND SURFACE DESCRIPTION		Jr	Jr	Jr	Jr	R4	R3	R2	R1	W1	W2		W3	W4	
							FLUSH	RECOVERY	R.Q.D.	FRACT. INDEX			TYPE AND SURFACE DESCRIPTION		Jr	Jr	Jr	Jr	R4	R3	R2	R1	W1	W2		W3	W4	
		BEDROCK SURFACE		68.56																								
11		Fresh to slightly weathered, thickly to massive bedded, medium brownish grey, fine to coarse grained, faintly porous, strong LIMESTONE, with thin partings of shale - vertical joint from 11.11 to 11.27 m depth - broken core from 11.31 to 11.32 m depth	[Symbolic Log: Brick pattern]	10.84	1							JN., BD., BD., BD.,																
12		- vertical joint from 11.45 to 11.59 m depth - broken core from 11.54 to 11.59 m depth - lost core from 11.59 to 11.64 m depth - vertical bedding from 12.35 to 12.45 m depth		2									JN., BD., BD., BD.,															
13		- vertical joint from 13.23 to 13.45 m depth - vertical bedding from 14.63 to 14.69 m depth		3									BD., BD., BD., BD.,															Bentonite Seal
14				4									BD., BD., BD., BD.,															
15		End of Drillhole		64.71 14.69								BD.,																

MIS-RCK 004 21451149 ENVIRO.GPJ GAL-MISS.GDT 10/13/21

DEPTH SCALE

1 : 50



LOGGED: R/BW

CHECKED: RM

PROJECT: 21451149

# RECORD OF BOREHOLE: 21-221

SHEET 1 OF 3

LOCATION: N 5028600.7 ;E 366490.8

BORING DATE: May 21, 2021

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕		HYDRAULIC CONDUCTIVITY, k, cm/s		ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER TYPE	BLOWS/0.30m	ND = Not Detected	ND = Not Detected	Wp   W   Wi		
0		GROUND SURFACE		74.59							
		TOPSOIL - (SM) SILTY SAND, trace gravel; dark brown, contains organic matter (rootlets); non-cohesive, moist, compact		0.00 74.39 0.20	1	SS	12	ND			
		FILL - (SM) gravelly SILTY SAND; dark brown to brown, contains organic matter and brick; non-cohesive, moist, compact		73.83 0.76							Bentonite Seal
1		TOPSOIL - (SM) SILTY SAND, fine; dark brown, contains organic matter; non-cohesive, moist, compact		73.37 1.22	2	SS	12	ND			May 28, 2021 June 9, 2021
		(SM) SILTY SAND, fine to medium; brown; on-cohesive, moist, compact									
2		(CI/CH) SILTY CLAY to CLAY, trace to some sand; grey brown, highly fissured, contains thin laminations of silty sand (WEATHERED CRUST); cohesive, w>PL, very stiff to firm		72.61 1.98	3	SS	12	ND			May 28, 2021 June 9, 2021
					4	SS	11	ND			
3					5	SS	3	ND			
4					6	SS	2	ND			
5					7	SS	2	ND			Backfill
		(CI/CH) SILTY CLAY to CLAY; grey; cohesive, firm to stiff		69.25 5.34	8	SS	-				
6					9	SS	1				
7											
8		(SM) gravelly SILTY SAND; grey, contains cobbles and boulders (GLACIAL TILL); non-cohesive, wet, very loose to compact		66.66 7.93	10	SS	6				
					11	SS	15				
9					12	SS	17				Bentonite Seal
10					13	SS	20				

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MIS-BHS 001 21451149 ENVIRO.GPJ GAL-MIS.GDT 10/13/21

DEPTH SCALE

1 : 50



LOGGED: RI

CHECKED: RM



PROJECT: 21451149

# RECORD OF BOREHOLE: 21-221

SHEET 2 OF 3

LOCATION: N 5028600.7 ;E 366490.8

BORING DATE: May 21, 2021

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕	HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION				
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	ND = Not Detected	10 <sup>-6</sup>	10 <sup>-5</sup>	10 <sup>-4</sup>			10 <sup>-3</sup>			
								20	40	60	80			WATER CONTENT PERCENT			
							ND = Not Detected	Wp	W	Wi	20	40	60	80			
10	Power Auger 200 mm Diam. (Hollow Stem)	-- CONTINUED FROM PREVIOUS PAGE --															
			(SM) gravelly SILTY SAND; grey, contains cobbles and boulders (GLACIAL TILL); non-cohesive, wet, very loose to compact			13	SS	20									Native Sand
11						14	SS	3									
					63.31												
					11.28												
					62.85												
					11.74												
12			(SM) SAND, fine to coarse, trace gravel; grey; non-cohesive, wet, very dense			15	SS	83									32 mm Diam. PVC #10 Slot Screen 'S'
					62.09												
					12.50												
					61.18												
					13.41												
					60.63												
13			(SM/ML) gravelly SILTY SAND to sandy SILT; grey, contains cobbles and boulders (GLACIAL TILL); non-cohesive, wet, very dense			16	SS	114									
						17	SS	>50									
14		Rotary Drill NW Casing	(SM/ML) gravelly SILTY SAND to sandy SILT; grey, contains cobbles and boulders (GLACIAL TILL); non-cohesive, wet			1	RC	-									Silica Sand Bentonite Seal
					13.96												
14		Borehole continued on RECORD OF DRILLHOLE 21-221															

MIS-BHS 001 21451149 ENVIRO.GPJ GAL-MIS.GDT 10/13/21

DEPTH SCALE

1 : 50



LOGGED: RI

CHECKED: RM

PROJECT: 21451149

# RECORD OF DRILLHOLE: 21-221

SHEET 3 OF 3

LOCATION: N 5028600.7 ;E 366490.8



DRILLING DATE: May 21, 2021

DATUM: NAD 1983

INCLINATION: -90° AZIMUTH: ---

DRILL RIG: CME 75

DRILLING CONTRACTOR: Downing Drilling

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	RECOVERY				FRACT. INDEX PER 0.25 m	DISCONTINUITY DATA	ROCK STRENGTH INDEX				WEATHERING INDEX				Q. AVG.			
						FLUSH		R.Q.D. %				Joon	Jr	Ja	R4	R3	R2	R1	W1		W2	W3	W4
						TOTAL CORE %	SOLID CORE %	%	%														
14		BEDROCK SURFACE		60.63																			
14		Fresh, thinly to medium bedded, medium grey to brownish grey, fine to medium grained, non-porous, medium strong SHALEY LIMESTONE		13.96																			
15					2	100																	
16	Rotary Drill NC Core	- broken core from 15.55 m to 15.56 m depth			3	100																	
17					4	100																	
18		End of Drillhole		56.96																			
18		Note(s):		17.63																			
19		1. Water level in screen measured at 1.35 m (Elev. 73.23 m) on May 28, 2021 (Shallow)																					
19		2. Water level in screen measured at 1.43 m (Elev. 73.15 m) on June 9, 2021 (Shallow)																					
20		3. Water level in screen measured at 2.33 m (Elev. 72.26 m) on May 28, 2021 (Deep)																					
20		4. Water level in screen measured at 2.41 m (Elev. 72.18 m) on June 9, 2021 (Deep)																					

Bentonite Seal

Silica Sand

32 mm Diam. PVC #10 Slot Screen 'D'

MIS-RCK 004 21451149 ENVIRO.GPJ GAL-MISS.GDT 10/13/21

DEPTH SCALE

1 : 50



# GOLDER

LOGGED: RI

CHECKED: RM

PROJECT: 21451149

# RECORD OF BOREHOLE: 21-222

SHEET 1 OF 2

LOCATION: N 5028541.6 ; E 366553.3

BORING DATE: May 12, 2021

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕		HYDRAULIC CONDUCTIVITY, k, cm/s		ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] □	WATER CONTENT PERCENT			
						ND = Not Detected	20 40 60 80	10 <sup>-6</sup> 10 <sup>-5</sup> 10 <sup>-4</sup> 10 <sup>-3</sup>			
						ND = Not Detected	20 40 60 80	Wp  -----  W  -----  Wi			
0		GROUND SURFACE		78.83							
		TOPSOIL - (SM) SILTY SAND; brown, contains organic matter (rootlets); non-cohesive, moist, loose		0.00							
		FILL - (CL/CI) SILTY CLAY, trace to some sand, some gravel; brown, contains brick fragments; cohesive, w-PL, stiff		0.15	1	SS	14	⊕			
				0.30							Bentonite Seal
1		FILL - (SM) gravelly SILTY SAND; grey brown, possible cobbles and boulders; non-cohesive, moist, compact to loose		77.92							
		FILL - (CL/CI) SILTY CLAY, some sand, some gravel; grey brown; cohesive, w-PL, firm		0.91	2	SS	5	⊕			
				77.15							
2		FILL - (SM) gravelly SILTY SAND, fine to coarse; brown to grey brown, concrete fragments, brick fragments, organic matter and wood; non-cohesive, moist, loose to very dense		1.68	3	SS	7	⊕			
					4	SS	18	⊕			
					5	SS	5	⊕			
3					6	SS	>50	⊕			
					7	SS	65	⊕			
4					8	SS	24	⊕			
					9	SS	11	⊕			
5					10	SS	35	⊕			
					11	SS	35	⊕			
6		FILL -(SM) gravelly SILTY SAND; grey brown, contains concrete and brick fragments; non-cohesive, moist, compact		73.49							
				5.34	8	SS	11	⊕			May 28, 2021
					9	SS	11	⊕			
7		FILL - (GP) sandy GRAVEL; grey, contains concrete fragments; non-cohesive, wet, dense		71.97							
				6.86	10	SS	17	⊕			June 9, 2021
					11	SS	17	⊕			
8		(SM) gravelly SILTY SAND; grey, contains cobbles and boulders (GLACIAL TILL); non-cohesive, wet, dense to loose		71.21							
				7.62	12	SS	17	⊕			
					13	SS	9	⊕			
9					14	SS	14	⊕			
10											Bentonite Seal

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MIS-BHS 001 21451149 ENVIRO.GPJ GAL-MIS.GDT 10/13/21

DEPTH SCALE

1 : 50



LOGGED: R/BW

CHECKED: RM

PROJECT: 21451149

# RECORD OF BOREHOLE: 21-222

SHEET 2 OF 2

LOCATION: N 5028541.6 ;E 366553.3

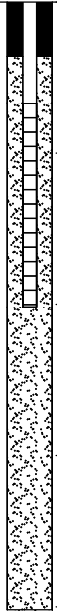
BORING DATE: May 12, 2021

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] □				WATER CONTENT PERCENT					
								ND = Not Detected				Wp  -----  W  -----  WI					
							20	40	60	80	10 <sup>-6</sup>	10 <sup>-5</sup>	10 <sup>-4</sup>	10 <sup>-3</sup>			
10	Power Auger 200 mm Diam. (Hollow Stem)	--- CONTINUED FROM PREVIOUS PAGE --- (SM) gravelly SILTY SAND; grey, contains cobbles and boulders (GLACIAL TILL); non-cohesive, wet, dense to loose															
				14	SS	14											
11				15	SS	39											
12				16	SS	9											
				17	SS	33											
13	DCPT	Dynamic Cone Penetration Test (DCPT)				66.03											
						12.80											
14		End of Borehole DCPT Refusal				64.81											
						14.02											
15		1. Water level in screen measured at 5.65 m (Elev. 73.18 m) on May 28, 2021 (Deep) 2. Water level in screen measured at 6.79 m (Elev. 72.04 m) on June 9, 2021 (Deep)															
16																	
17																	
18																	
19																	
20																	



MIS-BHS 001 21451149 ENVIRO.GPJ\_GAL-MIS.GDT 10/13/21

DEPTH SCALE

1 : 50



LOGGED: R/BW

CHECKED: RM

PROJECT: 21451149

# RECORD OF BOREHOLE: 21-222A

SHEET 1 OF 1

LOCATION: N ;E

BORING DATE: May 12, 2021

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION		
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	SHEAR STRENGTH Cu, kPa				WATER CONTENT PERCENT					
								20	40	60	80	nat V. +	rem V. ⊕			Q - ●	U - ○
0		GROUND SURFACE		0.00													
0		For soil stratigraphy refer to record of borehole 21-222															
1																	
2																	
3																	
4	Power Augger 200 mm Diam. (Hollow Stem)																
5																	
6																	
7																	
8		End of Borehole		7.62													
8		Note(s): 1. Water level in screen measured at 6.42 m (Elev. 72.41 m) on May 28, 2021 (Shallow) 2. Water level in screen measured at 6.52 m (Elev. 72.31 m) on June 9, 2021 (Shallow)															
9																	
10																	

Bentonite Seal

Backfill

Bentonite Seal

Silica Sand

50 mm Diam. PVC #10 Slot Screen 9'

May 28, 2021  
June 9, 2021



MIS-BHS 001 21451149 ENVIRO.GPJ GAL-MIS.GDT 10/13/21

DEPTH SCALE

1 : 50



LOGGED: RI

CHECKED: RM

PROJECT: 21451149

# RECORD OF BOREHOLE: 21-224

SHEET 1 OF 3

LOCATION: N 5028516.4 ;E 366593.7

BORING DATE: May 10, 2021

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕		HYDRAULIC CONDUCTIVITY, k, cm/s		ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] □	WATER CONTENT PERCENT			
						ND = Not Detected	20 40 60 80	10 <sup>-6</sup> 10 <sup>-5</sup> 10 <sup>-4</sup> 10 <sup>-3</sup>			
						ND = Not Detected	20 40 60 80	Wp  -----  W  -----  WI			
0		GROUND SURFACE		78.90							
		TOPSOIL - (SM) SILTY SAND, trace organic matter; dark brown; moist		0.00							
		FILL - (SM) gravelly SILTY SAND, fine to coarse; dark brown to brown, contains concrete fragments; non-cohesive, moist, dense to very dense		0.15	1	SS	41	ND	⊕		Bentonite Seal
1					2	SS	71	ND	⊕		Backfill
2					3	SS	61		⊕		
					4	SS	22		⊕		
3					5	SS	16	ND	⊕		Bentonite Seal
4					6	SS	22	ND	⊕		Silica Sand
5	Power Auger 200 mm Diam. (Hollow Stem)				7	SS	29		⊕		
6					8	SS	43		⊕		
7					9	SS	15	ND	⊕		50 mm Diam. PVC #10 Slot Screen May 28, 2021 June 9, 2021
8					10	SS	20	ND	⊕		
					11	SS	>50	ND			
					12	SS	6	ND	⊕		Silica Sand
9		(SM) gravelly SILTY SAND; grey brown to grey, contains cobbles (GLACIAL TILL); non-cohesive, wet, compact to loose		70.52 8.38	13	SS	24	ND	⊕		
					14	SS	11	ND	⊕		Bentonite Seal
10					15	SS	9				

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MIS-BHS 001 21451149 ENVIRO.GPJ GAL-MIS.GDT 10/13/21

DEPTH SCALE

1 : 50



LOGGED:

CHECKED: RM

PROJECT: 21451149

# RECORD OF BOREHOLE: 21-224

SHEET 2 OF 3

LOCATION: N 5028516.4 ;E 366593.7

BORING DATE: May 10, 2021

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	ND = Not Detected				10 <sup>-6</sup> 10 <sup>-5</sup> 10 <sup>-4</sup> 10 <sup>-3</sup>					
								HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] □				WATER CONTENT PERCENT					
							20	40	60	80	20	40	60	80			
10	Power Auger 200 mm Diam. (Hollow Stem)	-- CONTINUED FROM PREVIOUS PAGE --															
		(SM) gravelly SILTY SAND; grey brown to grey, contains cobbles (GLACIAL TILL); non-cohesive, wet, compact to loose			15	SS	9										
11					16	SS	8										
				67.47 11.43													
12		(SM) gravelly SILTY SAND; grey, contains cobbles and boulders (GLACIAL TILL); non-cohesive, wet, compact to very dense			17	SS	18										
					18	SS	25										
13					19	SS	50										
14					20	SS	57										
				64.42 14.48													
15		(SW) SAND, fine to coarse, trace gravel; grey, contains thin beds of gravelly silty sand; non-cohesive, wet, compact			21	SS	23										
			63.66 15.24														
16	(SM) gravelly SILTY SAND; grey, contains cobbles and boulders (GLACIAL TILL); non-cohesive, wet, very dense			22	SS	91											
				23	SS	>50											
17			61.98 16.92														
		Borehole continued on RECORD OF DRILLHOLE 21-224															
18																	
19																	
20																	

Bentonite Seal

MIS-BHS 001 21451149 ENVIRO.GPJ GAL-MIS.GDT 10/13/21

DEPTH SCALE

1 : 50



LOGGED:

CHECKED: RM

PROJECT: 21451149  
 LOCATION: N 5028516.4 ;E 366593.7  
 INCLINATION: -90° AZIMUTH: ---

# RECORD OF DRILLHOLE: 21-224

SHEET 3 OF 3  
 DRILLING DATE: May 10, 2021  
 DRILL RIG: CME 75  
 DRILLING CONTRACTOR: Downing Drilling  
 DATUM: NAD 1983

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	COLOUR % RETURN		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.			
						FLUSH	TOTAL CORE %	SOLID CORE %	R.Q.D. %	FRACT. INDEX PER 0.25 m	DIP W.R.L. CORE AXIS	DISCONTINUITY DATA		ROCK STRENGTH INDEX	WEATHERING INDEX			Q. AVG.					
												TYPE AND SURFACE DESCRIPTION	Joon		Jr	Ja	R4		R3	R2	R1	W1	W2
17	Rotary Drill NGL Core	BEDROCK SURFACE		61.98																			
		Fresh, thinly to medium bedded, medium grey to brownish grey, fine to medium grained, non-porous, medium strong to weak SHALEY LIMESTONE	█	16.92	1	100	██████████	██████████	██████████	██████████	██████████	██████████	██████████	██████████	██████████	██████████	██████████	██████████	██████████	██████████	██████████	██████████	██████████
18						2	100	██████████	██████████	██████████	██████████	██████████	██████████	██████████	██████████	██████████	██████████	██████████	██████████	██████████	██████████	██████████	██████████
19					3	100	██████████	██████████	██████████	██████████	██████████	██████████	██████████	██████████	██████████	██████████	██████████	██████████	██████████	██████████	██████████	██████████	
20		- broken core from 19.80 m to 19.82 m depth		58.70																			
		End of Drillhole		20.20																			

Bentonite Seal

MIS-RCK 004 21451149 ENVIRO.GPJ GAL-MISS.GDT 10/13/21



PROJECT: 21451149

# RECORD OF BOREHOLE: 21-225

SHEET 1 OF 2

LOCATION: N 5028560.9 ; E 366591.4

BORING DATE: May 3, 2021

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕	HYDRAULIC CONDUCTIVITY, k, cm/s	ADDITIONAL LAB TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m		
		GROUND SURFACE		75.21					
0		TOPSOIL - (SM) SILTY SAND; dark brown, contains brick and organic matter (rootlets); moist		0.00	1	SS	>50	ND	
		FILL - (SM) gravelly SILTY SAND; brown, contains cobbles and boulders; non-cohesive, dry, very dense		74.98					
1				0.23					
				73.69	2	SS	78	⊕	Bentonite Seal
				1.52					
2		FILL - (CI/CH) SILTY CLAY, some sand, trace gravel; grey brown; cohesive, w~PL, stiff			3	SS	12	⊕	Silica Sand
				72.16					
				3.05	4	SS	10	⊕	50 mm Diam. PVC #10 Slot Screen
3		(CI/CH) SILTY CLAY, trace sand; grey brown, slightly fissured (WEATHERED CRUST); cohesive, W~PL, stiff			5	SS	13	⊕	May 28, 2021 June 9, 2021
				71.40					
4		(SM) gravelly SILTY SAND; grey brown to grey (GLACIAL TILL); non-cohesive, moist to wet, compact		3.81	6	SS	12	⊕	
					7	SS	15	⊕	Silica Sand
5	Power Auger 200 mm Diam. (Hollow Stem)								
					8	SS	19	⊕	
6									
					9	SS	10	□	
7									
					10	SS	20		
8									
					11	SS	23		Bentonite Seal
9									
					12	SS	13		
10									
					13	SS	12		
					14	SS	11		

CONTINUED NEXT PAGE

DEPTH SCALE

1 : 50



LOGGED: RI  
CHECKED: RM

MIS-BHS 001 21451149 ENVIRO.GPJ GAL-MIS.GDT 10/13/21

PROJECT: 21451149

# RECORD OF BOREHOLE: 21-225

SHEET 2 OF 2

LOCATION: N 5028560.9 ;E 366591.4

BORING DATE: May 3, 2021

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] $\oplus$				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] $\square$				WATER CONTENT PERCENT					
								ND = Not Detected				Wp  -----  W  -----  WI					
							20	40	60	80	20	40	60	80			
10	Power Auger 200 mm Diam. (Hollow Stem)	-- CONTINUED FROM PREVIOUS PAGE -- (SM) gravelly SILTY SAND; grey brown to grey (GLACIAL TILL); non-cohesive, moist to wet, compact															
				14	SS	11											
11				15	SS	10										Bentonite Seal	
				16	SS	11											
12				17	SS	13									Cave		
13																	
		End of Borehole Auger Refusal															
		Note(s):															
		1. Water level in screen measured at 3.63 m (Elev. 71.59 m) on June 9, 2021															
		2. Water level in screen measured at 3.54 m (Elev. 71.68 m) on May 28, 2021															
		3. Water level measured at a depth of 2.96 m on May 5, 2021															
13							62.23										
							12.96										
14																	
15																	
16																	
17																	
18																	
19																	
20																	

MIS-BHS 001 21451149 ENVIRO.GPJ\_GAL-MIS.GDT 10/13/21

DEPTH SCALE

1 : 50



LOGGED: RI

CHECKED: RM

PROJECT: 21451149

### RECORD OF BOREHOLE: 21-226

SHEET 1 OF 2

LOCATION: N 5028544.1 ; E 366622.8

BORING DATE: May 4, 2021

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕	HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] □	WATER CONTENT PERCENT					
								ND = Not Detected	20 40 60 80	W <sub>p</sub>   W	10 <sup>-6</sup> 10 <sup>-5</sup> 10 <sup>-4</sup> 10 <sup>-3</sup>			WI
		GROUND SURFACE		75.31										
0		TOPSOIL - (SM) SILTY SAND; dark brown; moist		0.00										
		FILL - (SM) SILTY SAND, fine to coarse, some gravel, trace clay; brown; non-cohesive, moist, loose to dense		75.08	1	SS	12	⊕						
				0.23										
1					2	SS	38	⊕					Bentonite Seal	
					3	SS	95	⊕						
2				73.02										
		FILL - (CL/CH) SILTY CLAY, trace sand; grey brown, with black mottling, contains organic matter; w<PL, very stiff		2.29	4	SS	21	⊕						
3				72.26										
		(CI/CH) SILTY CLAY, trace sand; grey brown, highly fissured (WEATHERED CRUST); cohesive, w<PL, stiff to firm		3.05	5	SS	12	⊕						
4					6	SS	5	⊕						
5				70.74										
		(SM) gravelly SILTY SAND; grey brown to grey, contains cobbles (GLACIAL TILL); non-cohesive, moist to wet, compact to very dense		4.57	7	SS	19	⊕						
6					8	SS	11	⊕						
7					9	SS	13	⊕						
8					10	SS	9							
9					11	SS	15							
10					12	SS	11							
					13	SS	10							
					14	SS	32							

Power Auger  
200 mm Diam. (Hollow Stem)

50 mm Diam. PVC #10 Slot Screen  
May 28, 2021  
June 9, 2021

Bentonite Seal

Silica Sand

Silica Sand

Bentonite Seal

CONTINUED NEXT PAGE

MIS-BHS 001 21451149 ENVIRO.GPJ GAL-MIS.GDT 10/13/21

DEPTH SCALE  
1 : 50



LOGGED: RI  
CHECKED: RM

PROJECT: 21451149

# RECORD OF BOREHOLE: 21-226

SHEET 2 OF 2

LOCATION: N 5028544.1 ;E 366622.8

BORING DATE: May 4, 2021

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE			SAMPLES			HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] $\oplus$	HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	ND = Not Detected	10 <sup>-6</sup> 10 <sup>-5</sup> 10 <sup>-4</sup> 10 <sup>-3</sup>						
								20 40 60 80	WATER CONTENT PERCENT						
							ND = Not Detected	Wp  -----  W  -----  WI							
							20 40 60 80	20 40 60 80							
10	Power Auger	-- CONTINUED FROM PREVIOUS PAGE -- (SM) gravelly SILTY SAND; grey brown to grey, contains cobbles (GLACIAL TILL); non-cohesive, moist to wet, compact to very dense			14	SS	32							Bentonite Seal	
				64.36	15	SS	87							Cave	
11		End of Borehole Auger Refusal			10.95										
		Note(s):													
		1. Water level in screen measured at 3.77 m (Elev. 72.48 m) on May 28, 2021													
		2. Water level in screen measured at 3.94 m (Elev. 72.31 m) on June 9, 2021													
		3. Water level measured at a depth of 2.40 m on May 5, 2021													
12															
13															
14															
15															
16															
17															
18															
19															
20															

MIS-BHS 001 21451149 ENVIRO.GPJ GAL-MIS.GDT 10/13/21

DEPTH SCALE

1 : 50



LOGGED: RI

CHECKED: RM

PROJECT: 21451149

# RECORD OF BOREHOLE: 21-101

SHEET 1 OF 1

LOCATION: N 5028354.8 ;E 366451.2

BORING DATE: June 11, 2021

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION		
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] □				WATER CONTENT PERCENT					
								ND = Not Detected				Wp  -----  W  -----  WI					
		GROUND SURFACE		81.42													
0	Power Auger 200 mm Diam. (Hollow Stem)	TOPSOIL - (SM) SILTY SAND; dark brown, contains cobbles, boulders and organic matter (rootlets); non-cohesive, moist		0.00													
				81.12													
				0.30													
1		FILL - (SM) SILTY SAND, trace gravel; brown to dark brown, contains organic matter (rootlets), possible cobbles and boulders; non-cohesive, moist, loose		80.61	1	SS	6	□	ND	⊕							
		(SM) gravelly SILTY SAND; grey brown, contains cobbles and boulders (GLACIAL TILL); non-cohesive, moist, compact		0.81													
				80.61	2	SS	21	□	ND	⊕							
				0.81													
		End of Borehole		79.90													
				1.52													
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

MIS-BHS 001 21451149 ENVIRO.GPJ GAL-MIS.GDT 10/13/21

DEPTH SCALE

1 : 50



LOGGED: RI

CHECKED: RM

PROJECT: 21451149

# RECORD OF BOREHOLE: 21-102

SHEET 1 OF 1

LOCATION: N 5028319.0 ; E 366502.1

BORING DATE: June 11, 2021

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕	HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	ND = Not Detected	10 <sup>-6</sup> 10 <sup>-5</sup> 10 <sup>-4</sup> 10 <sup>-3</sup>					
								20 40 60 80	WATER CONTENT PERCENT					
		GROUND SURFACE		81.80										
0	Power Auger 200 mm Diam. (Hollow Stem)	TOPSOIL - (SM) SILTY SAND; dark brown, contains organic matter (TOPSOIL); non-cohesive, moist		0.00										
				81.52										
		FILL - (SM) SILTY SAND, fine to medium brown to dark brown, contains organic matter (rootlets); non-cohesive, moist, compact		0.28										
				81.19	1	SS	14							
1		(SM) gravelly SILTY SAND; grey brown, contains cobbles and boulders (GLACIAL TILL); non-cohesive, moist, compact to dense		0.61										
				80.28	2	SS	41							
		End of Borehole		1.52										
2														
3														
4														
5														
6														
7														
8														
9														
10														

MIS-BHS 001 21451149 ENVIRO.GPJ GAL-MIS.GDT 10/13/21

DEPTH SCALE

1 : 50



LOGGED: RI

CHECKED: RM

PROJECT: 21451149

# RECORD OF BOREHOLE: 21-103

SHEET 1 OF 1

LOCATION: N 5028356.8 ;E 366519.5

BORING DATE: June 11, 2021

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕	HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER TYPE	BLOWS/0.30m	ND = Not Detected 20 40 60 80	10 <sup>-6</sup> 10 <sup>-5</sup> 10 <sup>-4</sup> 10 <sup>-3</sup>	WATER CONTENT PERCENT Wp  -----  W  -----  WI				
						ND = Not Detected 20 40 60 80	20 40 60 80						
0	Power Auger 200 mm Diam. (Hollow Stem)	GROUND SURFACE		81.25									
		TOPSOIL - (SM) SILTY SAND; dark brown, contains organic matter (rootlets); non-cohesive, moist		0.00									
		FILL - (SM) gravelly SILTY SAND; dark brown to grey brown, contains organic matter; non-cohesive, moist, compact		0.36									
1		(SM) gravelly SILTY SAND; grey brown, contains cobbles and boulders (GLACIAL TILL); non-cohesive, moist, compact		0.61	1	SS	20	⊕					
		End of Borehole		0.61	2	SS	28	⊕					
				79.73									
				1.52									
2													
3													
4													
5													
6													
7													
8													
9													
10													

MIS-BHS 001 21451149 ENVIRO.GPJ GAL-MIS.GDT 10/13/21

DEPTH SCALE

1 : 50



**GOLDER**

LOGGED: RI

CHECKED: RM

PROJECT: 21451149

# RECORD OF BOREHOLE: 21-104

SHEET 1 OF 1

LOCATION: N 5028277.1 ;E 366533.3

BORING DATE: June 11, 2021

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] □				WATER CONTENT PERCENT					
								ND = Not Detected				Wp  -----  W  -----  WI					
0	Power Auger 200 mm Diam. (Hollow Stem)	GROUND SURFACE		82.69													
		TOPSOIL - (SM) SILTY SAND, trace gravel; dark brown, contains organic matter (rootlets); non-cohesive, moist		0.00													
				82.44													
1		(SM) gravelly SILTY SAND; grey brown, contains organic matter, possible cobbles and boulders (GLACIAL TILL); non-cohesive, moist, loose to compact		0.25	1	SS	6	⊕									
		(SM) gravelly SILTY SAND; grey brown, contains cobbles and boulders (GLACIAL TILL); non-cohesive, moist, compact		81.62													
				1.07	2	SS	22	□	⊕								
1.52		End of Borehole		81.17													
2				1.52													
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

MIS-BHS 001 21451149 ENVIRO.GPJ GAL-MIS.GDT 10/13/21

DEPTH SCALE

1 : 50



LOGGED: RI

CHECKED: RM



PROJECT: 21451149

# RECORD OF BOREHOLE: 21-105

SHEET 1 OF 1

LOCATION: N 5028324.4 ;E 366594.0

BORING DATE: June 11, 2021

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] □				WATER CONTENT PERCENT					
								ND = Not Detected				Wp  -----  W  -----  WI					
0	Power Auger 200 mm Diam. (Hollow Stem)	GROUND SURFACE		82.12													
		TOPSOIL - (SM) SILTY SAND; dark brown, contains organic matter (rootlets); non-cohesive, moist		0.00													
		FILL - (SM/ML) SILTY SAND to sandy SILT, trace to some gravel; dark brown to brown, contains organic matter; non-cohesive, moist, loose		81.82													
1				81.41	1	SS	6	□	ND	⊕							
		(SM) gravelly SILTY SAND; grey brown, contains cobbles and boulders (GLACIAL TILL); non-cohesive, moist, loose to compact		0.71													
				81.41	2	SS	28	□	ND	⊕							
		End of Borehole		80.60													
2				1.52													
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

MIS-BHS 001 21451149 ENVIRO.GPJ GAL-MIS.GDT 10/13/21

DEPTH SCALE

1 : 50



LOGGED: RI

CHECKED: RM

PROJECT: 21451149

# RECORD OF BOREHOLE: 21-106

SHEET 1 OF 1

LOCATION: N 5028291.1 ;E 366596.9

BORING DATE: June 11, 2021

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕	HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	ND = Not Detected	10 <sup>-6</sup> 10 <sup>-5</sup> 10 <sup>-4</sup> 10 <sup>-3</sup>					
								HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] □	WATER CONTENT PERCENT					
		GROUND SURFACE		82.68										
	Power Auger 200 mm Diam. (Hollow Stem)	TOPSOIL - (SM) SILTY SAND; dark brown, contains organic matter (rootlets); non-cohesive, moist		0.00										
				82.43										
		(SM) gravelly SILTY SAND; grey brown, contains organic matter, cobbles and boulders (GLACIAL TILL); non-cohesive, moist, compact		0.25										
		(SM) gravelly SILTY SAND; grey brown, contains cobbles and boulders (GLACIAL TILL); non-cohesive, moist, compact		82.07	1	SS	13	□	⊕					
				0.61										
		(SM) gravelly SILTY SAND; grey brown, contains cobbles and boulders (GLACIAL TILL); non-cohesive, moist, compact		81.16	2	SS	19	□	⊕					
				0.61										
		End of Borehole		81.16										
				1.52										
2														
3														
4														
5														
6														
7														
8														
9														
10														

MIS-BHS 001 21451149 ENVIRO.GPJ\_GAL-MIS.GDT 10/13/21

DEPTH SCALE

1 : 50



LOGGED: RI

CHECKED: RM

PROJECT: 21451149

# RECORD OF BOREHOLE: 21-107

SHEET 1 OF 1

LOCATION: N 5028261.2 ;E 366663.6

BORING DATE: June 11, 2021

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] □				WATER CONTENT PERCENT					
								ND = Not Detected				Wp  -----  W  -----  WI					
0	Power Auger 200 mm Diam. (Hollow Stem)	GROUND SURFACE		84.54													
		TOPSOIL - (SM/ML) SILTY SAND to sandy SILT; dark brown, contains organic matter (rootlets); non-cohesive, moist		0.00													
				84.21													
				0.33													
				0.42													
1		FILL - (SM/ML) SILTY SAND to sandy SILT, fine; brown to dark brown, contains organic matter; non-cohesive, moist		83.85	1	SS	25	□	⊕								
		FILL - (SW) gravelly SAND, fine to coarse, some silt; brown, contains cobbles and boulders; non-cohesive, moist, compact		0.69													
				83.02	2	SS	38	□	⊕								
		(SM) gravelly SILTY SAND; grey brown, contains cobbles and boulders (GLACIAL TILL); non-cohesive, moist, compact to dense		1.52													
2		End of Borehole															
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

MIS-BHS 001 21451149 ENVIRO.GPJ GAL-MIS.GDT 10/13/21

DEPTH SCALE

1 : 50



LOGGED: RI

CHECKED: RM

PROJECT: 21451149

# RECORD OF BOREHOLE: 21-108

SHEET 1 OF 1

LOCATION: N 5028229.5 ; E 366723.9

BORING DATE: June 11, 2021

DATUM: NAD 1983

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕	HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.30m	ND = Not Detected	10 <sup>-6</sup> 10 <sup>-5</sup> 10 <sup>-4</sup> 10 <sup>-3</sup>					
								20 40 60 80	WATER CONTENT PERCENT					
		GROUND SURFACE		86.48										
0	Power Auger 200 mm Diam. (Hollow Stem)	TOPSOIL - (SM/ML) SILTY SAND to sandy SILT, trace gravel; dark brown, contains organic matter (rootlets); non-cohesive, moist		0.00										
		(SP) SAND, fine to medium, trace silt; brown, possibly stratified; non-cohesive, moist, very loose to loose		0.46	1	SS	3	ND	⊕					
1				0.85	2	SS	5	ND	⊕					
		(SW) gravelly SAND, fine to coarse, some silt; bbrown; non-cohesive, moist to wet, loose		1.37										
2		(SM) gravelly SILTY SAND; grey brown, contains possible cobbles and boulders (GLACIAL TILL); non-cohesive, moist, loose		1.52										
		End of Borehole												

MIS-BHS 001 21451149 ENVIRO.GPJ GAL-MIS.GDT 10/13/21

DEPTH SCALE

1 : 50



LOGGED: RI

CHECKED: RM

**APPENDIX C**

# Record of Historical Borehole Sheets

DATUM

REMARKS

BORINGS BY Geoprobe

DATE July 27, 2017

FILE NO.

**PE4096**

HOLE NO.

**BH 1**

SOIL DESCRIPTION	STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Photo Ionization Detector				Monitoring Well Construction	
		TYPE	NUMBER	% RECOVERY	N VALUE or RQD			● Volatile Organic Rdg. (ppm)	○ Lower Explosive Limit %				
<b>GROUND SURFACE</b>								20	40	60	80		
<b>TOPSOIL</b> 0.15		AU	1			0							
<b>FILL:</b> Loose, brown silty clay, trace sand, gravel and organics 0.61		SS	2	100	4								
<b>GLACIAL TILL:</b> Compact, brown silty sand, some gravel, trace clay, cobbles and boulders 1.22		SS	3	54	13	1							
		SS	4	38	10								
		SS	5	100	10	2							
		SS	6	100	8	3							
<b>GLACIAL TILL:</b> Stiff to very soft, brown to grey silty clay, some sand and gravel, trace cobbles and boulders		SS	7	83	5	4							
		SS	8	96	2	5							
		SS	9	46	8	6							
<b>GLACIAL TILL:</b> Loose, grey silty sand, trace gravel, cobbles, boulders and clay 6.10		SS	9	46	8	6							
						7							
End of Borehole 7.34													
Practical refusal to augering at 7.34m depth (GWL @ 2.74m - August 8, 2017)													
								100	200	300	400	500	
								<b>RKI Eagle Rdg. (ppm)</b>					
								▲ Full Gas Resp. △ Methane Elim.					

DATUM

REMARKS

BORINGS BY Geoprobe

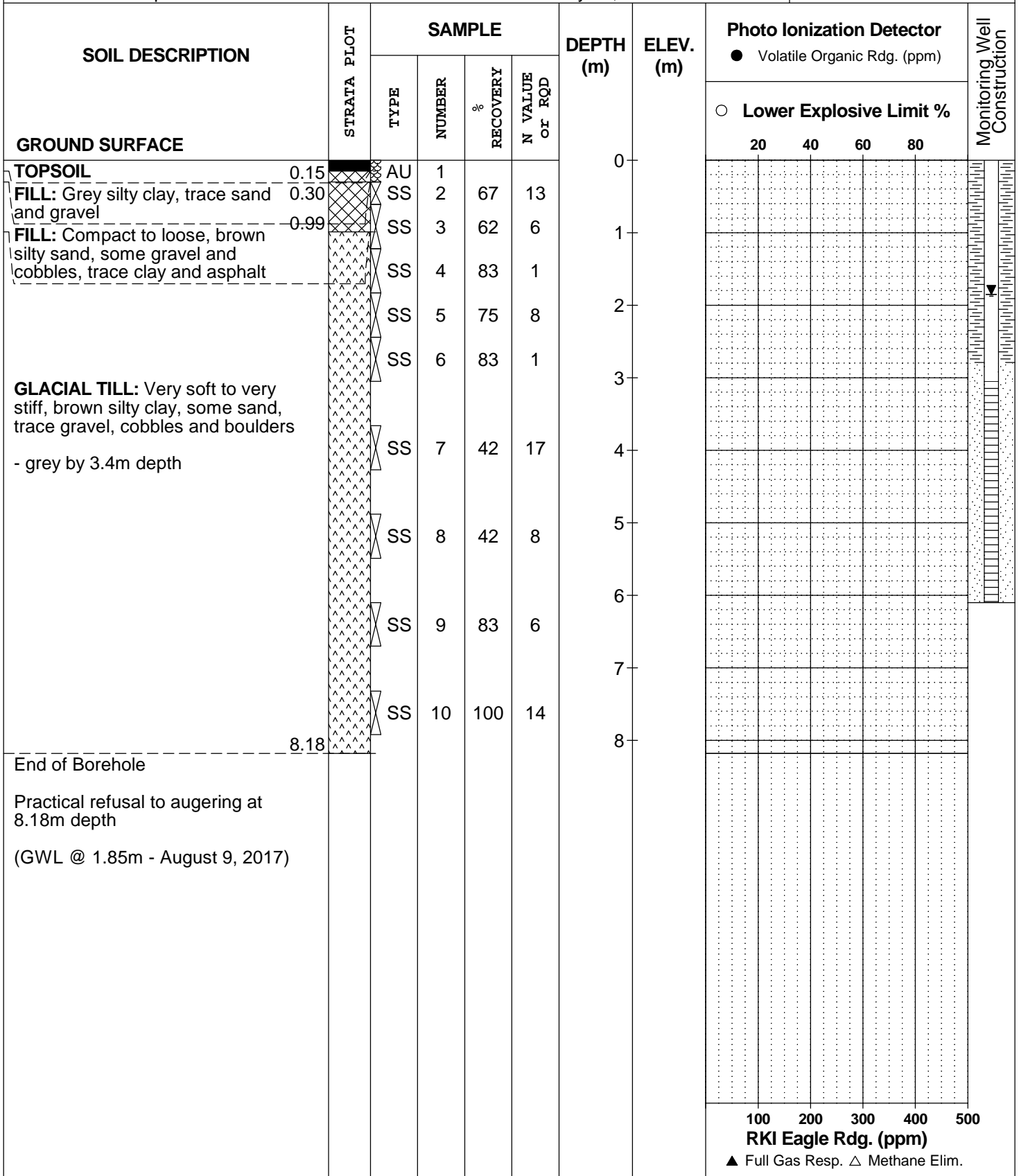
DATE July 27, 2017

FILE NO.

**PE4096**

HOLE NO.

**BH 2**



DATUM

REMARKS

BORINGS BY Geoprobe

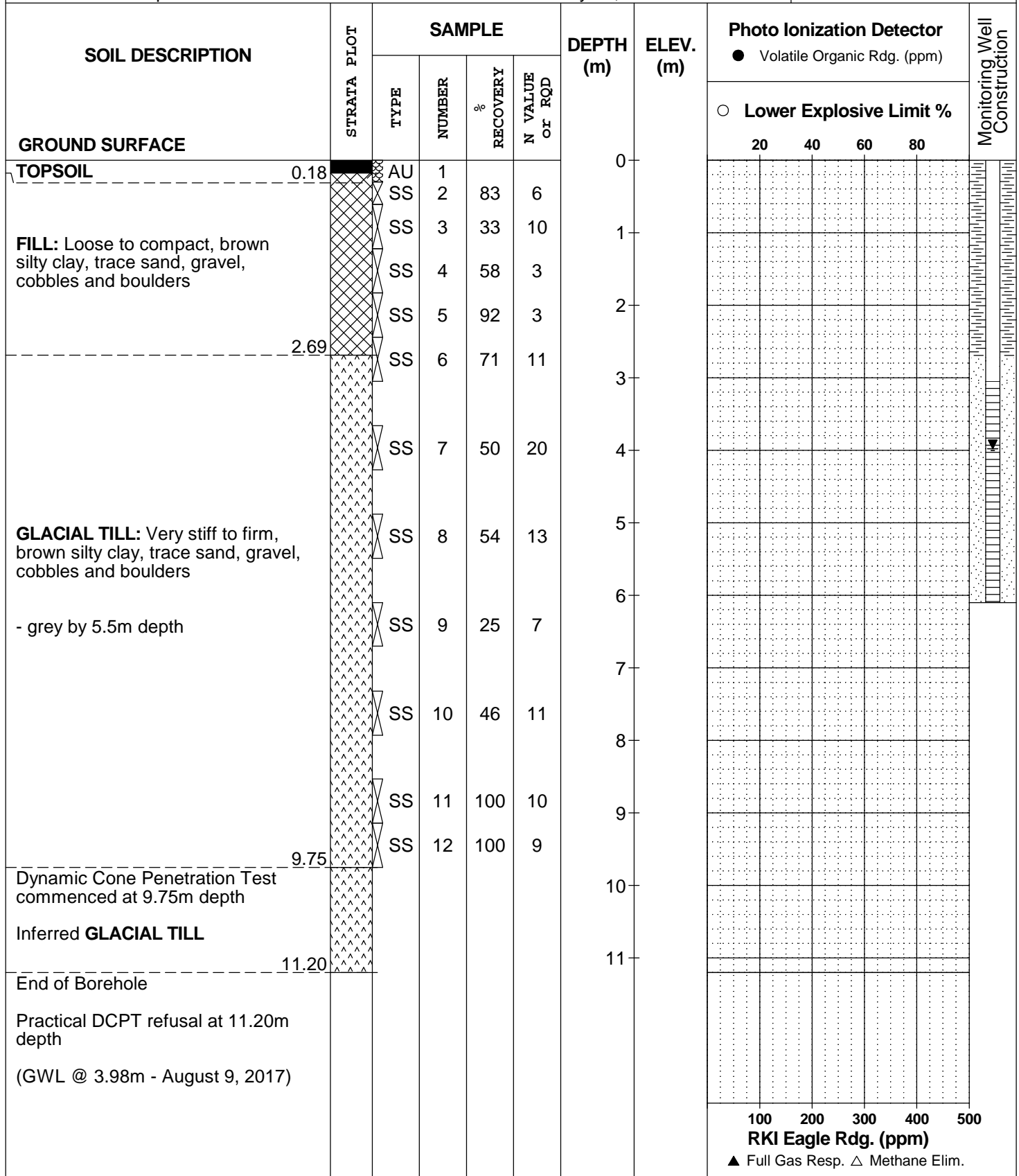
DATE July 28, 2017

FILE NO.

**PE4096**

HOLE NO.

**BH 3**





## SOIL PROFILE AND TEST DATA

Environmental Investigation of Existing Fault Line  
Proposed New Hospital Campus - Carling Avenue  
Ottawa, Ontario

DATUM

REMARKS

BORINGS BY CME 55 Power Auger

DATE July 24, 2017

FILE NO.

**PE4096**

HOLE NO.

**BH 4**

SOIL DESCRIPTION	STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Photo Ionization Detector				Monitoring Well Construction	
		TYPE	NUMBER	% RECOVERY	N VALUE or RQD			● Volatile Organic Rdg. (ppm)	○ Lower Explosive Limit %				
GROUND SURFACE								20	40	60	80		
Asphaltic concrete	0.10	AU	1			0							
FILL: Crushed stone with silt and sand	0.69												
GLACIAL TILL: Stiff, brown silty clay, some sand, gravel, cobbles and boulders		SS	2	25	14	1							
		SS	3	100	9	2							
End of Borehole	2.03												
Practical refusal to augering at 2.03m depth (BH dry upon completion)													
								100	200	300	400	500	
								<b>RKI Eagle Rdg. (ppm)</b>					
								▲ Full Gas Resp. △ Methane Elim.					

DATUM

REMARKS

BORINGS BY CME 55 Power Auger

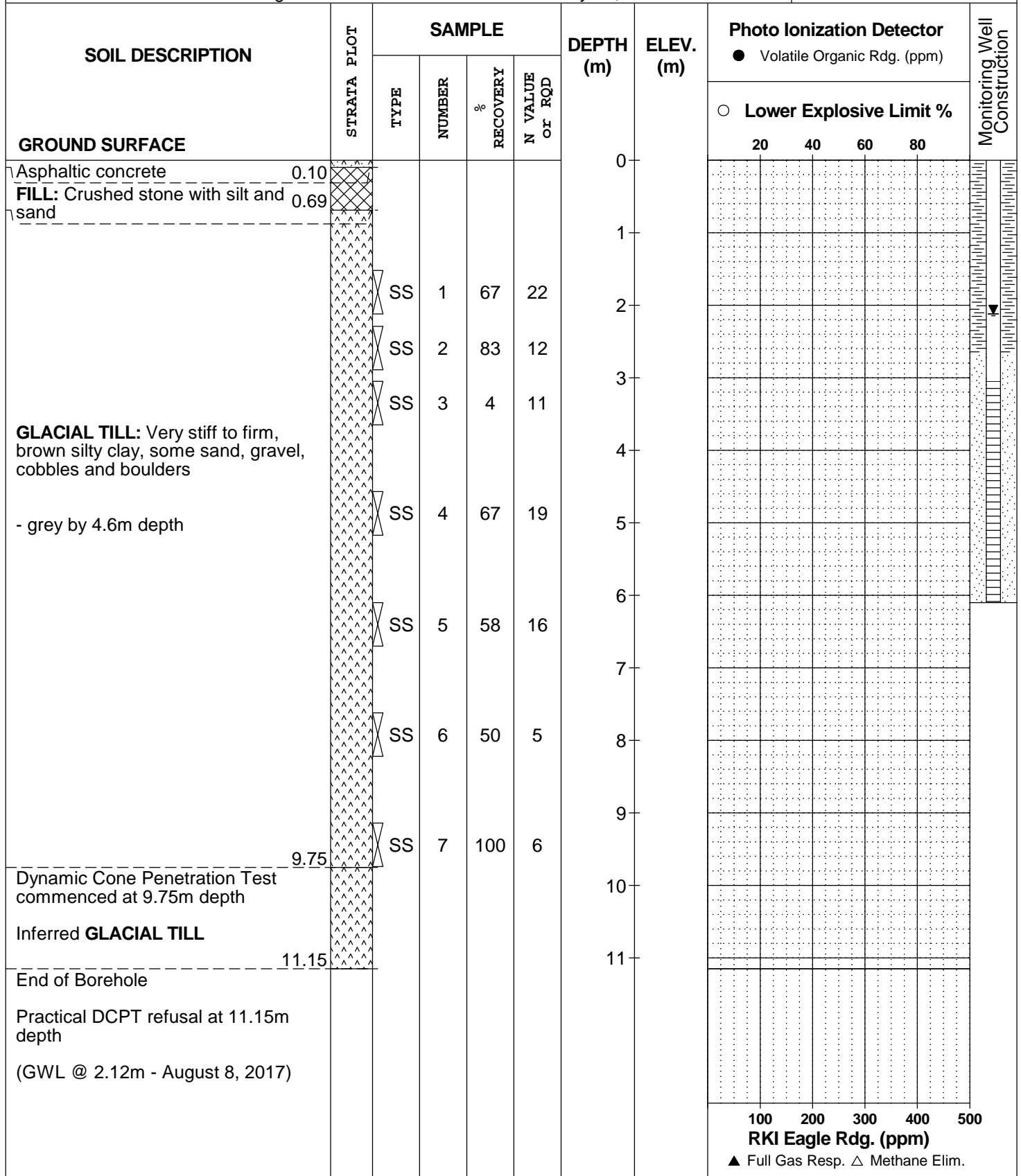
DATE July 24, 2017

FILE NO.

**PE4096**

HOLE NO.

**BH 4A**



DATUM

REMARKS

BORINGS BY CME 55 Power Auger

DATE July 24, 2017

FILE NO.

**PE4096**

HOLE NO.

**BH 5**

SOIL DESCRIPTION	STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Photo Ionization Detector				Monitoring Well Construction
		TYPE	NUMBER	% RECOVERY	N VALUE or RQD			● Volatile Organic Rdg. (ppm)	○ Lower Explosive Limit %			
GROUND SURFACE								20	40	60	80	
Asphaltic concrete		AU	1			0						
FILL: Crushed stone with silt and sand						0.71						
FILL: Brown silty clay, some sand, gravel and cobbles		SS	2	33	6	1						
		SS	3	50	4	1.83						
Loose, brown SILTY SAND, trace gravel		SS	4	100	P	1.96						
Hard, brown SILTY CLAY		SS	5	100	P	3.45						
		SS	4	100	4	5						
GLACIAL TILL: Soft to very stiff, brown silty clay, some sand, gravel, cobbles and boulders		SS	5	33	19	6						
- grey by 4.6m depth		SS	6	88	11	8						
		SS	7	62	14	9						
Dynamic Cone Penetration Test commenced at 9.75m depth						9.75						
Inferred GLACIAL TILL						10.26						
End of Borehole												
Practical DCPT refusal at 10.26m depth												
(GWL @ 4.40m - August 8, 2017)												

100 200 300 400 500

RKI Eagle Rdg. (ppm)

▲ Full Gas Resp. △ Methane Elim.

DATUM

REMARKS

BORINGS BY Geoprobe

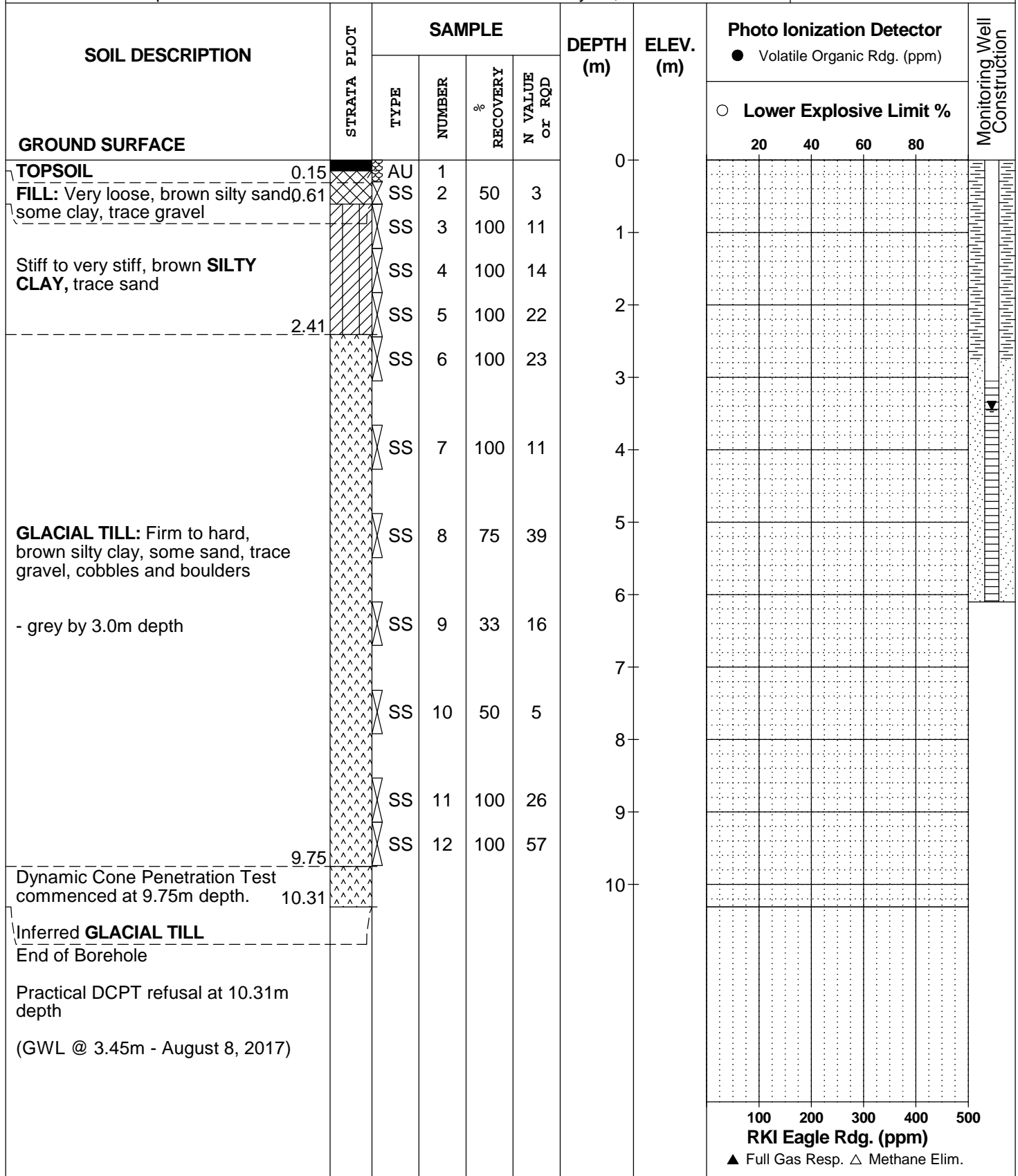
DATE July 26, 2017

FILE NO.

**PE4096**

HOLE NO.

**BH 6**



DATUM

REMARKS

BORINGS BY Geoprobe

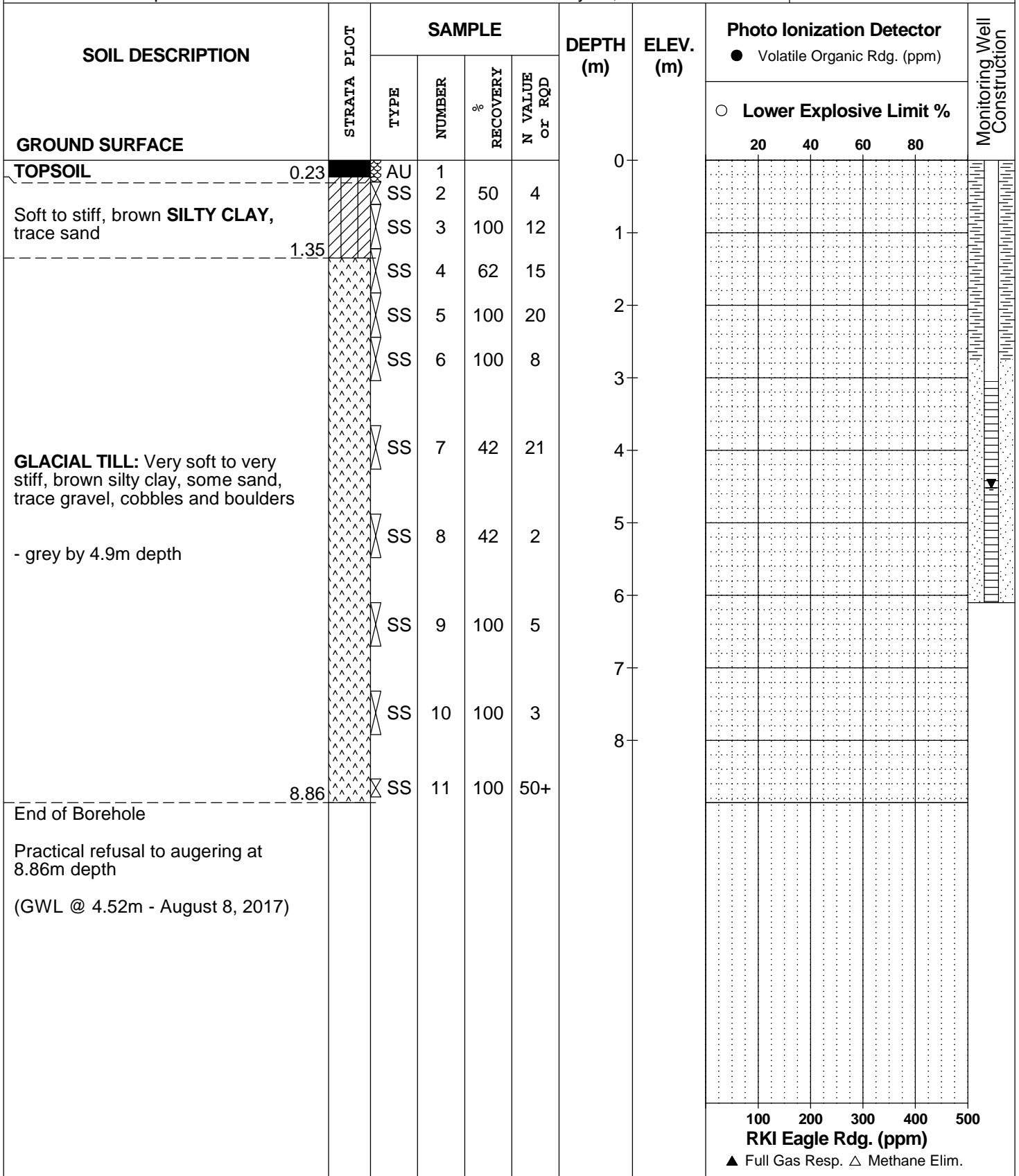
DATE July 26, 2017

FILE NO.

**PE4096**

HOLE NO.

**BH 8**



DATUM

REMARKS

BORINGS BY Geoprobe

DATE July 26, 2017

FILE NO.

**PE4096**

HOLE NO.

**BH 9**

SOIL DESCRIPTION	STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Photo Ionization Detector				Monitoring Well Construction	
		TYPE	NUMBER	% RECOVERY	N VALUE or RQD			● Volatile Organic Rdg. (ppm)	○ Lower Explosive Limit %				
GROUND SURFACE								20	40	60	80		
TOPSOIL	0.23	AU	1			0							
FILL: Brown silty clay, some sand, gravel and topsoil	0.30	SS	2	83	1								
FILL: Brown silty sand, trace gravel and topsoil	0.61	SS	3	42	0	1							
FILL: Brown silty clay, some sand, trace gravel and cobbles	1.22	SS	4	50	21								
		SS	5	100	24	2							
GLACIAL TILL: Compact to dense, brown silty sand, trace clay, gravel, cobbles and boulders		SS	6	83	31	3							
End of Borehole	3.43												
Practical refusal to augering at 3.43m depth (BH dry upon completion)													
								100	200	300	400	500	
								RKI Eagle Rdg. (ppm)					
								▲ Full Gas Resp. △ Methane Elim.					

## SOIL PROFILE AND TEST DATA

Environmental Investigation of Existing Fault Line  
Proposed New Hospital Campus - Carling Avenue  
Ottawa, Ontario

DATUM

REMARKS

BORINGS BY Geoprobe

DATE July 26, 2017

FILE NO.

**PE4096**

HOLE NO.

**BH 9A**

SOIL DESCRIPTION	STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Photo Ionization Detector				Monitoring Well Construction
		TYPE	NUMBER	% RECOVERY	N VALUE or RQD			● Volatile Organic Rdg. (ppm)	○ Lower Explosive Limit %			
GROUND SURFACE						0		20	40	60	80	
OVERBURDEN						1						
						2						
						3						
End of Borehole	3.25											
Practical refusal to augering at 3.25m depth (BH dry upon completion)												
								100	200	300	400	500
								<b>RKI Eagle Rdg. (ppm)</b>				
								▲ Full Gas Resp. △ Methane Elim.				

DATUM

REMARKS

BORINGS BY Geoprobe

DATE July 26, 2017

FILE NO.

**PE4096**

HOLE NO.

**BH10**

SOIL DESCRIPTION	STRATA PLOT	SAMPLE				DEPTH (m)	ELEV. (m)	Photo Ionization Detector				Monitoring Well Construction
		TYPE	NUMBER	% RECOVERY	N VALUE or RQD			● Volatile Organic Rdg. (ppm)	○ Lower Explosive Limit %			
GROUND SURFACE								20	40	60	80	
TOPSOIL	0.56	AU	1			0						
		SS	2	50	1							
		SS	3	92	5	1						
		SS	4	75	3							
		SS	5	100	4	2						
		SS	6	100	2							
<b>GLACIAL TILL:</b> Very soft to stiff, brown silty clay, trace sand, gravel and cobbles		SS	7	83	6	4						
- silty clay layer from 2.13 to 2.44m and 2.64 to 3.02m depths		SS	8	50	7	5						
- grey by 4.6m depth		SS	9	75	10	6						
		SS	9	75	10	7						
End of Borehole	7.29					7						
Practical refusal to augering at 7.29m depth												
(GWL @ 3.89m - August 8, 2017)												

100 200 300 400 500

**RKI Eagle Rdg. (ppm)**

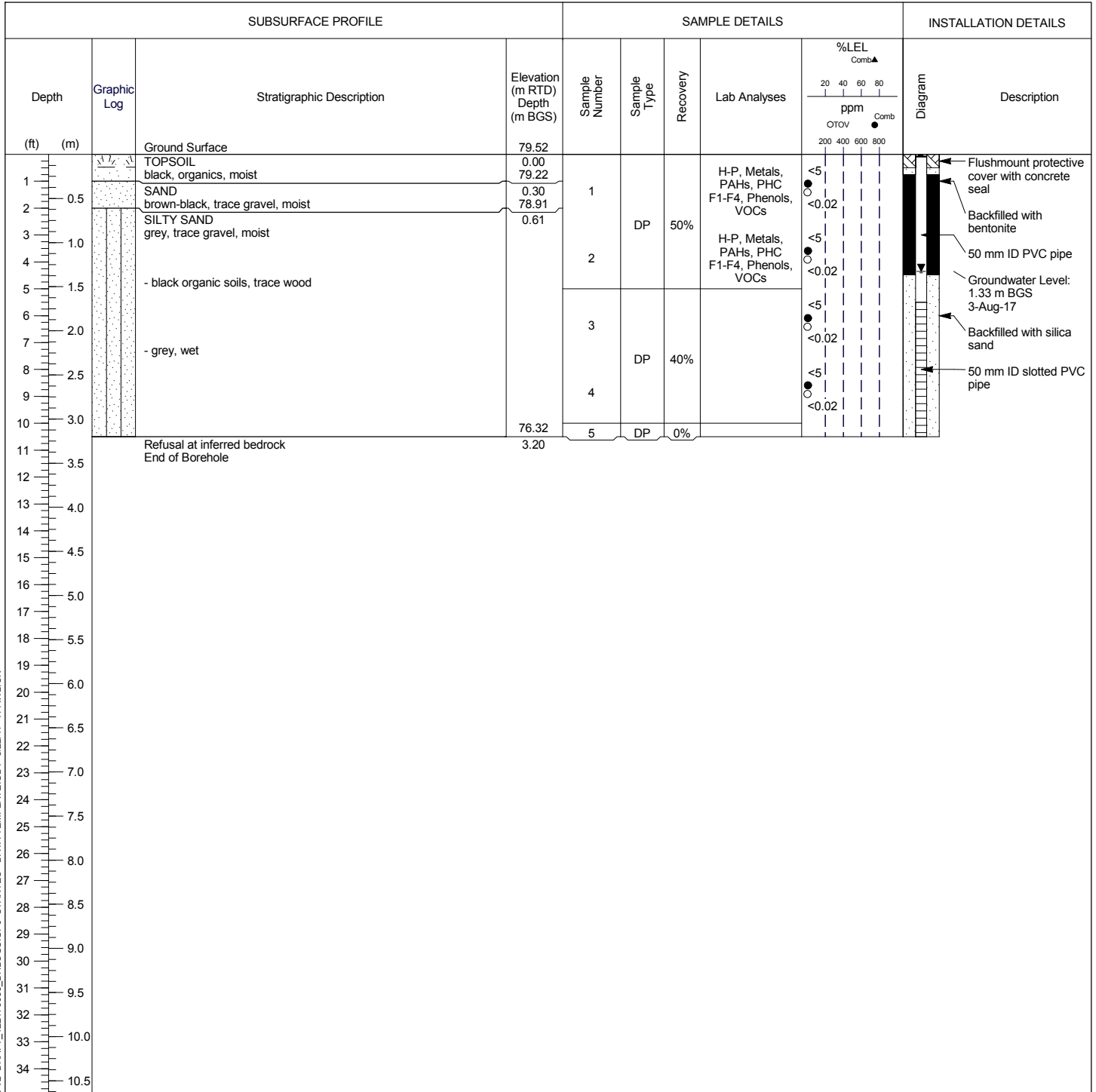
▲ Full Gas Resp. △ Methane Elim.



# Monitoring Well: MW17-03

**Project:** Phase II Environmental Site Assessment  
**Client:** Public Services and Procurement Canada  
**Location:** 870 and 930 Carling Avenue and 520 Preston Street, Ottawa, Ontario  
**Number:** 122170088  
**Field investigator:** A. Parrott  
**Contractor:** Strata Drilling Group

**Drilling method:** Geoprobe (direct push)  
**Date started/completed:** 27-Jul-2017  
**Ground surface elevation:** 79.52 m RTD  
**Top of casing elevation:** 79.42 m RTD  
**Easting:** 444317.1276  
**Northing:** 5027135.316



Screen Interval: 1.68 - 3.20 m BGS  
 Sand Pack Interval: 1.37 - 3.20 m BGS  
 Well Seal Interval: 0.23 - 1.37 m BGS

Notes:  
 m BGS - metres below ground surface  
 DP - direct push sample  
 ppm - parts per million by volume  
 n/a - not available

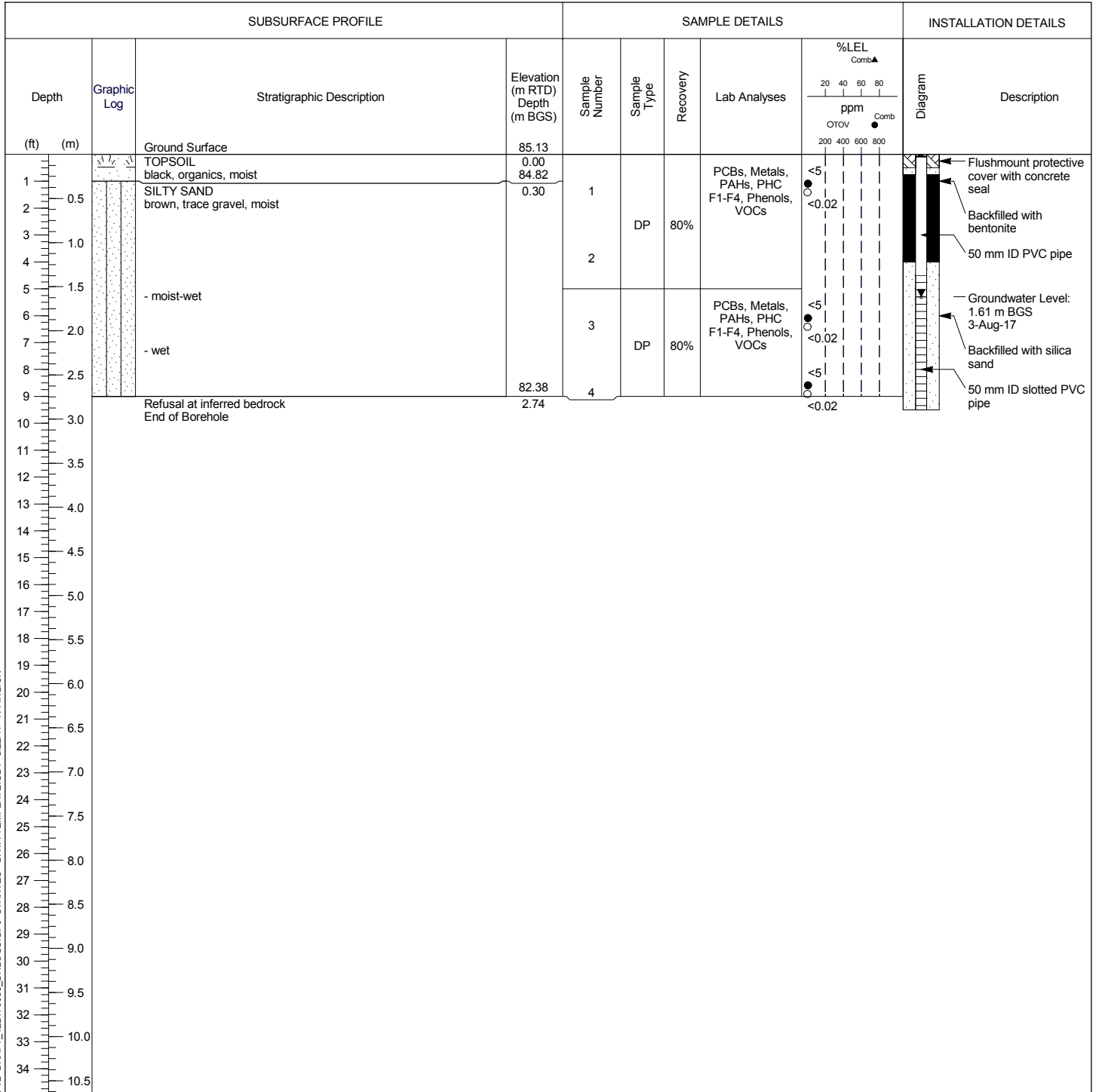
H-P - herbicides and pesticides  
 PAHs - polycyclic aromatic hydrocarbons  
 PHC F1-F4 - petroleum hydrocarbon fractions 1 to 4  
 VOCs - volatile organic compounds  
 Comb - combustible soil vapour  
 TOV - total organic vapour



# Monitoring Well: MW17-04

**Project:** Phase II Environmental Site Assessment  
**Client:** Public Services and Procurement Canada  
**Location:** 870 and 930 Carling Avenue and 520 Preston Street, Ottawa, Ontario  
**Number:** 122170088  
**Field investigator:** A. Parrott  
**Contractor:** Strata Drilling Group

**Drilling method:** Geoprobe (direct push)  
**Date started/completed:** 27-Jul-2017  
**Ground surface elevation:** 85.13 m RTD  
**Top of casing elevation:** 85.06 m RTD  
**Easting:** 444502.0718  
**Northing:** 5026981.471



STANTEC BOREHOLE AND WELL V2 DRAFT\_122170088\_BHLOGS.GPJ STANTEC - DATA TEMPLATE.GDT 8/22/17 TPAWLICK

Screen Interval: 1.37 - 2.90 m BGS  
 Sand Pack Interval: 1.22 - 2.90 m BGS  
 Well Seal Interval: 0.23 - 1.22 m BGS

Notes:  
 m BGS - metres below ground surface  
 DP - direct push sample  
 ppm - parts per million by volume  
 n/a - not available

PCBs - polychlorinated biphenyls  
 PAHs - polycyclic aromatic hydrocarbons  
 PHC F1-F4 - petroleum hydrocarbon fractions 1 to 4  
 VOCs - volatile organic compounds  
 Comb - combustible soil vapour  
 TOV - total organic vapour



# Monitoring Well: MW17-05

**Project:** Phase II Environmental Site Assessment  
**Client:** Public Services and Procurement Canada  
**Location:** 870 and 930 Carling Avenue and 520 Preston Street, Ottawa, Ontario  
**Number:** 122170088  
**Field investigator:** A. Parrott  
**Contractor:** Strata Drilling Group

**Drilling method:** Geoprobe (direct push)  
**Date started/completed:** 26-Jul-2017  
**Ground surface elevation:** 94.49 m RTD  
**Top of casing elevation:** 94.39 m RTD  
**Easting:** 444231.6325  
**Northing:** 5026850.536

SUBSURFACE PROFILE				SAMPLE DETAILS				INSTALLATION DETAILS				
Depth (ft) (m)	Graphic Log	Stratigraphic Description	Elevation (m RTD) Depth (m BGS)	Sample Number	Sample Type	Recovery	Lab Analyses	%LEL Comb		Diagram	Description	
								OTOV	ppm			
		Ground Surface	94.49									
1		TOPSOIL black-brown, organics, moist	0.00	1	DP	100%	H-P, Metals, PAHs, Phenols, VOCs	<5	<0.02		Flushmount protective cover with concrete seal	
2		SILT brown-grey, moist	0.61	2			PHC F1-F4	<5	<0.02		Backfilled with bentonite	
3				3			<5	<0.02	50 mm ID PVC pipe			
4				4	DP	100%	H-P, Metals, PAHs, PHC F1-F4, Phenols, VOCs	<5	<0.02			
5		SILTY SAND brown, trace gravel, wet	2.44	5				<5	<0.02			
6		- brown-grey		6	DP	80%		<5	<0.02			Groundwater Level: 3.43 m BGS 3-Aug-17
7		- grey		7				<5	<0.02		Backfilled with silica sand	
8				8	DP	80%		<5	<0.02			50 mm ID slotted PVC pipe
9				9				<5	<0.02			
10			88.39								End of Borehole	
11			6.10									

Screen Interval: 3.05 - 6.10 m BGS  
 Sand Pack Interval: 2.74 - 6.10 m BGS  
 Well Seal Interval: 0.23 - 2.74 m BGS

Notes:  
 m BGS - metres below ground surface  
 DP - direct push sample  
 ppm - parts per million by volume  
 n/a - not available

H-P - herbicides and pesticides  
 PAHs - polycyclic aromatic hydrocarbons  
 PHC F1-F4 - petroleum hydrocarbon fractions 1 to 4  
 VOCs - volatile organic compounds  
 Comb - combustible soil vapour  
 TOV - total organic vapour



# Monitoring Well: MW17-06

**Project:** Phase II Environmental Site Assessment  
**Client:** Public Services and Procurement Canada  
**Location:** 870 and 930 Carling Avenue and 520 Preston Street, Ottawa, Ontario  
**Number:** 122170088  
**Field investigator:** A. Parrott  
**Contractor:** Strata Drilling Group

**Drilling method:** Geoprobe (direct push)  
**Date started/completed:** 26-Jul-2017  
**Ground surface elevation:** 95.09 m RTD  
**Top of casing elevation:** 95.03 m RTD  
**Easting:** 444175.7424  
**Northing:** 5026815.478

SUBSURFACE PROFILE				SAMPLE DETAILS				INSTALLATION DETAILS	
Depth (ft) (m)	Graphic Log	Stratigraphic Description	Elevation (m RTD) Depth (m BGS)	Sample Number	Sample Type	Recovery	Lab Analyses	%LEL Comb▲ ppm OTOV ● Comb	Diagram
		Ground Surface	95.09						
1		TOPSOIL black-brown, organics, moist	0.00 94.78	1	DP	75%	H-P, Metals, PAHs, Phenols, VOCs		Flushmount protective cover with concrete seal
2		SANDY SILT brown, trace gravel, moist	0.30						Backfilled with bentonite
4		SILTY SAND brown, trace gravel, moist to wet	93.87 1.22	2			PHC F1-F4	<5 1	50 mm ID PVC pipe
11		- brown-grey							Backfilled with silica sand
14		SAND brown, wet	90.82 4.27 90.48	3	DP	50%	H-P, Metals, PAHs, PHC F1-F4, Phenols, VOCs	<5 <0.02	50 mm ID slotted PVC pipe
15		Refusal at inferred bedrock End of Borehole	4.60	4	DP	n/a		<5 <0.02	
16				5				<5 <0.02	Groundwater Level: dry on 3-Aug-17
17				6	DP	n/a		<0.02	

STANTEC BOREHOLE AND WELL V2 DRAFT\_122170088\_BHLOGS.GPJ STANTEC - DATA TEMPLATE.GDT 8/22/17 TPAWLICK

Screen Interval: 1.55 - 4.60 m BGS  
 Sand Pack Interval: 1.25 - 4.60 m BGS  
 Well Seal Interval: 0.23 - 1.25 m BGS

Notes:  
 m BGS - metres below ground surface  
 DP - direct push sample  
 ppm - parts per million by volume  
 n/a - not available

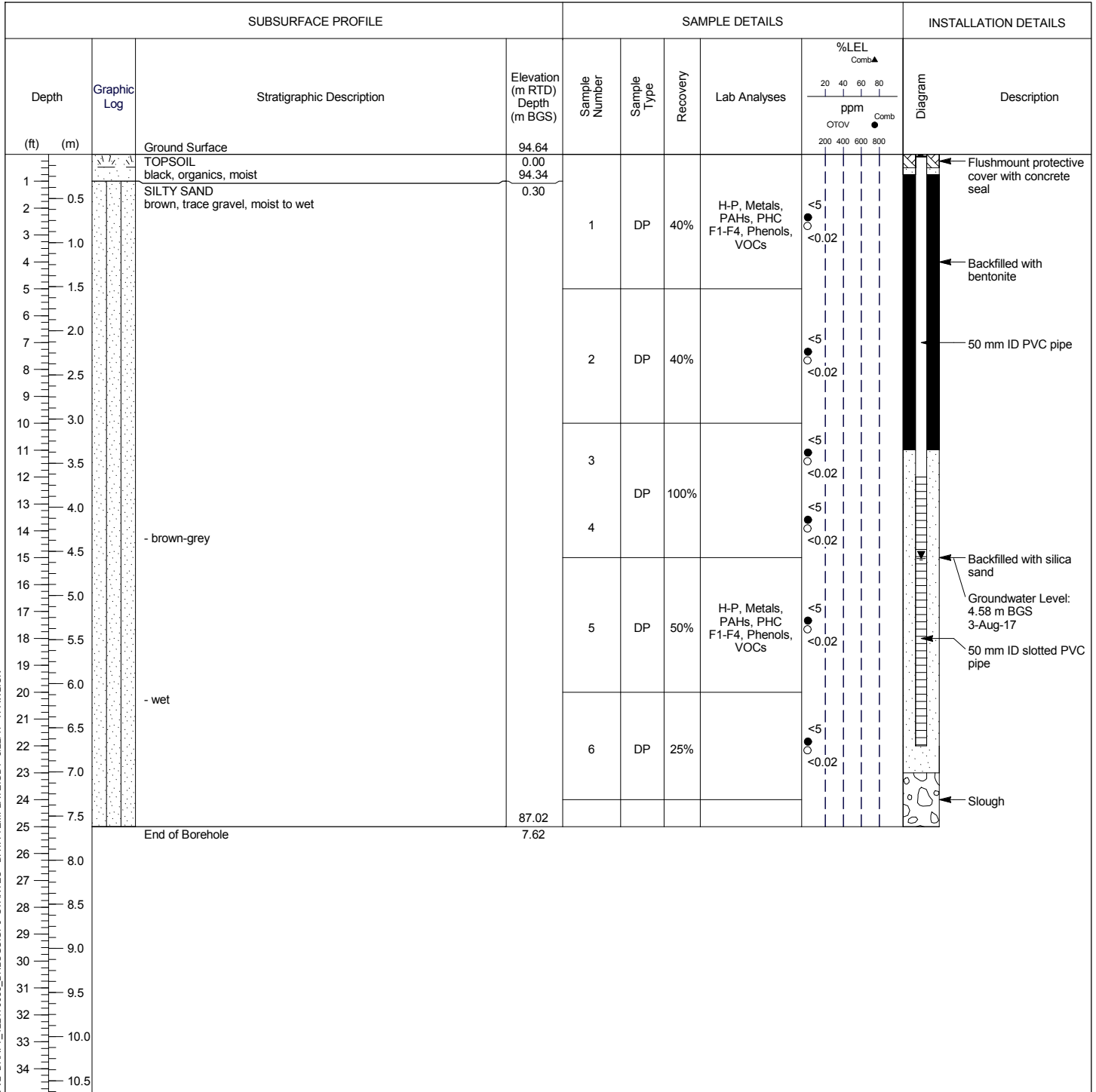
H-P - herbicides and pesticides  
 PAHs - polycyclic aromatic hydrocarbons  
 PHC F1-F4 - petroleum hydrocarbon fractions 1 to 4  
 VOCs - volatile organic compounds  
 Comb - combustible soil vapour  
 TOV - total organic vapour



# Monitoring Well: MW17-07

**Project:** Phase II Environmental Site Assessment  
**Client:** Public Services and Procurement Canada  
**Location:** 870 and 930 Carling Avenue and 520 Preston Street, Ottawa, Ontario  
**Number:** 122170088  
**Field investigator:** A. Parrott  
**Contractor:** Strata Drilling Group

**Drilling method:** Geoprobe (direct push)  
**Date started/completed:** 26-Jul-2017  
**Ground surface elevation:** 94.64 m RTD  
**Top of casing elevation:** 94.58 m RTD  
**Easting:** 444240.9625  
**Northing:** 5026754.904



Screen Interval: 3.66 - 6.71 m BGS  
 Sand Pack Interval: 3.35 - 7.01 m BGS  
 Well Seal Interval: 0.23 - 3.35 m BGS

Notes:  
 m BGS - metres below ground surface  
 DP - direct push sample  
 ppm - parts per million by volume  
 n/a - not available

H-P - herbicides and pesticides  
 PAHs - polycyclic aromatic hydrocarbons  
 PHC F1-F4 - petroleum hydrocarbon fractions 1 to 4  
 VOCs - volatile organic compounds  
 Comb - combustible soil vapour  
 TOV - total organic vapour



# Monitoring Well: MW17-08

**Project:** Phase II Environmental Site Assessment  
**Client:** Public Services and Procurement Canada  
**Location:** 870 and 930 Carling Avenue and 520 Preston Street, Ottawa, Ontario  
**Number:** 122170088  
**Field investigator:** A. Parrott  
**Contractor:** Strata Drilling Group

**Drilling method:** Geoprobe (direct push)  
**Date started/completed:** 26-Jul-2017  
**Ground surface elevation:** 95.59 m RTD  
**Top of casing elevation:** 95.52 m RTD  
**Easting:** 444299.964  
**Northing:** 5026787.713

SUBSURFACE PROFILE				SAMPLE DETAILS				INSTALLATION DETAILS			
Depth (ft) (m)	Graphic Log	Stratigraphic Description	Elevation (m RTD) Depth (m BGS)	Sample Number	Sample Type	Recovery	Lab Analyses	%LEL Comb		Diagram	Description
								OTOV	Comb		
		Ground Surface	95.59								
1		TOPSOIL black, organics, moist	0.00								
2		SAND brown, trace silt and gravel, moist	94.98 0.61	1	DP	40%	H-P, Metals, PAHs, PHC F1-F4, Phenols, VOCs	<5	<0.02		Flushmount protective cover with concrete seal
3											Backfilled with bentonite
4			94.07								50 mm ID PVC pipe
5		SILTY SAND brown, trace gravel, moist	1.52	2	DP	50%	H-P, Metals, PAHs, PHC F1-F4, Phenols, VOCs	<5	<0.02		
6											
7			93.15								
8		No soil samples recovered - augered through boulders	2.44								
9											
10				3	DP	20%					Backfilled with silica sand
11											
12											
13											
14											
15											
16											
17			90.41								
18		SILTY SAND grey, trace gravel, moist	5.18 90.11								
19		Refusal at inferred bedrock End of Borehole	5.49								
20											
21											
22											
23											
24											
25											
26											
27											
28											
29											
30											
31											
32											
33											
34											

Screen Interval: 2.23 - 5.28 m BGS  
 Sand Pack Interval: 1.93 - 5.49 m BGS  
 Well Seal Interval: 0.23 - 1.93 m BGS

Notes:  
 m BGS - metres below ground surface  
 DP - direct push sample  
 RC - rock core  
 ppm - parts per million by volume  
 n/a - not available

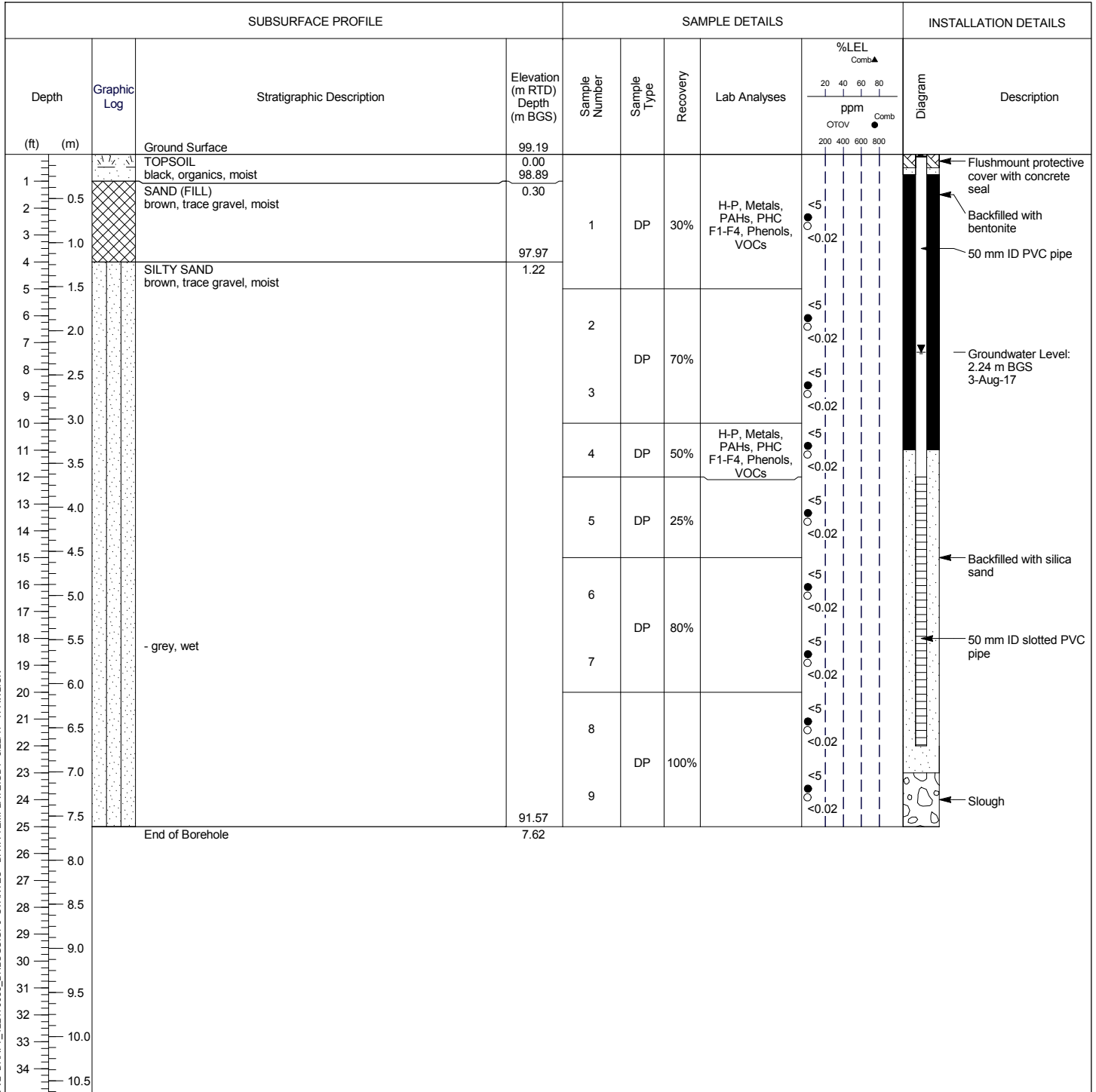
H-P - herbicides and pesticides  
 PAHs - polycyclic aromatic hydrocarbons  
 PHC F1-F4 - petroleum hydrocarbon fractions 1 to 4  
 VOCs - volatile organic compounds  
 Comb - combustible soil vapour  
 TOV - total organic vapour



# Monitoring Well: MW17-09

**Project:** Phase II Environmental Site Assessment  
**Client:** Public Services and Procurement Canada  
**Location:** 870 and 930 Carling Avenue and 520 Preston Street, Ottawa, Ontario  
**Number:** 122170088  
**Field investigator:** A. Parrott  
**Contractor:** Strata Drilling Group

**Drilling method:** Geoprobe (direct push)  
**Date started/completed:** 27-Jul-2017  
**Ground surface elevation:** 99.19 m RTD  
**Top of casing elevation:** 99.12 m RTD  
**Easting:** 444493.9007  
**Northing:** 5026676.009



Screen Interval: 3.66 - 6.71 m BGS  
 Sand Pack Interval: 3.35 - 7.01 m BGS  
 Well Seal Interval: 0.23 - 3.35 m BGS

**Notes:**  
 m BGS - metres below ground surface  
 DP - direct push sample  
 ppm - parts per million by volume  
 n/a - not available

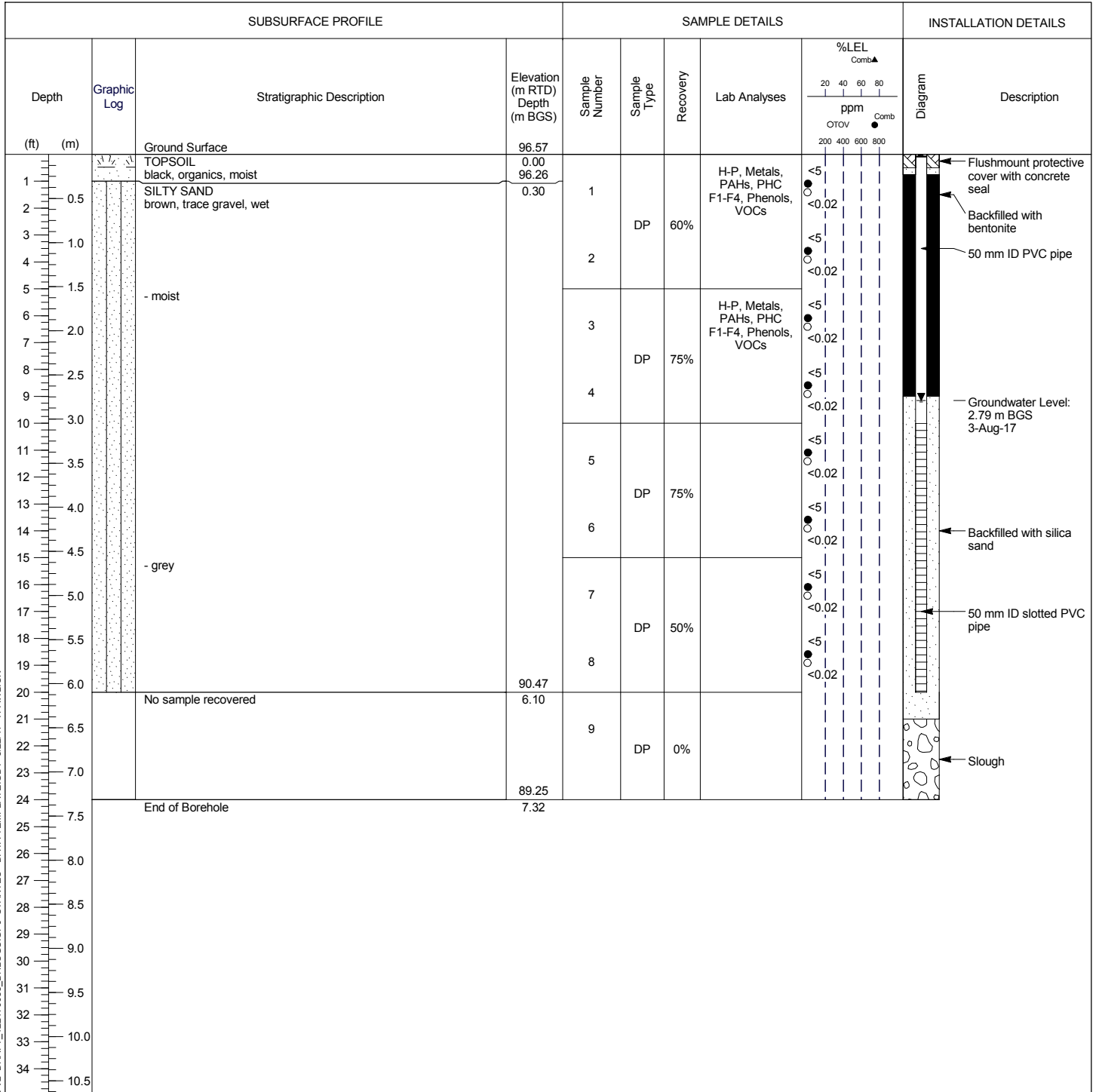
H-P - herbicides and pesticides  
 PAHs - polycyclic aromatic hydrocarbons  
 PHC F1-F4 - petroleum hydrocarbon fractions 1 to 4  
 VOCs - volatile organic compounds  
 Comb - combustible soil vapour  
 TOV - total organic vapour



# Monitoring Well: MW17-10

**Project:** Phase II Environmental Site Assessment  
**Client:** Public Services and Procurement Canada  
**Location:** 870 and 930 Carling Avenue and 520 Preston Street, Ottawa, Ontario  
**Number:** 122170088  
**Field investigator:** A. Parrott  
**Contractor:** Strata Drilling Group

**Drilling method:** Geoprobe (direct push)  
**Date started/completed:** 27-Jul-2017  
**Ground surface elevation:** 96.57 m RTD  
**Top of casing elevation:** 96.48 m RTD  
**Easting:** 444546.5613  
**Northing:** 5026699.988



Screen Interval: 3.05 - 6.10 m BGS  
 Sand Pack Interval: 2.74 - 6.40 m BGS  
 Well Seal Interval: 0.23 - 2.74 m BGS

**Notes:**  
 m BGS - metres below ground surface  
 DP - direct push sample  
 ppm - parts per million by volume  
 n/a - not available

H-P - herbicides and pesticides  
 PAHs - polycyclic aromatic hydrocarbons  
 PHC F1-F4 - petroleum hydrocarbon fractions 1 to 4  
 VOCs - volatile organic compounds  
 Comb - combustible soil vapour  
 TOV - total organic vapour

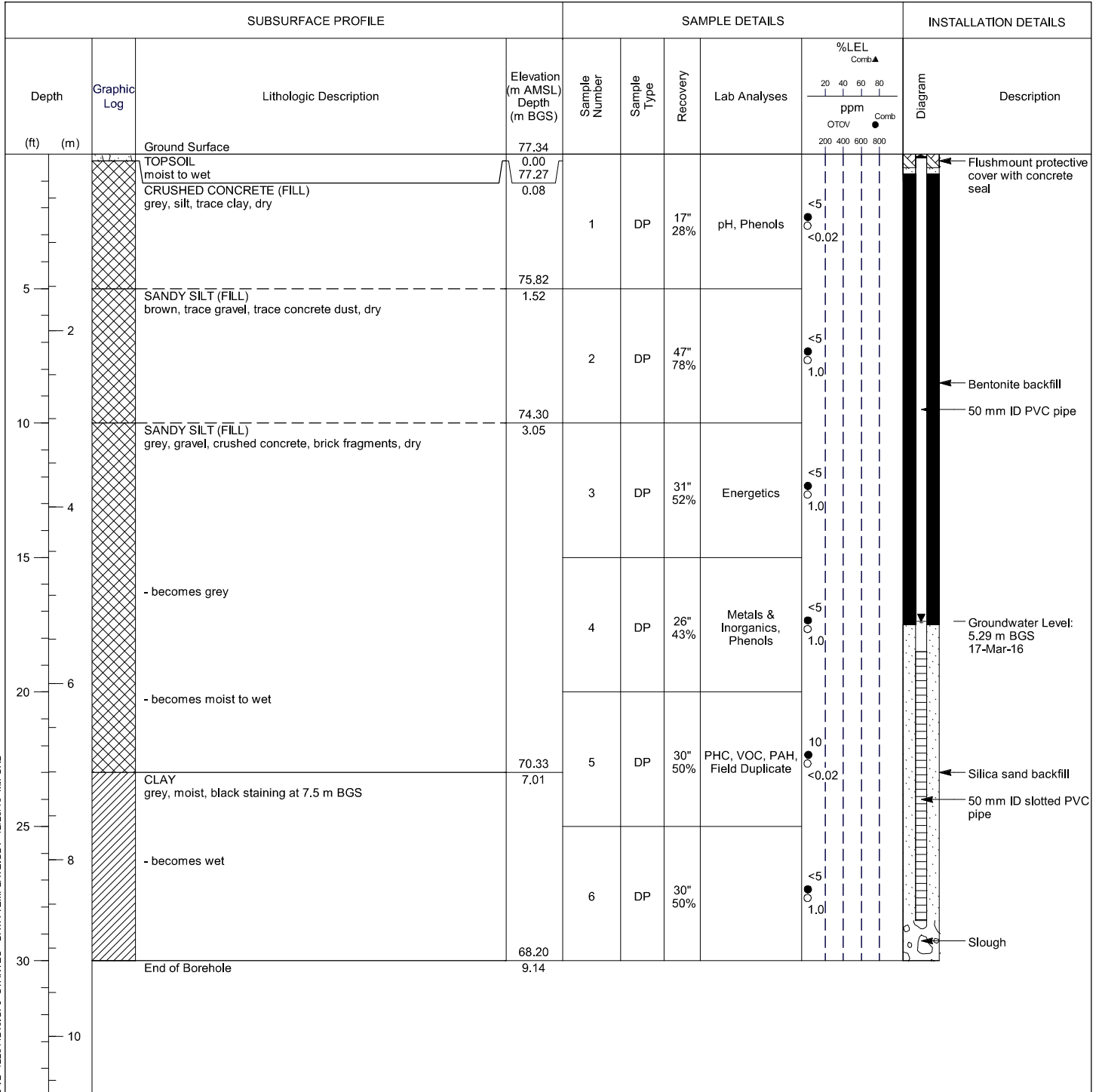




# Monitoring Well: MW16-1

**Project:** Environmental Site Assessment  
**Client:** Public Services and Procurement Canada  
**Location:** Sir John Carling Building  
**Number:** 122511246  
**Field investigator:** J. Urben / B. Chenier  
**Contractor:** Strata Drilling Group

**Drilling method:** GM100 (Direct Push)  
**Date started/completed:** 14-Mar-2016  
**Ground surface elevation:** 77.34 m AMSL  
**Top of casing elevation:** 77.25 m AMSL  
**Easting:** 444332.2  
**Northing:** 5026985.7



Screen Interval: 5.64 - 8.69 m BGS  
 Sand Pack Interval: 5.33 - 8.69 m BGS  
 Well Seal Interval: 0.23 - 5.33 m BGS

**Notes:**  
 m AMSL - metres above mean sea level  
 m BGS - metres below ground surface  
 DP - direct push sample  
 ppm - parts per million by volume  
 n/a - not available

PAH - polycyclic aromatic hydrocarbons  
 PHC F1-F4 - petroleum hydrocarbon fractions 1 to 4  
 VOC - volatile organic compounds

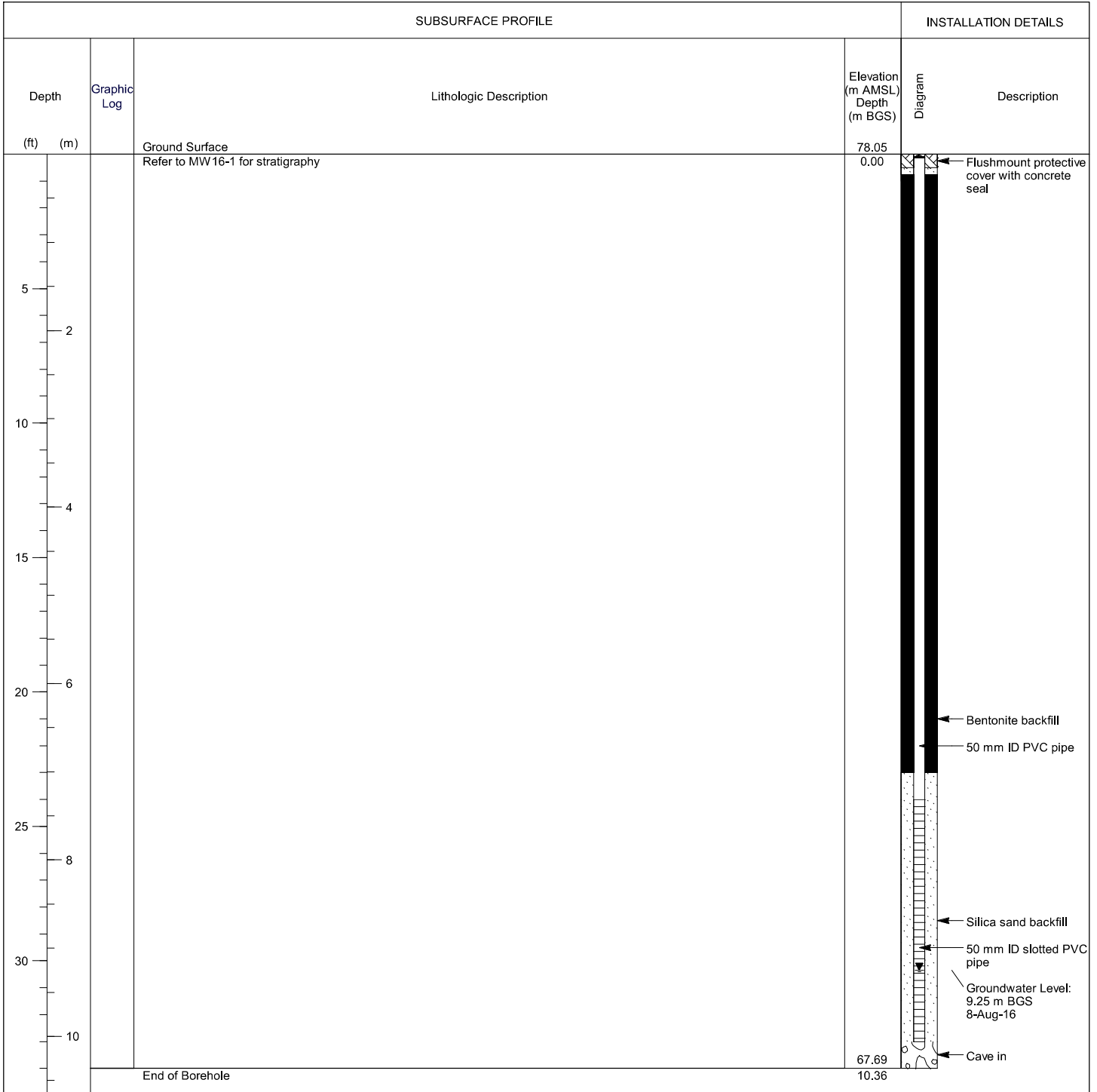
Field Duplicate - MW16-1A SS5



# Monitoring Well: MW16-1A

**Project:** Environmental Site Assessment  
**Client:** Public Services and Procurement Canada  
**Location:** Sir John Carling Building  
**Number:** 122511246  
**Field investigator:** R. Lee  
**Contractor:** Strata Drilling Group

**Drilling method:** Geoprobe 7822DT  
**Date started/completed:** 02-Aug-2016  
**Ground surface elevation:** 78.05 m AMSL  
**Top of casing elevation:** 77.96 m AMSL  
**Easting:** 444332.2  
**Northing:** 5026985.7



Screen Interval: 7.32 - 10.06 m BGS  
 Sand Pack Interval: 7.01 - 10.06 m BGS  
 Well Seal Interval: 0.23 - 7.01 m BGS

**Notes:**  
 m AMSL - metres above mean sea level  
 m BGS - metres below ground surface  
 n/a - not available

PAH - polycyclic aromatic hydrocarbons  
 PHC F1-F4 - petroleum hydrocarbon fractions 1 to 4  
 VOC - volatile organic compounds

Installed to replace MW 16-1 (destroyed)



# Borehole: BH16-2

**Project:** Environmental Site Assessment  
**Client:** Public Services and Procurement Canada  
**Location:** Sir John Carling Building  
**Number:** 122511246  
**Field investigator:** J. Urben / B. Chenier  
**Contractor:** Strata Drilling Group

**Drilling method:** GM100 (Direct Push)  
**Date started/completed:** 14-Mar-2016  
**Ground surface elevation:** 79.20 m AMSL  
**Top of casing elevation:** n/a  
**Easting:** 444365.8  
**Northing:** 5026932.5

SUBSURFACE PROFILE				SAMPLE DETAILS				INSTALLATION DETAILS			
Depth (ft) (m)	Graphic Log	Lithologic Description	Elevation (m AMSL) Depth (m BGS)	Sample Number	Sample Type	Recovery	Lab Analyses	%LEL Comb▲		Diagram	Description
								20	40		
		Ground Surface	79.20								
		TOPSOIL	0.00								
		CLAYEY SILT brown with orange mottling, sand, gravel, dry	79.05 0.15	1	DP	21" 70%	Energetics, PAH, Metals	<5	<0.02		
5			77.68	2a	DP	19" 63%		<5	<0.02		
2		SILTY SAND grey-brown, with gravel, moist	1.52	2b	DP	19" 32%		<5	<0.02		
10		- becomes grey, dry									
4				3	DP	24" 40%		<5	<0.02		
15		- with silt, moist									
6			73.11	4	DP	12" 20%	VOC, PHC	<5	<0.02		
20		No soil samples recovered	6.10								
25			71.58								
8		CLAY grey, gravel, trace silt, wet	7.62	6	DP	12" 20%		<5	<0.02		
30		End of Borehole	70.06 9.14								

← Bentonite backfill

**Notes:**  
 m AMSL - metres above mean sea level  
 m BGS - metres below ground surface  
 DP - direct push sample  
 ppm - parts per million by volume  
 n/a - not available

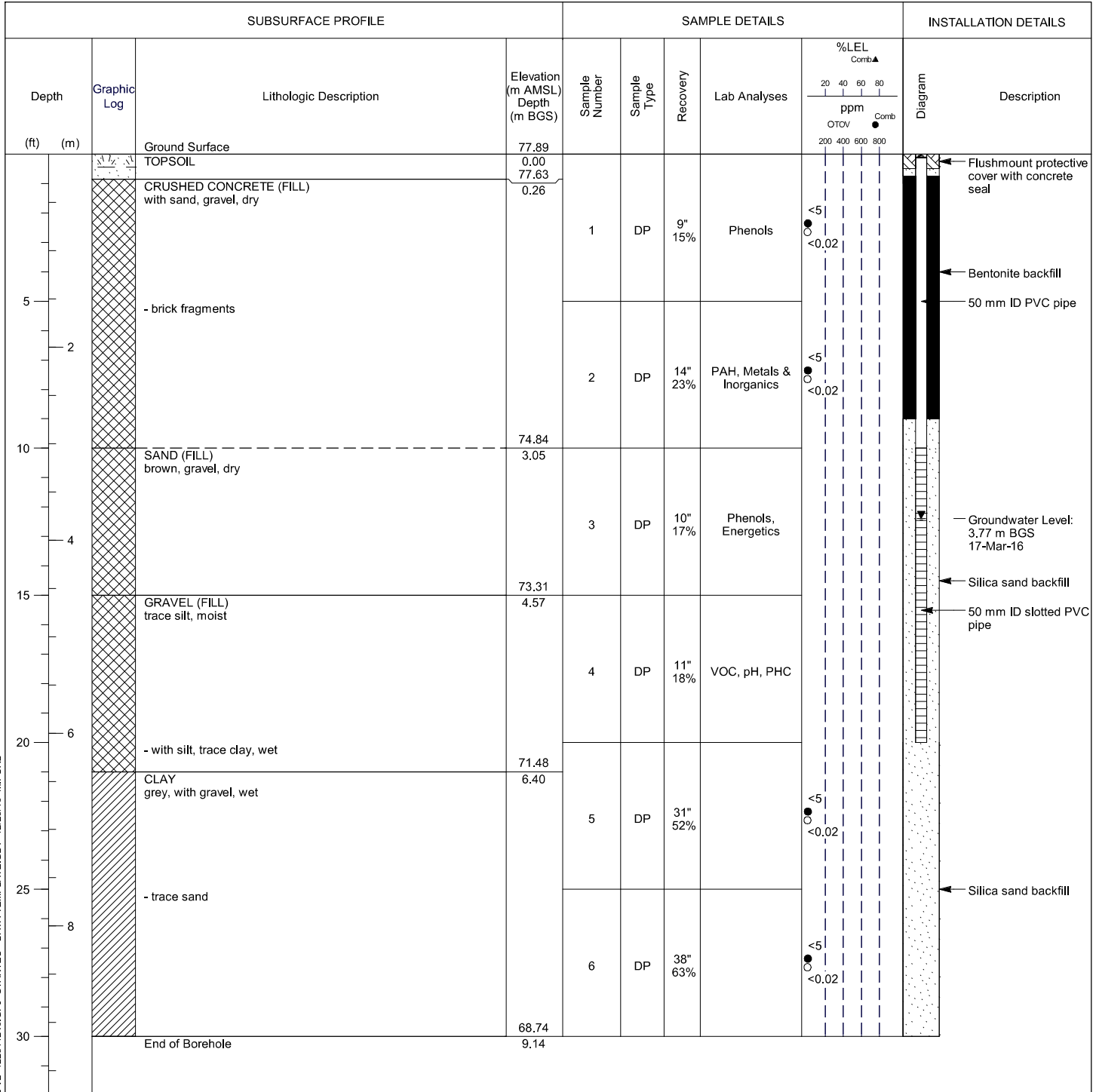
PAH - polycyclic aromatic hydrocarbons  
 PHC F1-F4 - petroleum hydrocarbon fractions 1 to 4  
 VOC - volatile organic compounds



# Monitoring Well: MW16-3

**Project:** Environmental Site Assessment  
**Client:** Public Services and Procurement Canada  
**Location:** Sir John Carling Building  
**Number:** 122511246  
**Field investigator:** J. Urben / B. Chenier  
**Contractor:** Strata Drilling Group

**Drilling method:** GM100 (Direct Push)  
**Date started/completed:** 14-Mar-2016  
**Ground surface elevation:** 77.89 m AMSL  
**Top of casing elevation:** 77.85 m AMSL  
**Easting:** 444386.4  
**Northing:** 5026952



Screen Interval: 3.05 - 6.10 m BGS  
 Sand Pack Interval: 2.74 - 9.14 m BGS  
 Well Seal Interval: 0.23 - 2.74 m BGS

**Notes:**  
 m AMSL - metres above mean sea level  
 m BGS - metres below ground surface  
 DP - direct push sample  
 ppm - parts per million by volume  
 n/a - not available

PAH - polycyclic aromatic hydrocarbons  
 PHC F1-F4 - petroleum hydrocarbon fractions 1 to 4  
 VOC - volatile organic compounds



# Borehole: BH16-4

**Project:** Environmental Site Assessment  
**Client:** Public Services and Procurement Canada  
**Location:** Sir John Carling Building  
**Number:** 122511246  
**Field investigator:** J. Urben / B. Chenier  
**Contractor:** Strata Drilling Group

**Drilling method:** GM100 (Direct Push)  
**Date started/completed:** 14-Mar-2016  
**Ground surface elevation:** 74.17 m AMSL  
**Top of casing elevation:** n/a  
**Easting:** 444468.1  
**Northing:** 5026816

SUBSURFACE PROFILE				SAMPLE DETAILS				INSTALLATION DETAILS			
Depth (ft) (m)	Graphic Log	Lithologic Description	Elevation (m AMSL) Depth (m BGS)	Sample Number	Sample Type	Recovery	Lab Analyses	%LEL Comb▲		Diagram	Description
								20	40		
		Ground Surface	74.17								
		SILTY SAND grey, trace clay, gravel, moist	0.00	1	DP	24" 40%	PAH, Metals, Energetics, Field Duplicate	<5	<0.02		
5			72.39								
		SAND coarse to medium grained, with gravel	1.78	2	DP	24" 40%	Glycol, pH	<5	<0.02		
2			71.13								
		SILTY SAND grey, with clay, gravel, wet	3.05	3	DP	36" 60%	VOC, PHC	<5	<0.02		
10											
				4	DP	29" 81%		<5	<0.02		
15											
				5	DP	29" 121%		<5	<0.02		
20											
				6	DP	36" 100%		<5	<0.02		
25			67.16								
		Refusal on inferred bedrock End of Borehole	7.01								
30											

← Bentonite backfill

**Notes:**  
 m AMSL - metres above mean sea level  
 m BGS - metres below ground surface  
 DP - direct push sample  
 ppm - parts per million by volume  
 n/a - not available

PAH - polycyclic aromatic hydrocarbons  
 PHC F1-F4 - petroleum hydrocarbon fractions 1 to 4  
 VOC - volatile organic compounds

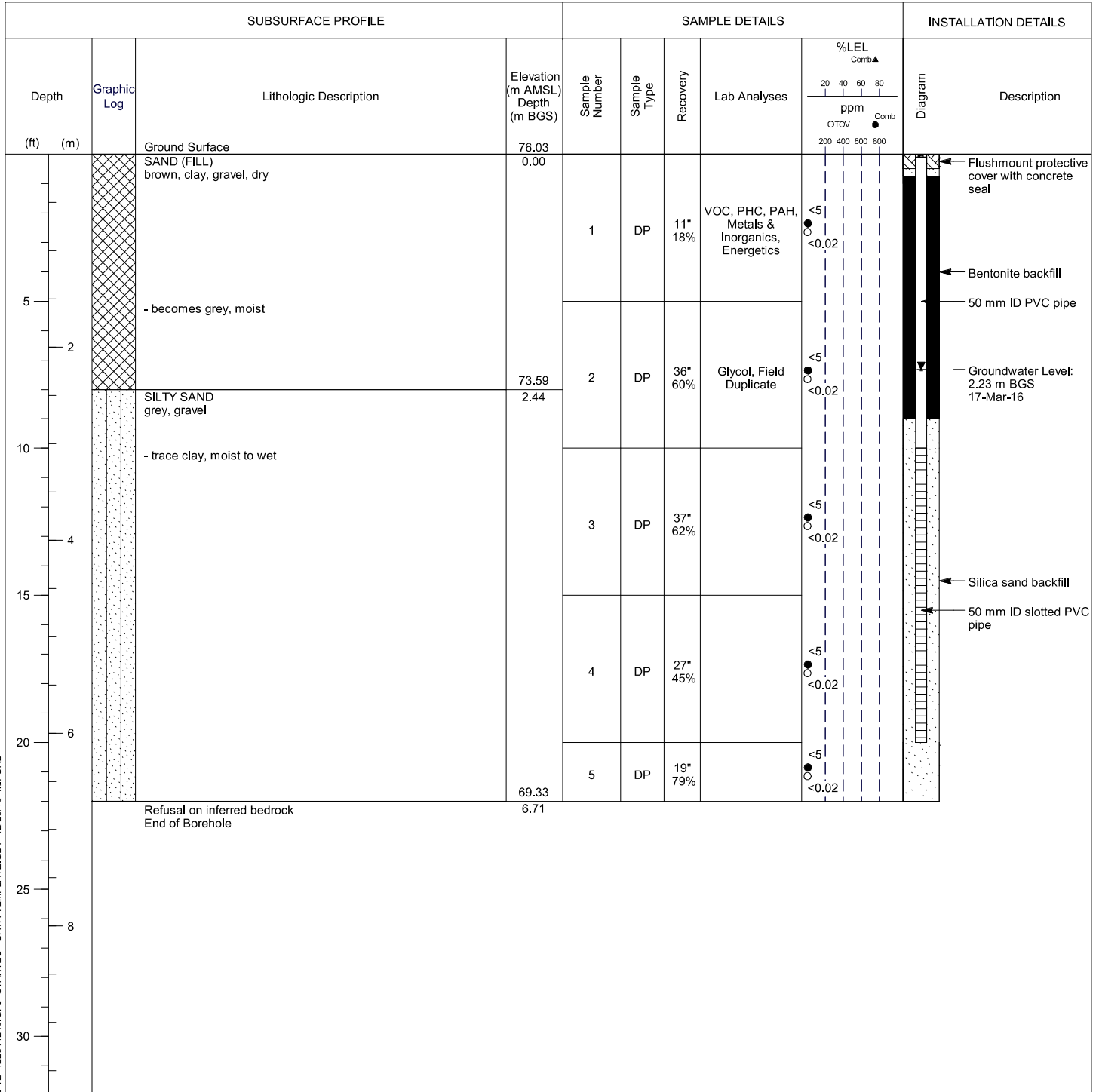
Field Duplicate - BH16-4 SS7 (for Metals Only)



# Monitoring Well: MW16-5

**Project:** Environmental Site Assessment  
**Client:** Public Services and Procurement Canada  
**Location:** Sir John Carling Building  
**Number:** 122511246  
**Field investigator:** J. Urben / B. Chenier  
**Contractor:** Strata Drilling Group

**Drilling method:** GM100 (Direct Push)  
**Date started/completed:** 14-Mar-2016  
**Ground surface elevation:** 76.03 m AMSL  
**Top of casing elevation:** 76.00 m AMSL  
**Easting:** 444404.1  
**Northing:** 5026972.9



Screen Interval: 3.05 - 6.10 m BGS  
 Sand Pack Interval: 2.74 - 6.71 m BGS  
 Well Seal Interval: 0.23 - 2.74 m BGS

**Notes:**  
 m AMSL - metres above mean sea level  
 m BGS - metres below ground surface  
 DP - direct push sample  
 ppm - parts per million by volume  
 n/a - not available

PAH - polycyclic aromatic hydrocarbons  
 PHC F1-F4 - petroleum hydrocarbon fractions 1 to 4  
 VOC - volatile organic compounds

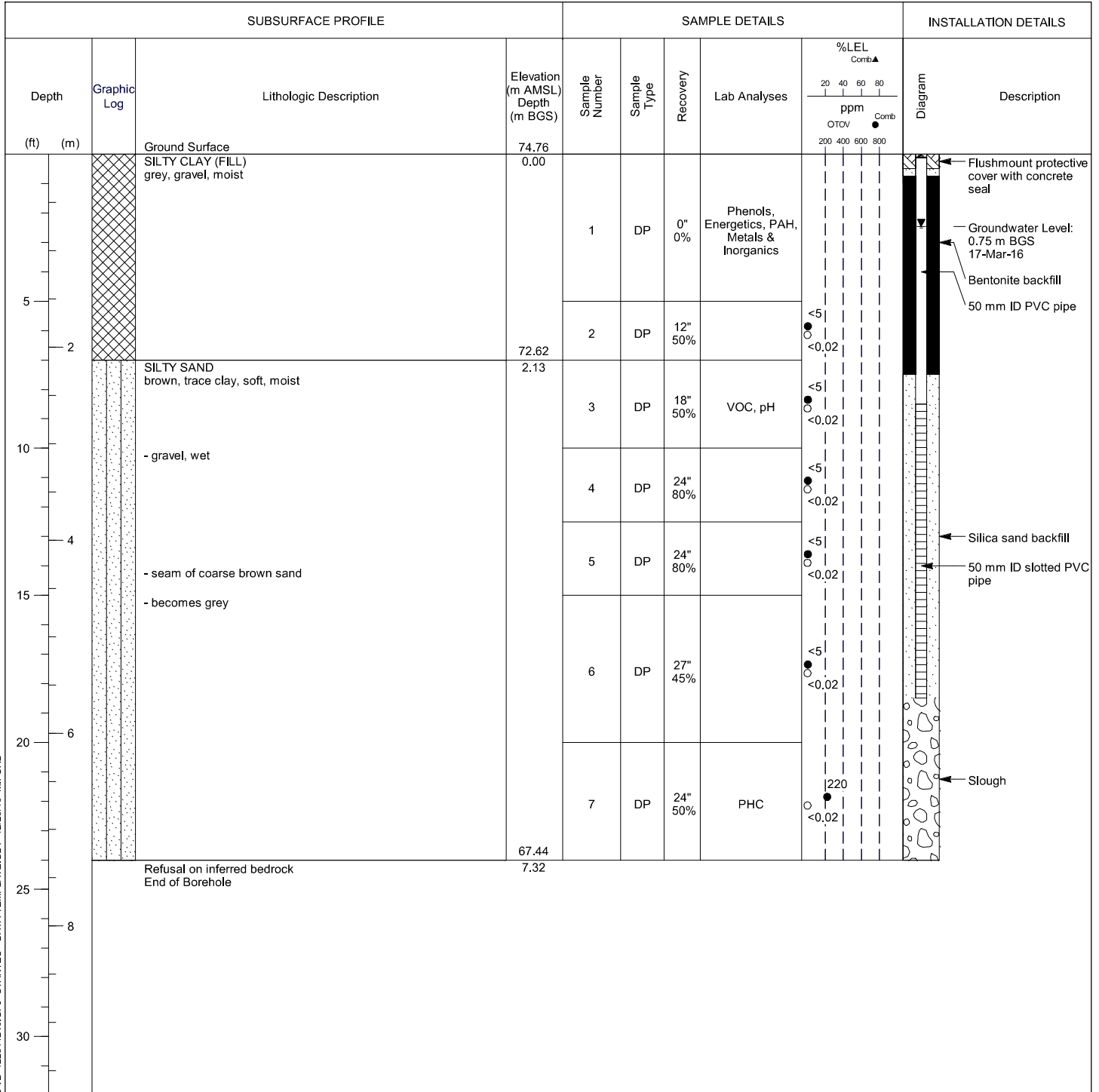
Field Duplicate - MW16-5 SS7



# Monitoring Well: MW16-6

**Project:** Environmental Site Assessment  
**Client:** Public Services and Procurement Canada  
**Location:** Sir John Carling Building  
**Number:** 122511246  
**Field investigator:** J. Urben / B. Chenier  
**Contractor:** Strata Drilling Group

**Drilling method:** GM100 (Direct Push)  
**Date started/completed:** 11-Mar-2016 / 14-Mar-2016  
**Ground surface elevation:** 74.76 m AMSL  
**Top of casing elevation:** 74.71 m AMSL  
**Easting:** 444454.1  
**Northing:** 5026972.9



Screen Interval: 2.59 - 5.64 m BGS  
 Sand Pack Interval: 2.29 - 5.64 m BGS  
 Well Seal Interval: 0.23 - 2.29 m BGS

Notes:  
 m AMSL - metres above mean sea level  
 m BGS - metres below ground surface  
 DP - direct push sample  
 ppm - parts per million by volume  
 n/a - not available

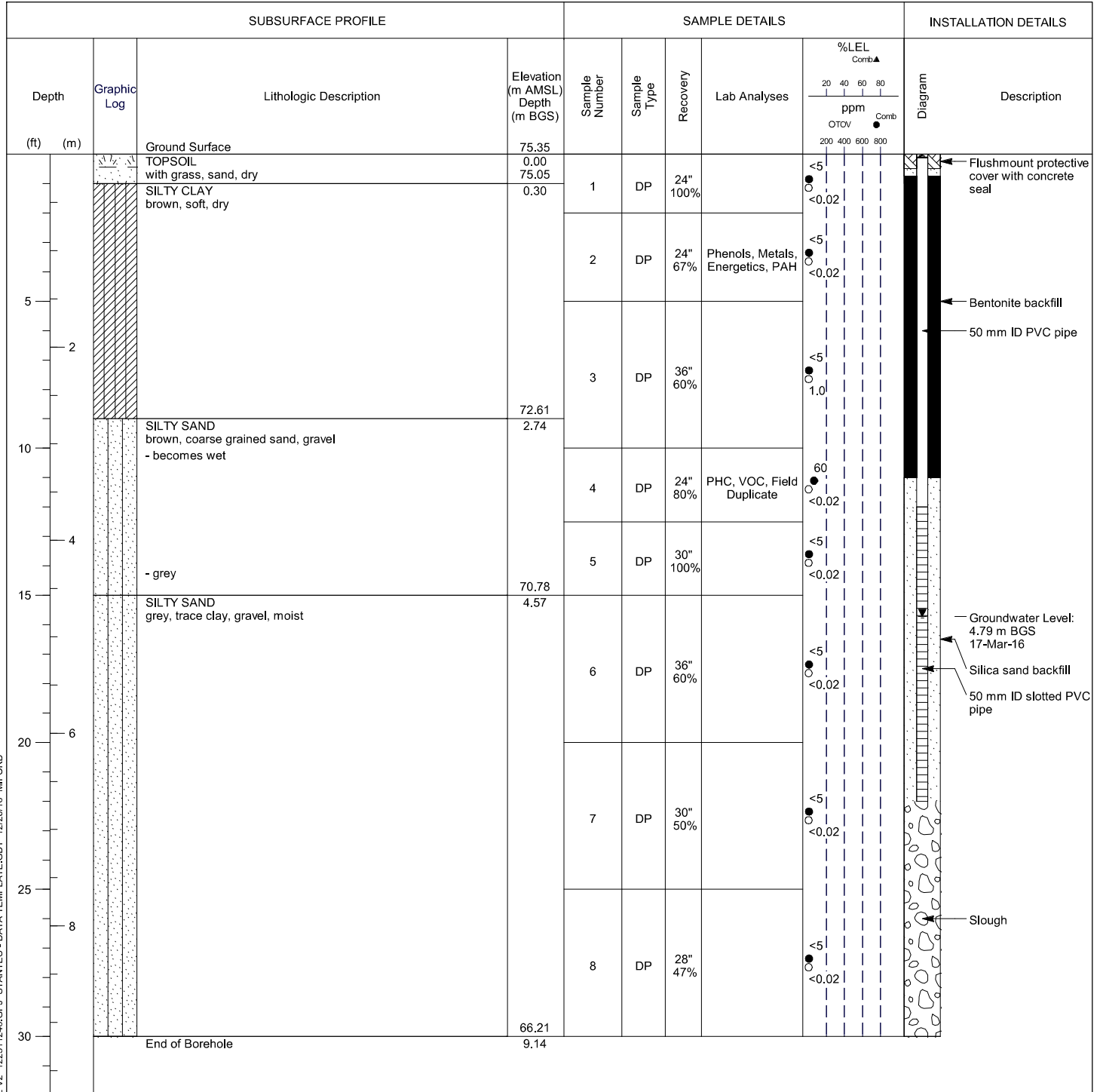
PAH - polycyclic aromatic hydrocarbons  
 PHC F1-F4 - petroleum hydrocarbon fractions 1 to 4  
 VOC - volatile organic compounds



# Monitoring Well: MW16-7

**Project:** Environmental Site Assessment  
**Client:** Public Services and Procurement Canada  
**Location:** Sir John Carling Building  
**Number:** 122511246  
**Field investigator:** J. Urben / B. Chenier  
**Contractor:** Strata Drilling Group

**Drilling method:** GM100 (Direct Push)  
**Date started/completed:** 14-Mar-2016  
**Ground surface elevation:** 75.35 m AMSL  
**Top of casing elevation:** 75.24 m AMSL  
**Easting:** 444336.2  
**Northing:** 5027014.9



Screen Interval: 3.66 - 6.71 m BGS  
 Sand Pack Interval: 3.35 - 6.71 m BGS  
 Well Seal Interval: 0.23 - 3.35 m BGS

**Notes:**  
 m AMSL - metres above mean sea level  
 m BGS - metres below ground surface  
 DP - direct push sample  
 ppm - parts per million by volume  
 n/a - not available

PAH - polycyclic aromatic hydrocarbons  
 PHC F1-F4 - petroleum hydrocarbon fractions 1 to 4  
 VOC - volatile organic compounds

Field Duplicate - MW16-2A SS4

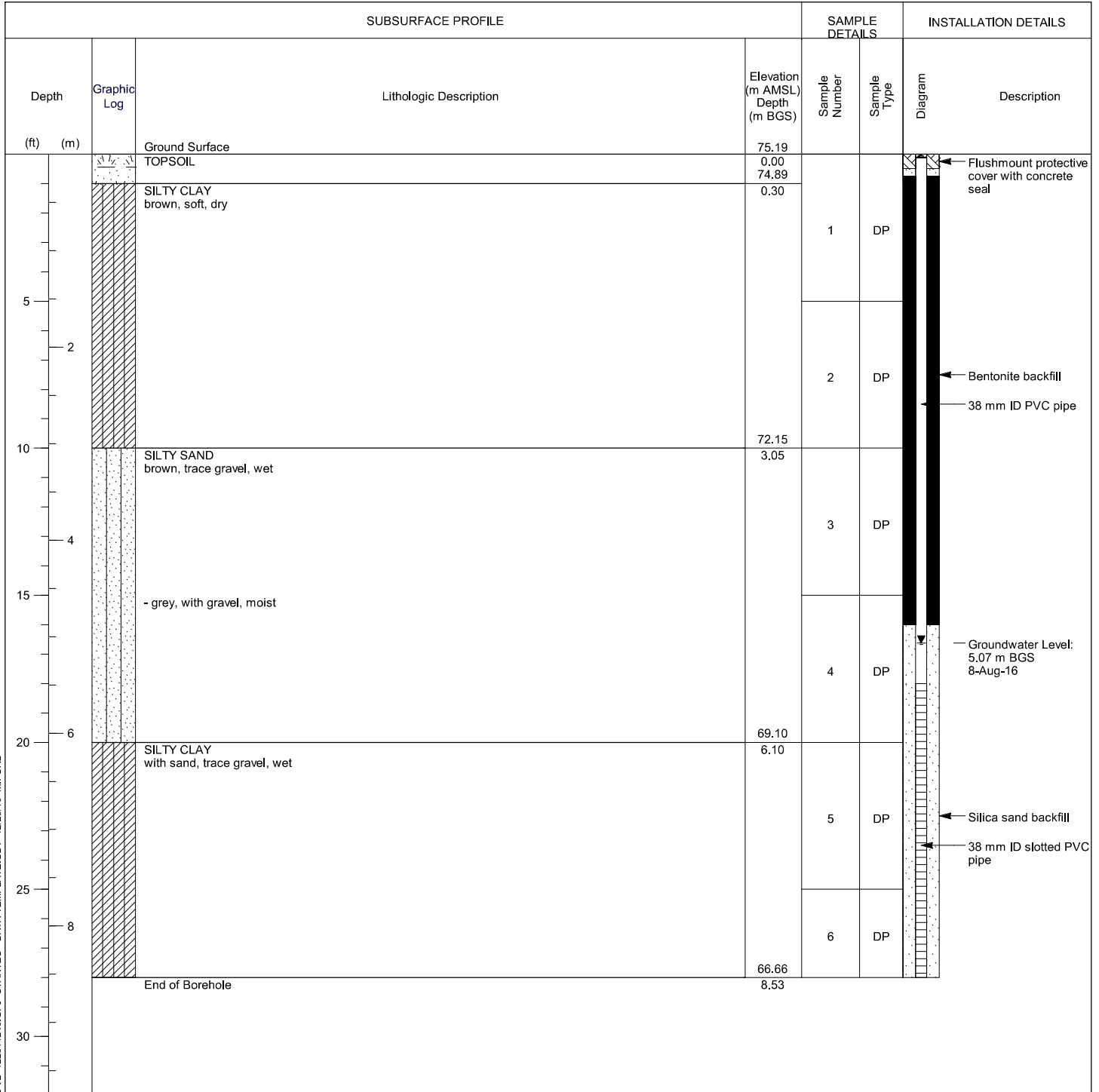




# Monitoring Well: MW16-7A

**Project:** Environmental Site Assessment  
**Client:** Public Services and Procurement Canada  
**Location:** Sir John Carling Building  
**Number:** 122511246  
**Field investigator:** T. Ghadieh  
**Contractor:** Strata Drilling Group

**Drilling method:** Geoprobe 7822DT  
**Date started/completed:** 03-Aug-2016  
**Ground surface elevation:** 75.19 m AMSL  
**Top of casing elevation:** 75.11 m AMSL  
**Easting:** 444336.2  
**Northing:** 5027014.9



Screen Interval: 5.49 - 8.53 m BGS  
 Sand Pack Interval: 4.88 - 8.53 m BGS  
 Well Seal Interval: 0.23 - 4.88 m BGS

**Notes:**  
 m AMSL - metres above mean sea level  
 m BGS - metres below ground surface  
 DP - direct push sample  
 n/a - not available

PAH - polycyclic aromatic hydrocarbons  
 PHC F1-F4 - petroleum hydrocarbon fractions 1 to 4  
 VOC - volatile organic compounds

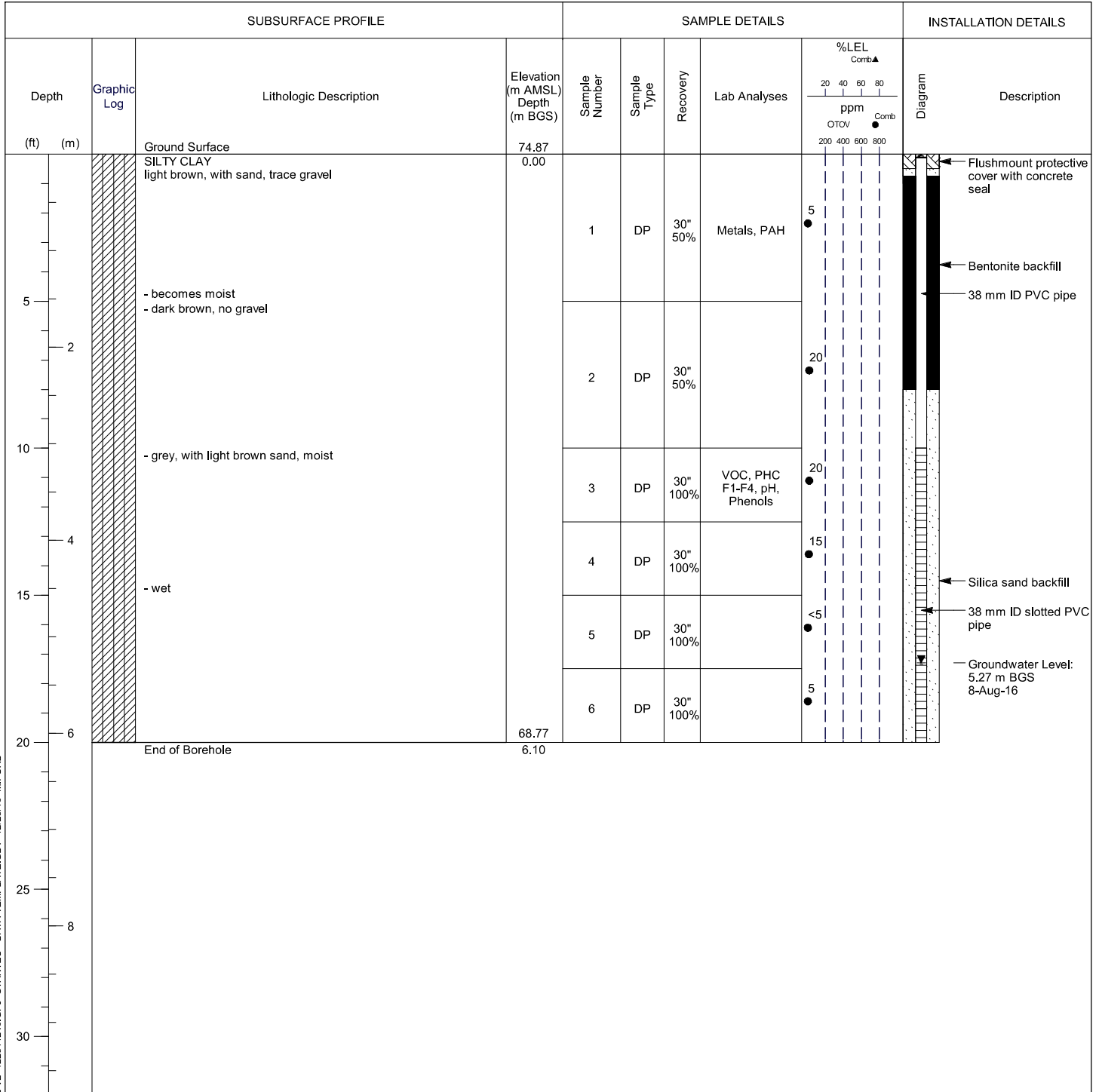
Installed to replace MW 16-7 (destroyed)



# Monitoring Well: MW16-8

**Project:** Environmental Site Assessment  
**Client:** Public Services and Procurement Canada  
**Location:** Sir John Carling Building  
**Number:** 122511246  
**Field investigator:** T. Ghadieh  
**Contractor:** Strata Drilling Group

**Drilling method:** Geoprobe 7822DT  
**Date started/completed:** 03-Aug-2016  
**Ground surface elevation:** 74.87 m AMSL  
**Top of casing elevation:** 74.83 m AMSL  
**Easting:** n/a  
**Northing:** n/a



STANTEC BOREHOLE AND WELL V2 122511246.GPJ STANTEC - DATA TEMPLATE.GDT 12/20/16 MIFORD

Screen Interval: 3.05 - 6.10 m BGS  
 Sand Pack Interval: 2.44 - 6.10 m BGS  
 Well Seal Interval: 0.23 - 2.44 m BGS

**Notes:**  
 m AMSL - metres above mean sea level  
 m BGS - metres below ground surface  
 DP - direct push sample  
 ppm - parts per million by volume  
 n/a - not available

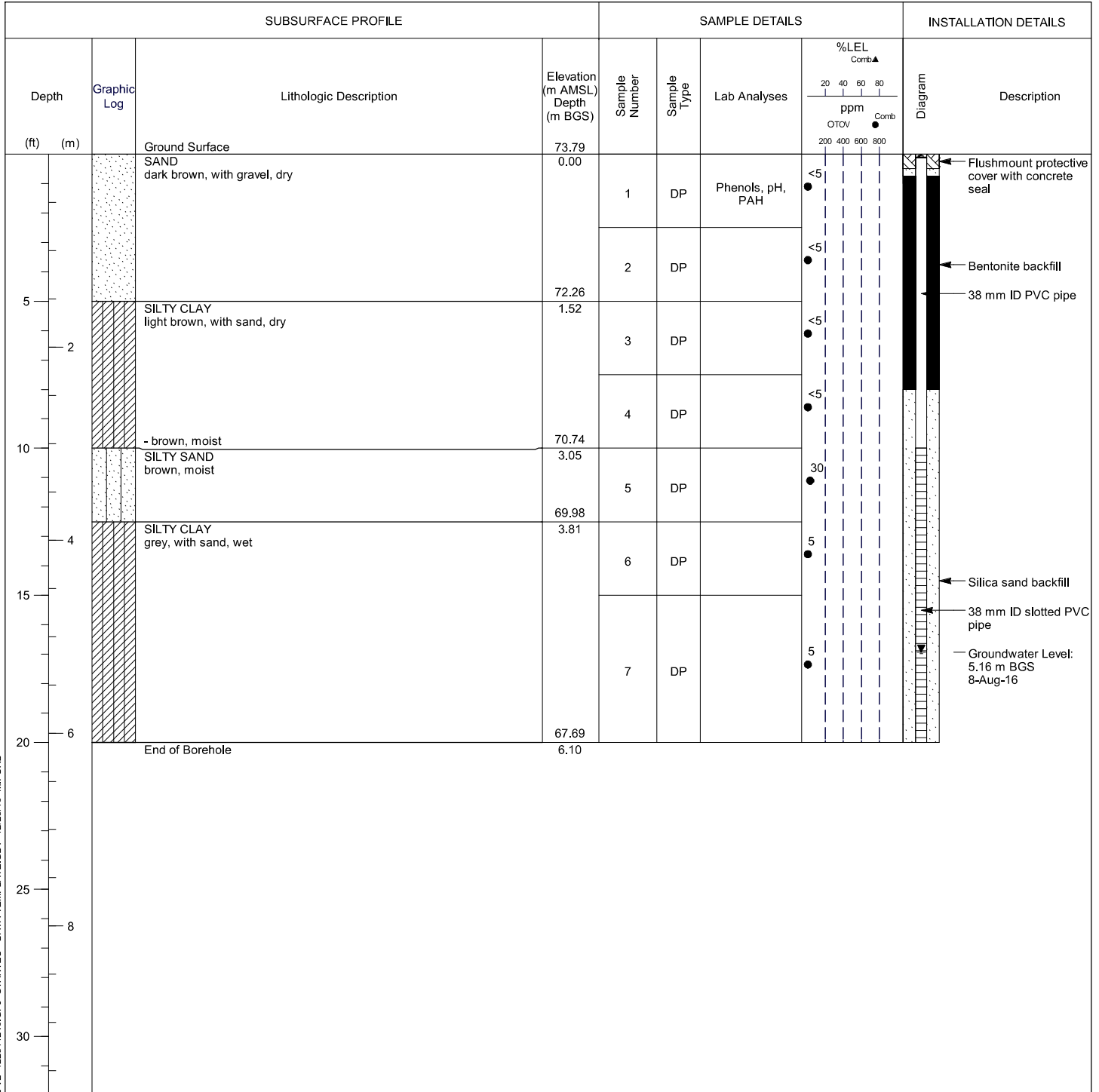
PAH - polycyclic aromatic hydrocarbons  
 PHC F1-F4 - petroleum hydrocarbon fractions 1 to 4  
 VOC - volatile organic compounds



# Monitoring Well: MW16-9

**Project:** Environmental Site Assessment  
**Client:** Public Services and Procurement Canada  
**Location:** Sir John Carling Building  
**Number:** 122511246  
**Field investigator:** T. Ghadieh  
**Contractor:** Strata Drilling Group

**Drilling method:** Geoprobe 7822DT  
**Date started/completed:** 03-Aug-2016  
**Ground surface elevation:** 73.79 m AMSL  
**Top of casing elevation:** 73.78 m AMSL  
**Easting:** n/a  
**Northing:** n/a



Screen Interval: 3.05 - 6.10 m BGS  
 Sand Pack Interval: 2.44 - 6.10 m BGS  
 Well Seal Interval: 0.23 - 2.44 m BGS

**Notes:**  
 m AMSL - metres above mean sea level  
 m BGS - metres below ground surface  
 DP - direct push sample  
 ppm - parts per million by volume  
 n/a - not available

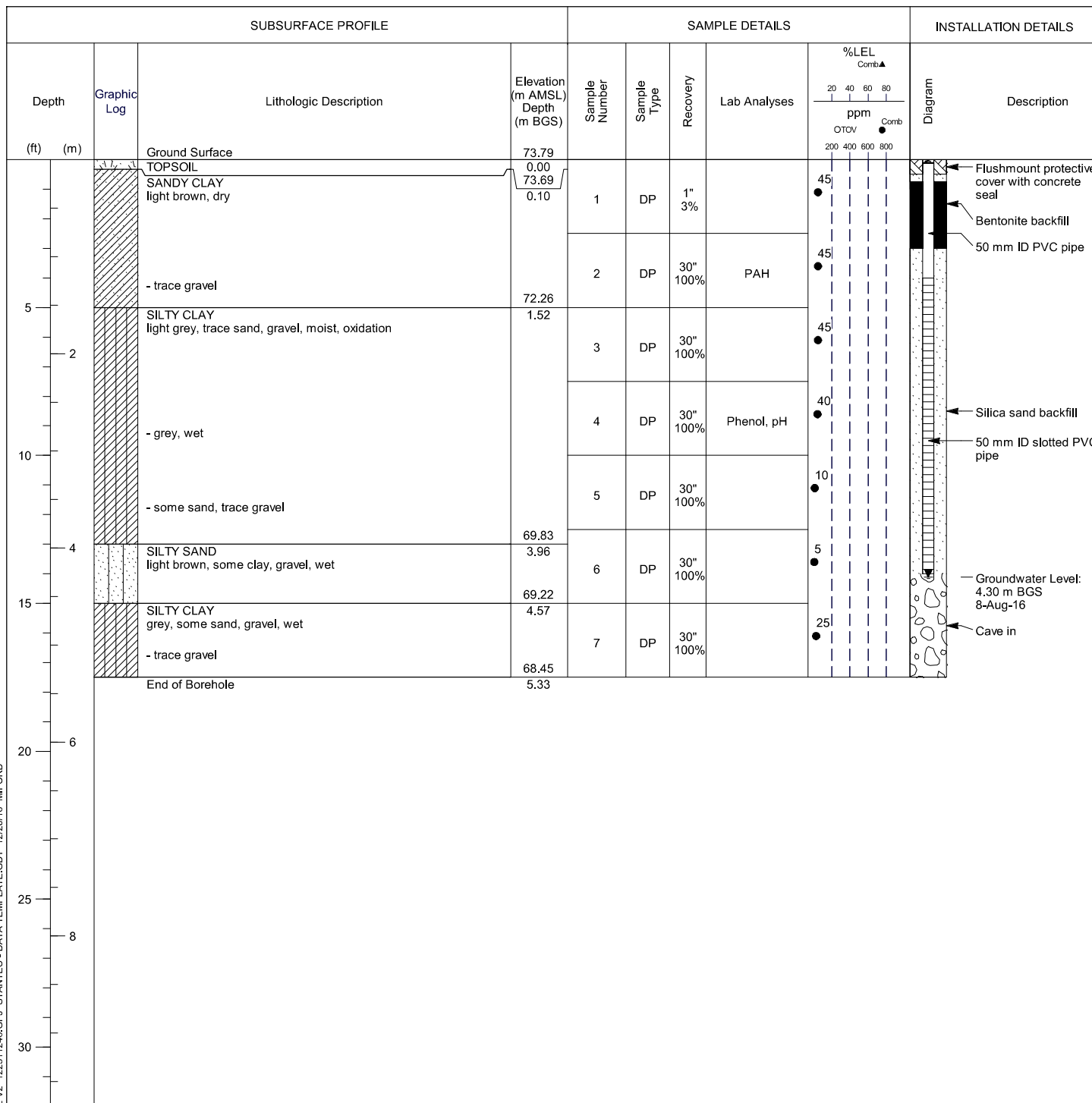
PAH - polycyclic aromatic hydrocarbons  
 PHC F1-F4 - petroleum hydrocarbon fractions 1 to 4  
 VOC - volatile organic compounds



## Monitoring Well: MW16-10

**Project:** Environmental Site Assessment  
**Client:** Public Services and Procurement Canada  
**Location:** Sir John Carling Building  
**Number:** 122511246  
**Field investigator:** R. Lee  
**Contractor:** Strata Drilling Group

**Drilling method:** Geoprobe 7822DT  
**Date started/completed:** 02-Aug-2016  
**Ground surface elevation:** 73.79 m AMSL  
**Top of casing elevation:** 73.71 m AMSL  
**Easting:** n/a  
**Northing:** n/a



Screen Interval: 1.22 - 4.27 m BGS  
 Sand Pack Interval: 0.91 - 4.27 m BGS  
 Well Seal Interval: 0.23 - 0.91 m BGS

Notes:  
 m AMSL - metres above mean sea level  
 m BGS - metres below ground surface  
 DP - direct push sample  
 ppm - parts per million by volume  
 n/a - not available

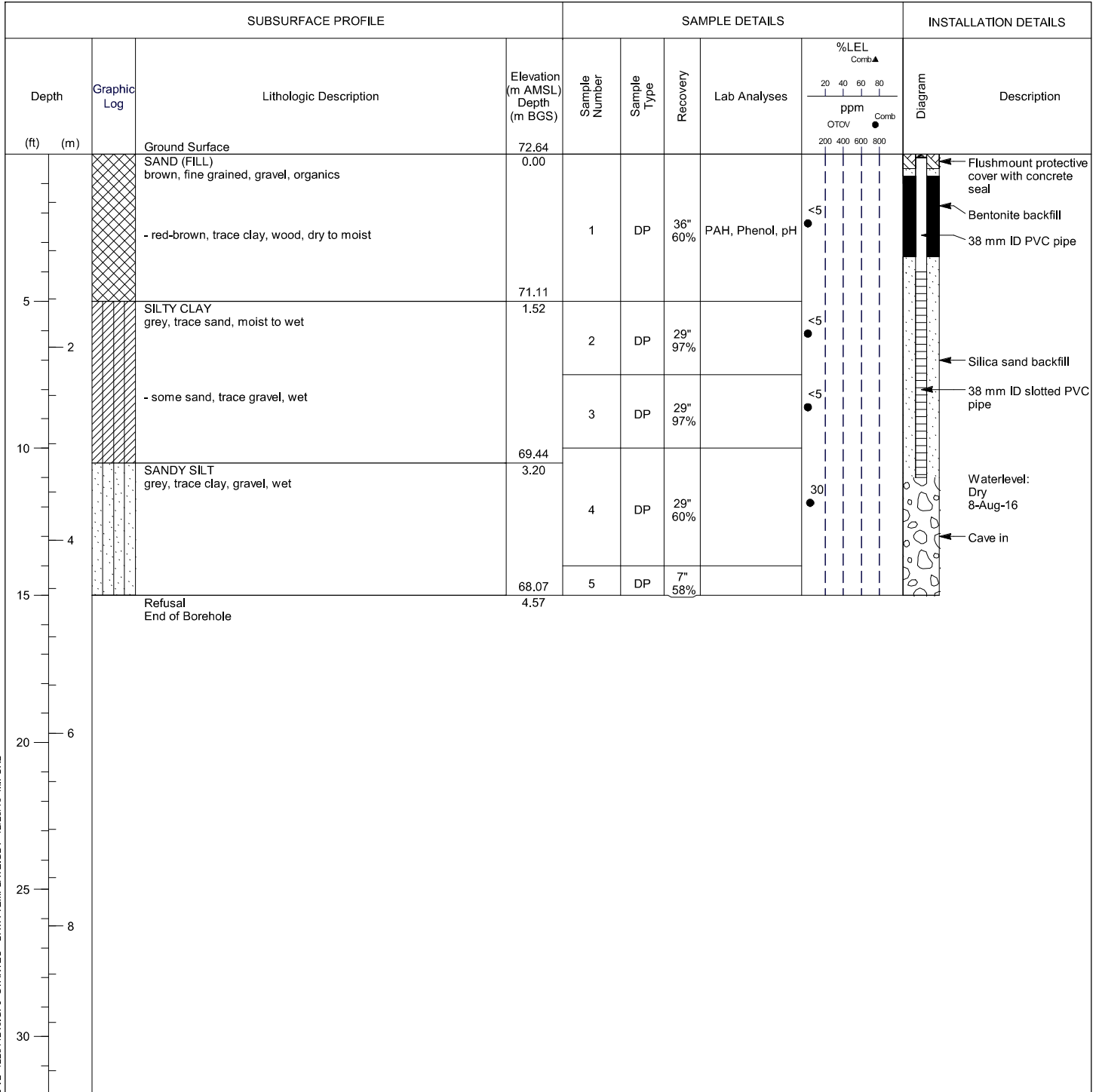
PAH - polycyclic aromatic hydrocarbons  
 PHC F1-F4 - petroleum hydrocarbon fractions 1 to 4  
 VOC - volatile organic compounds



# Monitoring Well: MW16-11

**Project:** Environmental Site Assessment  
**Client:** Public Services and Procurement Canada  
**Location:** Sir John Carling Building  
**Number:** 122511246  
**Field investigator:** B. Chenier  
**Contractor:** Strata Drilling Group

**Drilling method:** Geoprobe 7822DT  
**Date started/completed:** 04-Aug-2016  
**Ground surface elevation:** 72.64 m AMSL  
**Top of casing elevation:** 72.56 m AMSL  
**Easting:** n/a  
**Northing:** n/a



Screen Interval: 1.22 - 3.35 m BGS  
 Sand Pack Interval: 1.07 - 3.35 m BGS  
 Well Seal Interval: 0.23 - 1.07 m BGS

**Notes:**  
 m AMSL - metres above mean sea level  
 m BGS - metres below ground surface  
 DP - direct push sample  
 ppm - parts per million by volume  
 n/a - not available

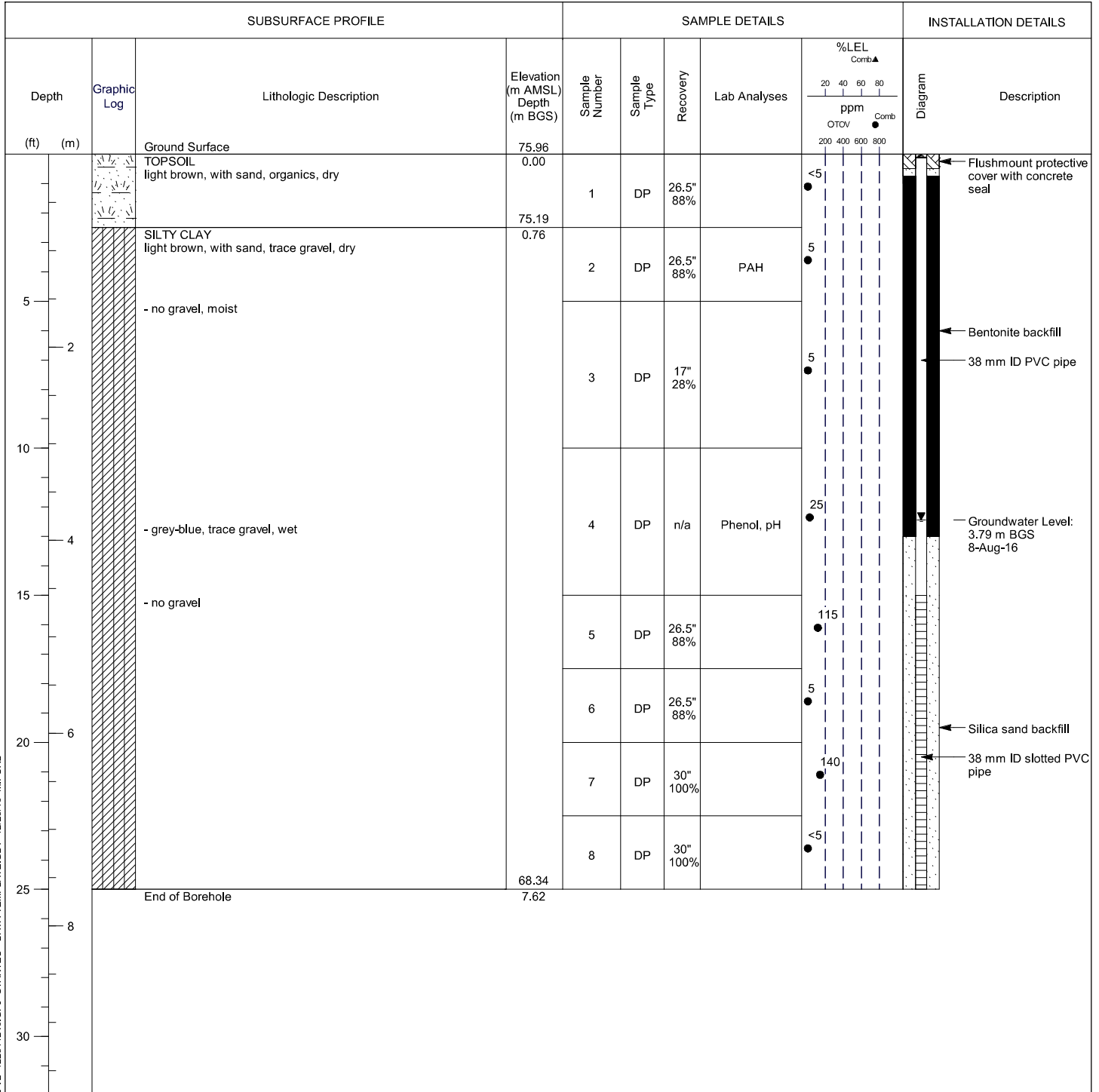
PAH - polycyclic aromatic hydrocarbons  
 PHC F1-F4 - petroleum hydrocarbon fractions 1 to 4  
 VOC - volatile organic compounds



# Monitoring Well: MW16-12

**Project:** Environmental Site Assessment  
**Client:** Public Services and Procurement Canada  
**Location:** Sir John Carling Building  
**Number:** 122511246  
**Field investigator:** T. Ghadieh  
**Contractor:** Strata Drilling Group

**Drilling method:** Geoprobe 7822DT  
**Date started/completed:** 04-Aug-2016  
**Ground surface elevation:** 75.96 m AMSL  
**Top of casing elevation:** 75.93 m AMSL  
**Easting:** n/a  
**Northing:** n/a



Screen Interval: 4.57 - 7.62 m BGS  
 Sand Pack Interval: 3.96 - 7.62 m BGS  
 Well Seal Interval: 0.23 - 3.96 m BGS

**Notes:**  
 m AMSL - metres above mean sea level  
 m BGS - metres below ground surface  
 DP - direct push sample  
 ppm - parts per million by volume  
 n/a - not available

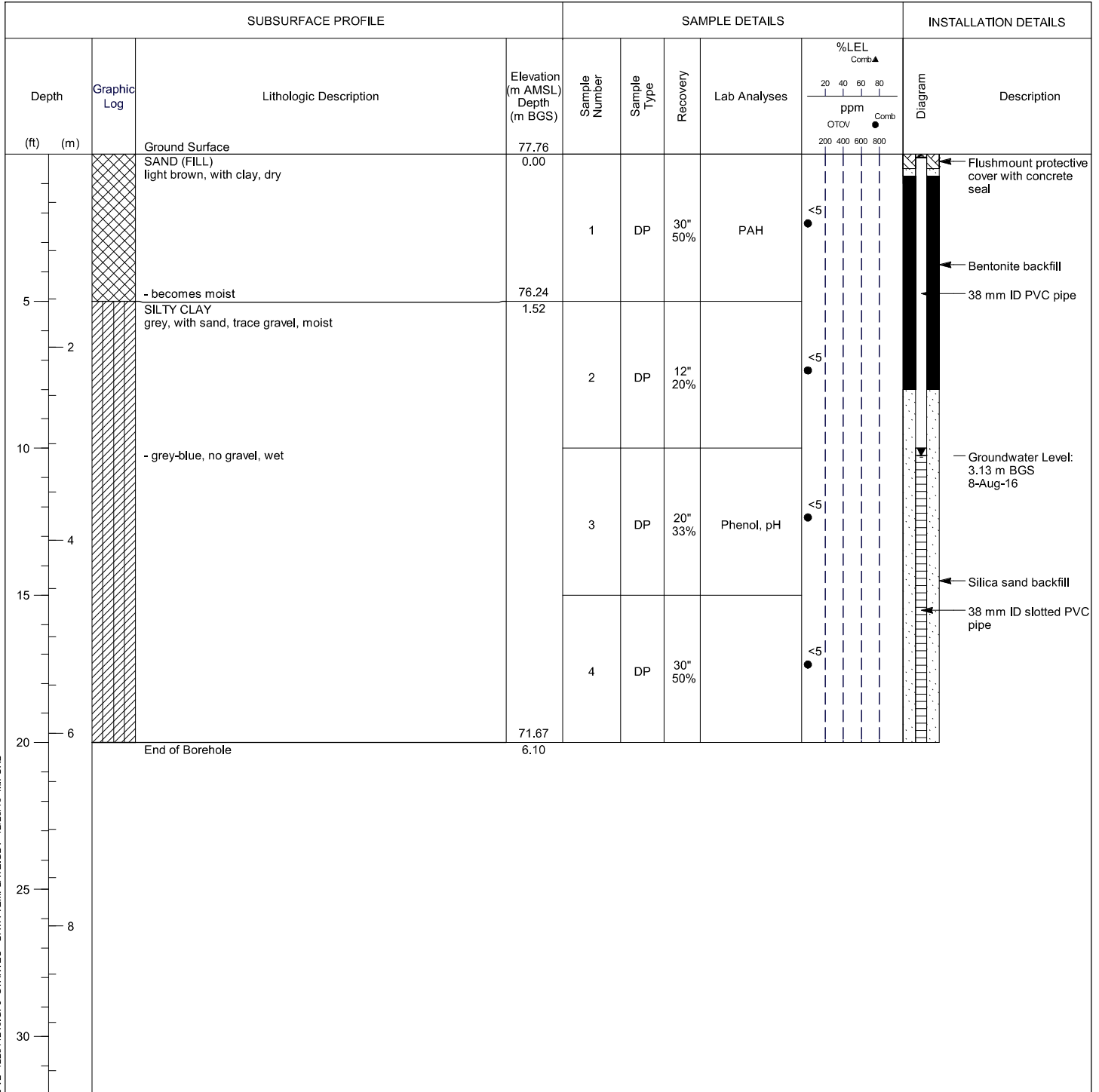
PAH - polycyclic aromatic hydrocarbons  
 PHC F1-F4 - petroleum hydrocarbon fractions 1 to 4  
 VOC - volatile organic compounds



# Monitoring Well: MW16-13

**Project:** Environmental Site Assessment  
**Client:** Public Services and Procurement Canada  
**Location:** Sir John Carling Building  
**Number:** 122511246  
**Field investigator:** T. Ghadieh  
**Contractor:** Strata Drilling Group

**Drilling method:** Geoprobe 7822DT  
**Date started/completed:** 03-Aug-2016  
**Ground surface elevation:** 77.76 m AMSL  
**Top of casing elevation:** 77.73 m AMSL  
**Easting:** n/a  
**Northing:** n/a



Screen Interval: 3.05 - 6.10 m BGS  
 Sand Pack Interval: 2.44 - 6.10 m BGS  
 Well Seal Interval: 0.23 - 2.44 m BGS

**Notes:**  
 m AMSL - metres above mean sea level  
 m BGS - metres below ground surface  
 DP - direct push sample  
 ppm - parts per million by volume  
 n/a - not available

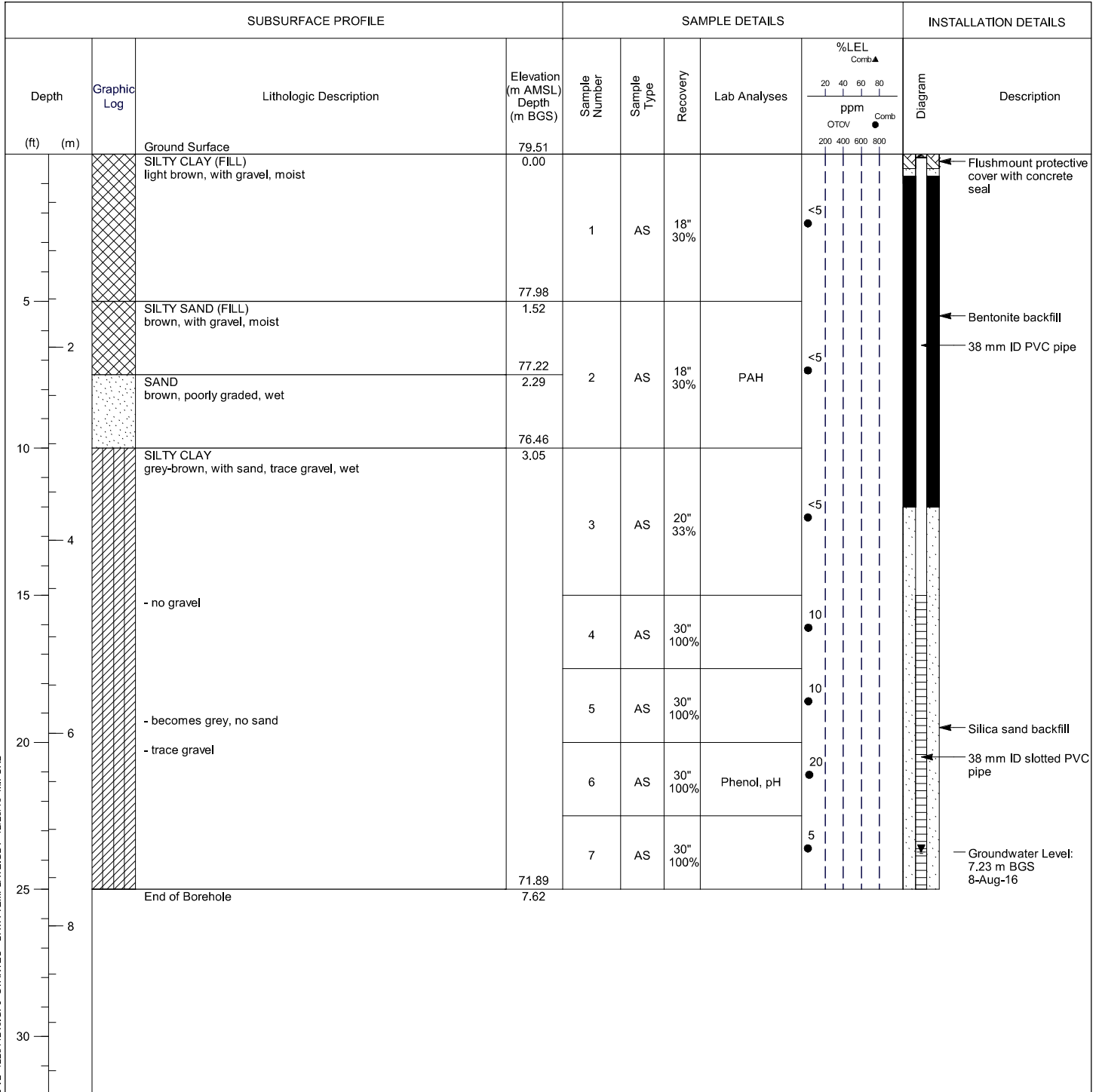
PAH - polycyclic aromatic hydrocarbons  
 PHC F1-F4 - petroleum hydrocarbon fractions 1 to 4  
 VOC - volatile organic compounds



# Monitoring Well: MW16-14

**Project:** Environmental Site Assessment  
**Client:** Public Services and Procurement Canada  
**Location:** Sir John Carling Building  
**Number:** 122511246  
**Field investigator:** T. Ghadieh  
**Contractor:** Strata Drilling Group

**Drilling method:** Geoprobe 7822DT  
**Date started/completed:** 03-Aug-2016  
**Ground surface elevation:** 79.51 m AMSL  
**Top of casing elevation:** 79.45 m AMSL  
**Easting:** n/a  
**Northing:** n/a



Screen Interval: 4.57 - 7.62 m BGS  
 Sand Pack Interval: 3.66 - 7.62 m BGS  
 Well Seal Interval: 0.23 - 3.66 m BGS

**Notes:**  
 m AMSL - metres above mean sea level  
 m BGS - metres below ground surface  
 AS - auger sample  
 ppm - parts per million by volume  
 n/a - not available

PAH - polycyclic aromatic hydrocarbons  
 PHC F1-F4 - petroleum hydrocarbon fractions 1 to 4  
 VOC - volatile organic compounds

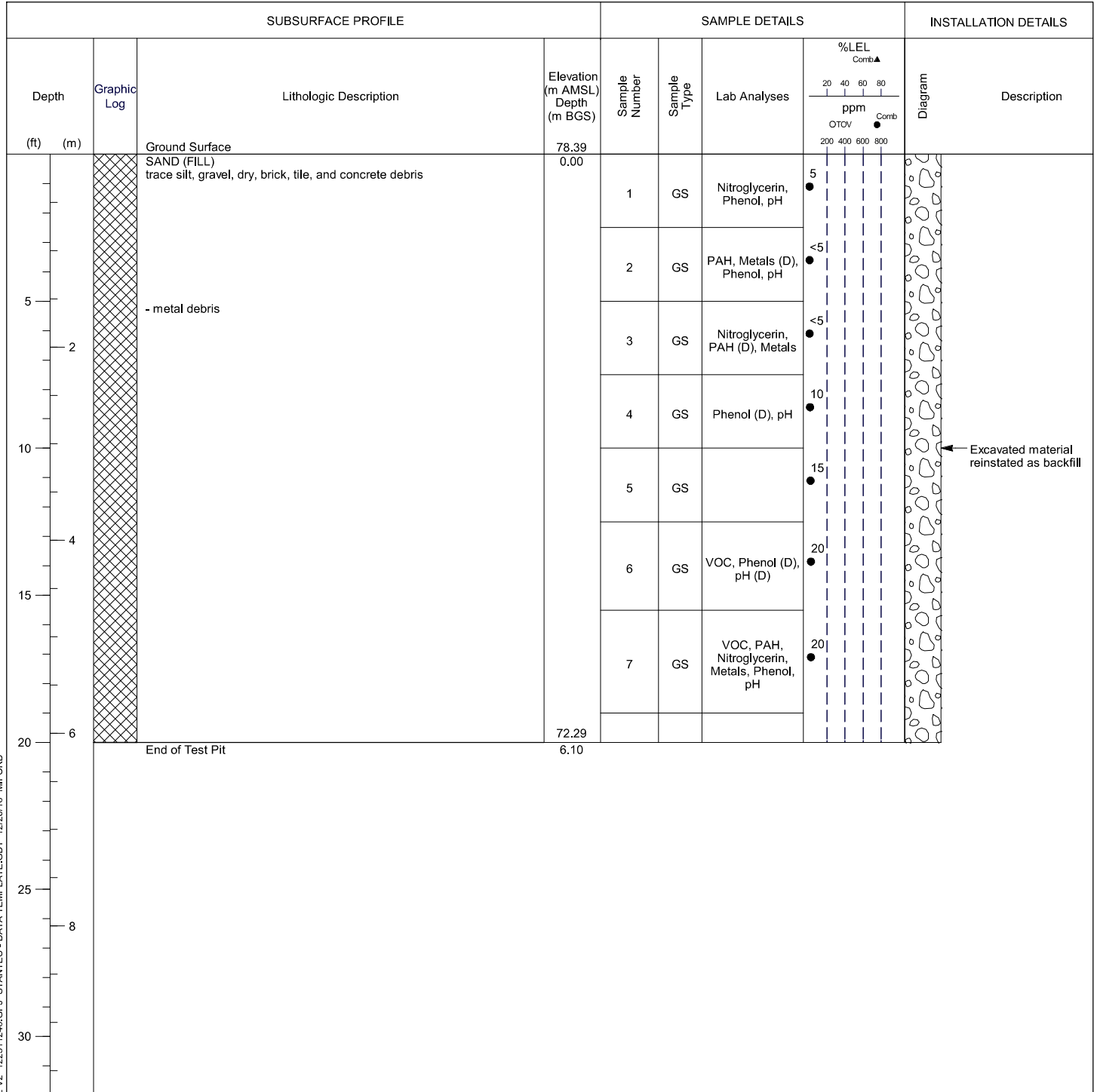




# Test Pit: TP16-1

**Project:** Environmental Site Assessment  
**Client:** Public Services and Procurement Canada  
**Location:** Sir John Carling Building  
**Number:** 122511246  
**Field investigator:** B. Chenier  
**Contractor:**

**Drilling method:**  
**Date started/completed:** 28-Jul-2016  
**Ground surface elevation:** 78.39 m AMSL  
**Top of casing elevation:** n/a  
**Easting:** n/a  
**Northing:** n/a



Notes:  
m AMSL - metres above mean sea level  
m BGS - metres below ground surface  
GS - grab sample  
ppm - parts per million by volume  
n/a - not available

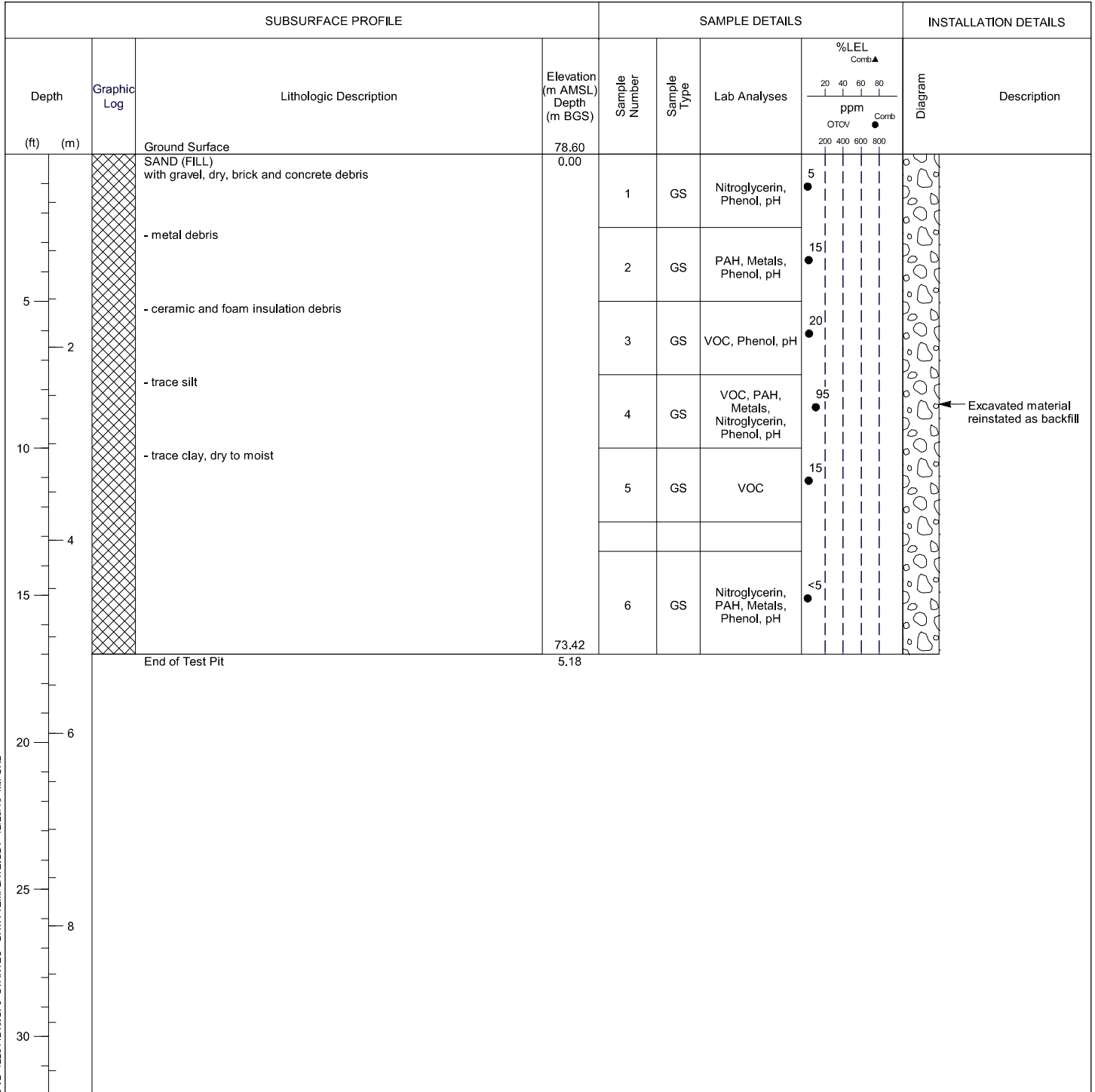
PAH - polycyclic aromatic hydrocarbons  
PHC F1-F4 - petroleum hydrocarbon fractions 1 to 4  
VOC - volatile organic compounds  
(D) - field duplicate submitted for laboratory analysis



# Test Pit: TP16-2

**Project:** Environmental Site Assessment  
**Client:** Public Services and Procurement Canada  
**Location:** Sir John Carling Building  
**Number:** 122511246  
**Field investigator:** B. Chenier  
**Contractor:**

**Drilling method:**  
**Date started/completed:** 28-Jul-2016  
**Ground surface elevation:** 78.60 m AMSL  
**Top of casing elevation:** n/a  
**Easting:** n/a  
**Northing:** n/a



STANTEC BOREHOLE AND WELL V2 122511246.GPJ STANTEC - DATA TEMPLATE.GDT 12/20/16 MIFORD

Notes:  
 m AMSL - metres above mean sea level  
 m BGS - metres below ground surface  
 GS - grab sample  
 ppm - parts per million by volume  
 n/a - not available

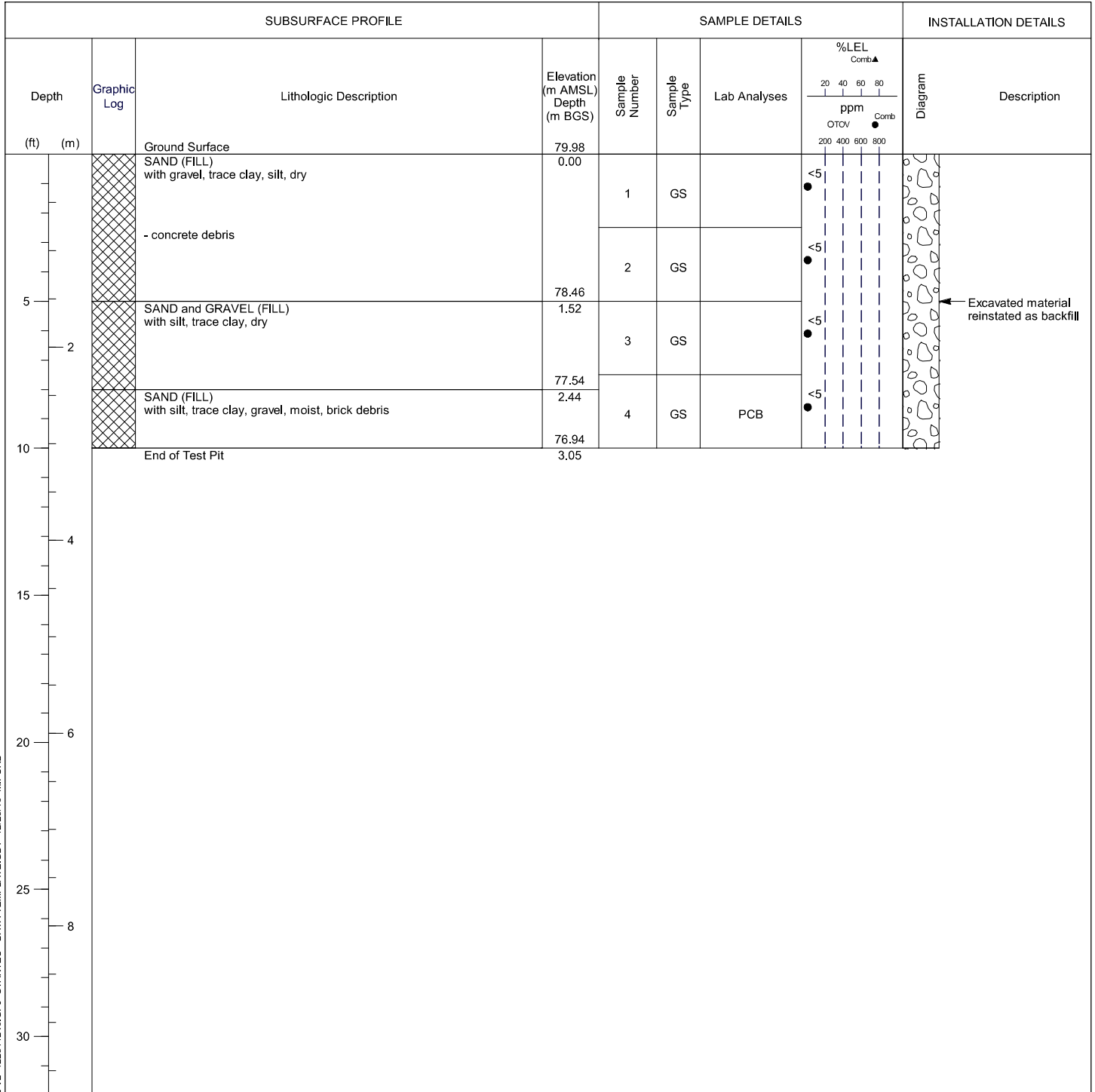
PAH - polycyclic aromatic hydrocarbons  
 PHC F1-F4 - petroleum hydrocarbon fractions 1 to 4  
 VOC - volatile organic compounds  
 (D) - field duplicate submitted for laboratory analysis



# Test Pit: TP16-3

**Project:** Environmental Site Assessment  
**Client:** Public Services and Procurement Canada  
**Location:** Sir John Carling Building  
**Number:** 122511246  
**Field investigator:** B. Chenier  
**Contractor:**

**Drilling method:**  
**Date started/completed:** 28-Jul-2016  
**Ground surface elevation:** 79.98 m AMSL  
**Top of casing elevation:** n/a  
**Easting:** n/a  
**Northing:** n/a



Notes:  
m AMSL - metres above mean sea level  
m BGS - metres below ground surface  
GS - grab sample  
ppm - parts per million by volume  
n/a - not available

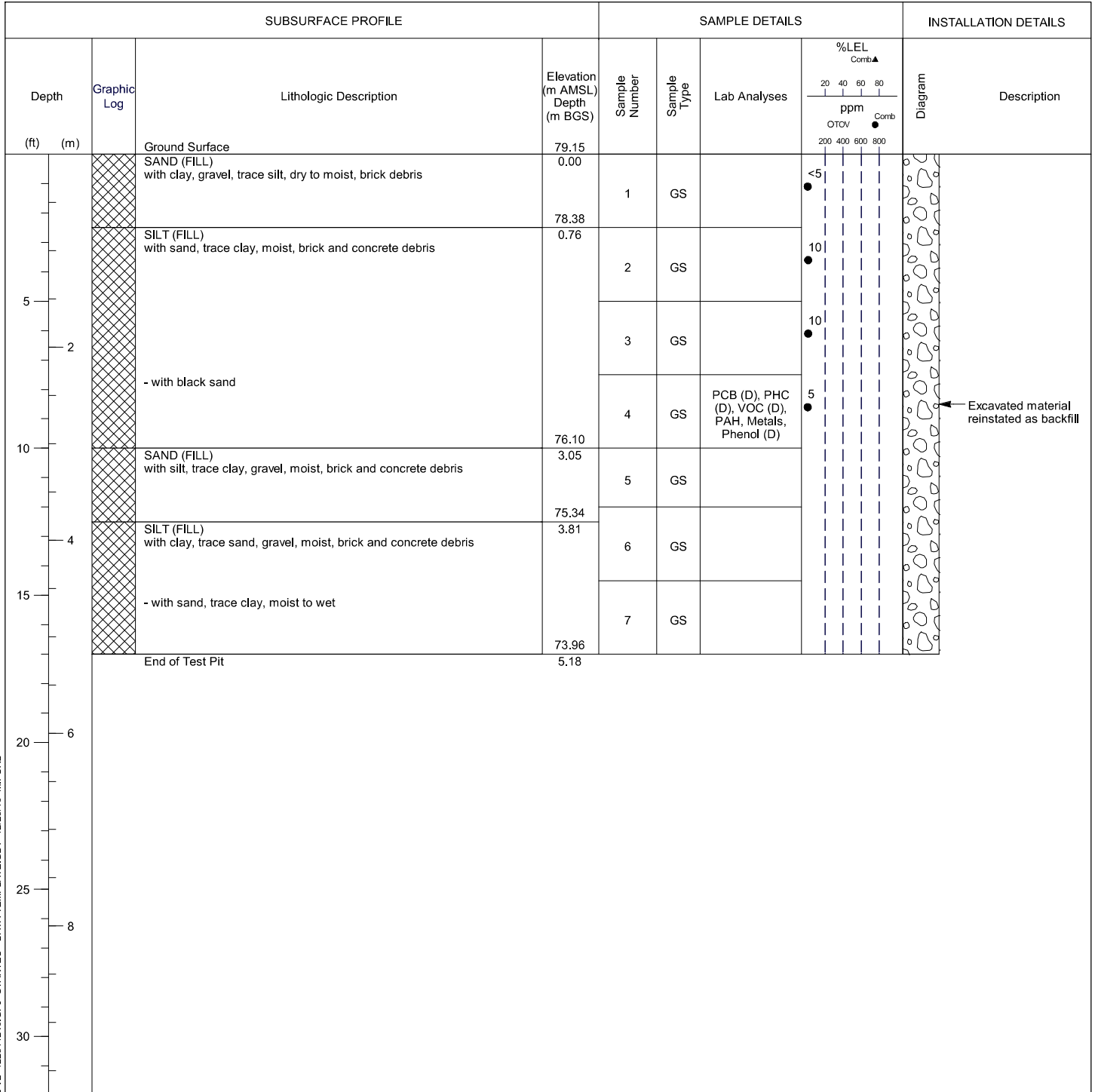
PAH - polycyclic aromatic hydrocarbons  
PCB - polychlorinated biphenyls  
PHC F1-F4 - petroleum hydrocarbon fractions 1 to 4  
VOC - volatile organic compounds  
(D) - field duplicate submitted for laboratory analysis



# Test Pit: TP16-4

**Project:** Environmental Site Assessment  
**Client:** Public Services and Procurement Canada  
**Location:** Sir John Carling Building  
**Number:** 122511246  
**Field investigator:** B. Chenier  
**Contractor:**

**Drilling method:**  
**Date started/completed:** 28-Jul-2016  
**Ground surface elevation:** 79.15 m AMSL  
**Top of casing elevation:** n/a  
**Easting:** n/a  
**Northing:** n/a



Notes:  
m AMSL - metres above mean sea level  
m BGS - metres below ground surface  
GS - grab sample  
ppm - parts per million by volume  
n/a - not available

PAH - polycyclic aromatic hydrocarbons  
PCB - polychlorinated biphenyls  
PHC F1-F4 - petroleum hydrocarbon fractions 1 to 4  
VOC - volatile organic compounds  
(D) - field duplicate submitted for laboratory analysis



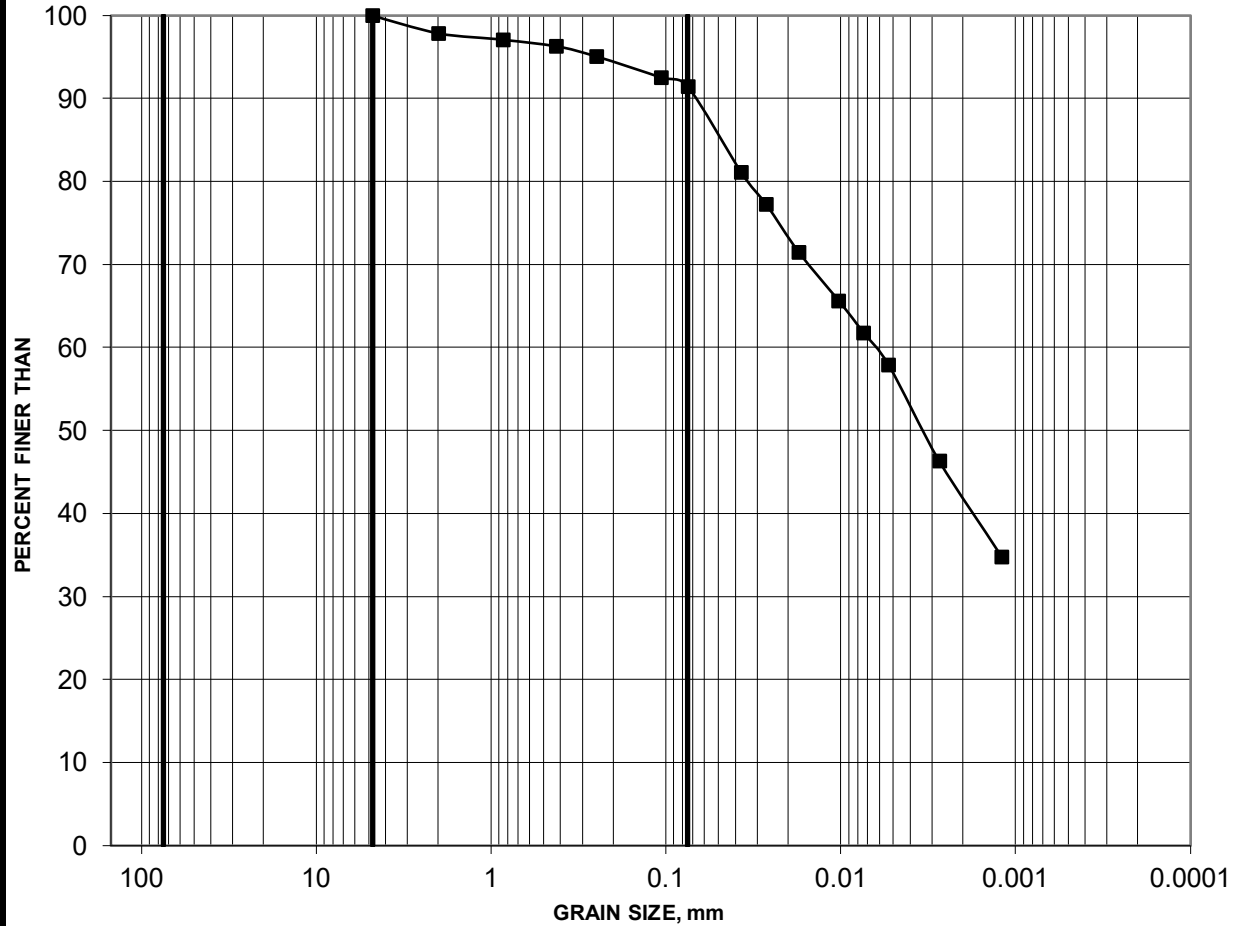
**APPENDIX D**

# Grainsize Distribution Curves

# GRAIN SIZE DISTRIBUTION

# FIGURE 2

## SILTY CLAY (FILL)



COBBLE SIZE	COARSE	FINE	COARSE	MEDIUM	FINE	SILT AND CLAY
	GRAVEL SIZE		SAND SIZE			

Borehole	Sample	Depth (m)	Constituents (%)			
			Gravel	Sand	Silt	Clay
■ 21-217	4	2.29-2.90	0	9	49	42

Project: 21451149/2000

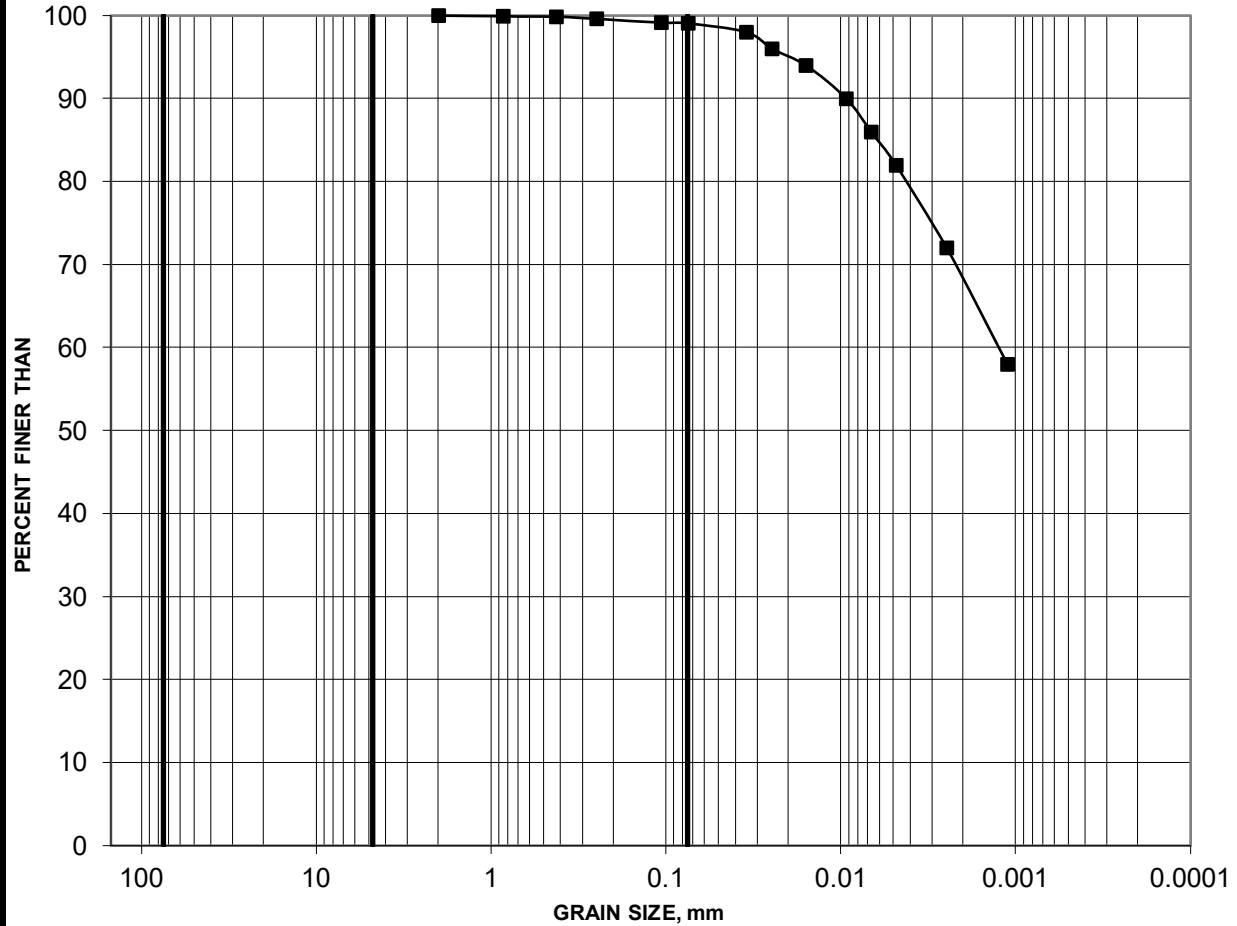


Created by: CW  
Checked by: MI

# GRAIN SIZE DISTRIBUTION

# FIGURE 3

## SILTY CLAY TO CLAY (WEATHERED CRUST)



COBBLE SIZE	COARSE	FINE	COARSE	MEDIUM	FINE	SILT AND CLAY
	GRAVEL SIZE		SAND SIZE			

Borehole	Sample	Depth (m)	Constituents (%)				
			Gravel	Sand	Silt	Clay	
■	21-212	4	2.29-2.90	0	1	31	68

Project: 21451149/2000

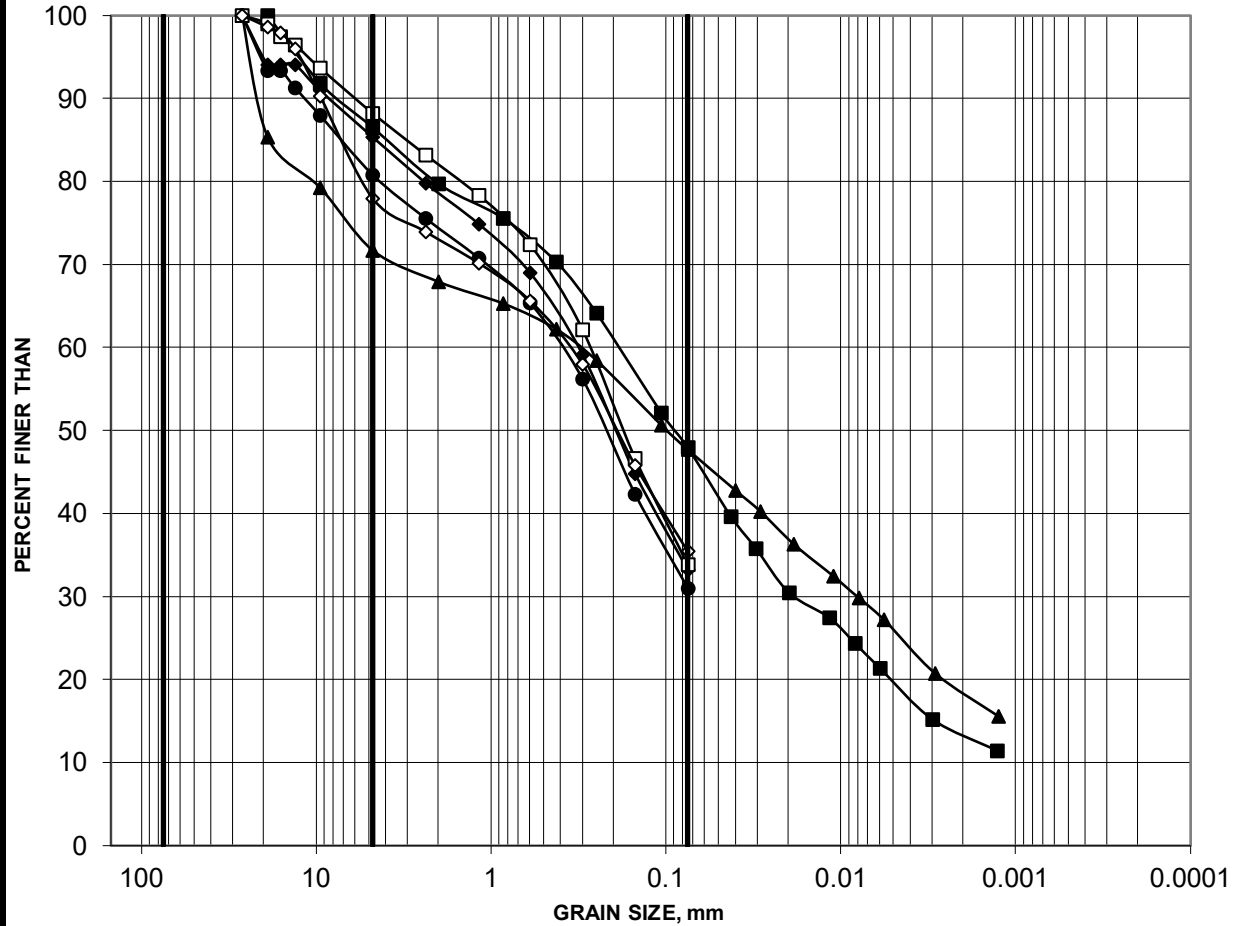


Created by: CW  
Checked by: MI

# GRAIN SIZE DISTRIBUTION

# FIGURE 5

## GLACIAL TILL



COBBLE SIZE	COARSE	FINE	COARSE	MEDIUM	FINE	SILT AND CLAY
	GRAVEL SIZE		SAND SIZE			

Borehole	Sample	Depth (m)	Constituents (%)				
			Gravel	Sand	Silt	Clay	
■	21-208	5	3.05-3.66	14	38	35	13
◆	21-208	9	6.10-6.71	15	52		33
▲	21-210	5	3.05-3.66	28	24	30	18
●	21-210	9	6.10-6.86	19	50		31
□	21-212	10	6.86-7.47	12	54		34
◇	21-217	10	6.86-7.47	22	43		35

Project: 21451149/2000



Created by: CW  
Checked by: MI



**APPENDIX E**

# Certificates of Analysis



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

**ATTENTION TO: Laura Jones**

**PROJECT: 21451149**

**AGAT WORK ORDER: 21T761059**

**SOIL ANALYSIS REVIEWED BY: Jacky Zhu, Spectroscopy Technician**

**TRACE ORGANICS REVIEWED BY: Pinkal Patel, Report Reviewer**

**DATE REPORTED: Jun 22, 2021**

**PAGES (INCLUDING COVER): 12**

**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.



## Certificate of Analysis

AGAT WORK ORDER: 21T761059

PROJECT: 21451149

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

SAMPLING SITE: Ottawa Hospital

ATTENTION TO: Laura Jones

SAMPLED BY: Robert Ireland

### O. Reg. 153(511) - All Metals (Soil)

DATE RECEIVED: 2021-06-14

DATE REPORTED: 2021-06-22

Parameter	Unit	SAMPLE DESCRIPTION:		21-207 SA1	21-201 SA1
		SAMPLE TYPE:		Soil	Soil
		DATE SAMPLED:		2021-06-04	2021-06-08
		G / S	RDL	2611246	2611251
Antimony	µg/g	7.5	0.8	<0.8	1.1
Arsenic	µg/g	18	1	3	<b>90</b>
Barium	µg/g	390	2.0	26.0	74.6
Beryllium	µg/g	4	0.4	<0.4	0.5
Boron	µg/g	120	5	5	6
Boron (Hot Water Soluble)	µg/g	1.5	0.10	<0.10	0.17
Cadmium	µg/g	1.2	0.5	<0.5	<0.5
Chromium	µg/g	160	5	12	27
Cobalt	µg/g	22	0.5	4.4	5.9
Copper	µg/g	140	1.0	7.7	12.1
Lead	µg/g	120	1	9	<b>256</b>
Molybdenum	µg/g	6.9	0.5	1.5	<0.5
Nickel	µg/g	100	1	9	12
Selenium	µg/g	2.4	0.8	<0.8	<0.8
Silver	µg/g	20	0.5	<0.5	<0.5
Thallium	µg/g	1	0.5	<0.5	<0.5
Uranium	µg/g	23	0.50	0.67	0.98
Vanadium	µg/g	86	0.4	18.1	29.3
Zinc	µg/g	340	5	19	53
Chromium, Hexavalent	µg/g	8	0.2	<0.2	<0.2
Mercury	µg/g	0.27	0.10	<0.10	<b>10.9</b>

**Comments:** RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

Analysis performed at AGAT Toronto (unless marked by \*)

Certified By:





## Certificate of Analysis

AGAT WORK ORDER: 21T761059

PROJECT: 21451149

5835 COOPERS AVENUE  
MISSISSAUGA, ONTARIO  
CANADA L4Z 1Y2  
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<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD

SAMPLING SITE: Ottawa Hospital

ATTENTION TO: Laura Jones

SAMPLED BY: Robert Ireland

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

DATE RECEIVED: 2021-06-14

DATE REPORTED: 2021-06-22

Parameter	Unit	SAMPLE DESCRIPTION:		21-207 SA1	21-201 SA1
		SAMPLE TYPE:		Soil	Soil
		DATE SAMPLED:		2021-06-04	2021-06-08
		G / S	RDL	2611246	2611251
Naphthalene	µg/g	0.6	0.05	<0.05	<0.05
Acenaphthylene	µg/g	0.15	0.05	<0.05	0.07
Acenaphthene	µg/g	7.9	0.05	<0.05	<0.05
Fluorene	µg/g	62	0.05	<0.05	<0.05
Phenanthrene	µg/g	6.2	0.05	<0.05	0.16
Anthracene	µg/g	0.67	0.05	<0.05	0.13
Fluoranthene	µg/g	0.69	0.05	<0.05	0.41
Pyrene	µg/g	78	0.05	<0.05	0.36
Benz(a)anthracene	µg/g	0.5	0.05	<0.05	0.14
Chrysene	µg/g	7	0.05	<0.05	0.38
Benzo(b)fluoranthene	µg/g	0.78	0.05	<0.05	0.21
Benzo(k)fluoranthene	µg/g	0.78	0.05	<0.05	0.12
Benzo(a)pyrene	µg/g	0.3	0.05	<0.05	<0.05
Indeno(1,2,3-cd)pyrene	µg/g	0.38	0.05	<0.05	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	0.05	<0.05	<0.05
Benzo(g,h,i)perylene	µg/g	6.6	0.05	<0.05	0.06
1 and 2 Methylnaphthalene	µg/g	0.99	0.05	<0.05	<0.05
Moisture Content	%		0.1	4.0	7.4
Surrogate	Unit	Acceptable Limits			
Naphthalene-d8	%	50-140		98	99
Acenaphthene-d10	%	50-140		85	101
Chrysene-d12	%	50-140		95	98

**Comments:** RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

**2611246-2611251** 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: \_\_\_\_\_



## Certificate of Analysis

AGAT WORK ORDER: 21T761059

PROJECT: 21451149

5835 COOPERS AVENUE  
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CLIENT NAME: GOLDER ASSOCIATES LTD

SAMPLING SITE: Ottawa Hospital

ATTENTION TO: Laura Jones

SAMPLED BY: Robert Ireland

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

DATE RECEIVED: 2021-06-14

DATE REPORTED: 2021-06-22

Parameter	Unit	SAMPLE DESCRIPTION:		21-207 SA1	21-201 SA1
		SAMPLE TYPE:		Soil	Soil
		DATE SAMPLED:		2021-06-04	2021-06-08
		G / S	RDL	2611246	2611251
Benzene	µg/g	0.21	0.02	<0.02	<0.02
Toluene	µg/g	2.3	0.05	<0.05	<0.05
Ethylbenzene	µg/g	2	0.05	<0.05	<0.05
m & p-Xylene	µg/g		0.05	<0.05	<0.05
o-Xylene	µg/g		0.05	<0.05	<0.05
Xylenes (Total)	µg/g	3.1	0.05	<0.05	<0.05
F1 (C6 - C10)	µg/g	55	5	<5	<5
F1 (C6 to C10) minus BTEX	µg/g	55	5	<5	<5
F2 (C10 to C16)	µg/g	98	10	<10	<10
F2 (C10 to C16) minus Naphthalene	µg/g		10	<10	<10
F3 (C16 to C34)	µg/g	300	50	<50	<50
F3 (C16 to C34) minus PAHs	µg/g		50	<50	<50
F4 (C34 to C50)	µg/g	2800	50	<50	<50
Gravimetric Heavy Hydrocarbons	µg/g	2800	50	NA	NA
Moisture Content	%		0.1	4.0	7.4
Surrogate	Unit	Acceptable Limits			
Toluene-d8	% Recovery	60-140	103	74	
Terphenyl	%	60-140	80	84	

Certified By:



## Certificate of Analysis

AGAT WORK ORDER: 21T761059

PROJECT: 21451149

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CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Laura Jones

SAMPLING SITE: Ottawa Hospital

SAMPLED BY: Robert Ireland

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

DATE RECEIVED: 2021-06-14

DATE REPORTED: 2021-06-22

**Comments:** RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

**2611246-2611251** Results are based on sample dry weight.  
The C6-C10 fraction is calculated using toluene response factor.  
Xylenes total is a calculated parameter. The calculated value is the sum of m&p-Xylene and o-Xylene.  
C6-C10 (F1 minus BTEX) is a calculated parameter. The calculated value is F1 minus BTEX.  
The calculated parameters are non-accredited. The parameters that are components of the calculation are accredited.  
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and 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:



**Exceedance Summary**

AGAT WORK ORDER: 21T761059

PROJECT: 21451149

5835 COOPERS AVENUE  
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CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Laura Jones

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
2611251	21-201 SA1	ON T3 S RPI CT	O. Reg. 153(511) - All Metals (Soil)	Arsenic	µg/g	18	90
2611251	21-201 SA1	ON T3 S RPI CT	O. Reg. 153(511) - All Metals (Soil)	Lead	µg/g	120	256
2611251	21-201 SA1	ON T3 S RPI CT	O. Reg. 153(511) - All Metals (Soil)	Mercury	µg/g	0.27	10.9

## Quality Assurance

**CLIENT NAME:** GOLDER ASSOCIATES LTD  
**PROJECT:** 21451149  
**SAMPLING SITE:** Ottawa Hospital

**AGAT WORK ORDER:** 21T761059  
**ATTENTION TO:** Laura Jones  
**SAMPLED BY:** Robert Ireland

### Soil Analysis

RPT Date: Jun 22, 2021			DUPLICATE				Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE		MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Measured Value		Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

O. Reg. 153(511) - All Metals (Soil)															
Antimony	2604648		8.5	8.6	1.2%	< 0.8	101%	70%	130%	109%	80%	120%	92%	70%	130%
Arsenic	2604648		23	24	4.3%	< 1	117%	70%	130%	109%	80%	120%	108%	70%	130%
Barium	2604648		709	733	3.3%	< 2.0	109%	70%	130%	99%	80%	120%	89%	70%	130%
Beryllium	2604648		0.9	0.9	NA	< 0.4	102%	70%	130%	116%	80%	120%	111%	70%	130%
Boron	2604648		25	26	3.9%	< 5	78%	70%	130%	100%	80%	120%	98%	70%	130%
Boron (Hot Water Soluble)	2612533		0.11	0.13	NA	< 0.10	95%	60%	140%	106%	70%	130%	99%	60%	140%
Cadmium	2604648		7.2	7.2	0.0%	< 0.5	107%	70%	130%	107%	80%	120%	86%	70%	130%
Chromium	2604648		36	38	5.4%	< 5	101%	70%	130%	117%	80%	120%	105%	70%	130%
Cobalt	2604648		11.0	11.5	4.4%	< 0.5	100%	70%	130%	103%	80%	120%	98%	70%	130%
Copper	2604648		169	177	4.6%	< 1.0	88%	70%	130%	107%	80%	120%	98%	70%	130%
Lead	2604648		2680	2710	1.1%	< 1	102%	70%	130%	96%	80%	120%	95%	70%	130%
Molybdenum	2604648		3.5	3.7	5.6%	< 0.5	119%	70%	130%	109%	80%	120%	106%	70%	130%
Nickel	2604648		39	41	5.0%	< 1	97%	70%	130%	104%	80%	120%	107%	70%	130%
Selenium	2604648		3.1	3.2	NA	< 0.8	119%	70%	130%	105%	80%	120%	105%	70%	130%
Silver	2604648		1.5	1.5	NA	< 0.5	105%	70%	130%	106%	80%	120%	94%	70%	130%
Thallium	2604648		<0.5	<0.5	NA	< 0.5	111%	70%	130%	104%	80%	120%	98%	70%	130%
Uranium	2604648		1.76	1.83	NA	< 0.50	115%	70%	130%	107%	80%	120%	107%	70%	130%
Vanadium	2604648		30.7	32.5	5.7%	< 0.4	103%	70%	130%	101%	80%	120%	103%	70%	130%
Zinc	2604648		2530	2560	1.2%	< 5	100%	70%	130%	111%	80%	120%	97%	70%	130%
Chromium, Hexavalent	2623491		<0.2	<0.2	NA	< 0.2	108%	70%	130%	100%	80%	120%	79%	70%	130%
Mercury	2604648		1.48	1.56	5.3%	< 0.10	100%	70%	130%	108%	80%	120%	106%	70%	130%

Comments: NA signifies Not Applicable.  
 If the RPD value is NA, the results of the duplicates are under 5X the RDL and will not be calculated.

Certified By: \_\_\_\_\_





## Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 21T761059

PROJECT: 21451149

ATTENTION TO: Laura Jones

SAMPLING SITE: Ottawa Hospital

SAMPLED BY: Robert Ireland

### Trace Organics Analysis

RPT Date: Jun 22, 2021			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
<b>O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)</b>															
Benzene	2605142		<0.02	<0.02	NA	< 0.02	85%	60%	140%	81%	60%	140%	118%	60%	140%
Toluene	2605142		<0.05	<0.05	NA	< 0.05	88%	60%	140%	100%	60%	140%	93%	60%	140%
Ethylbenzene	2605142		<0.05	<0.05	NA	< 0.05	119%	60%	140%	91%	60%	140%	93%	60%	140%
m & p-Xylene	2605142		<0.05	<0.05	NA	< 0.05	97%	60%	140%	108%	60%	140%	108%	60%	140%
o-Xylene	2605142		<0.05	<0.05	NA	< 0.05	96%	60%	140%	107%	60%	140%	103%	60%	140%
F1 (C6 - C10)	2605142		<5	<5	NA	< 5	103%	60%	140%	102%	60%	140%	99%	60%	140%
F2 (C10 to C16)	2596071		< 10	< 10	NA	< 10	110%	60%	140%	83%	60%	140%	87%	60%	140%
F3 (C16 to C34)	2596071		< 50	< 50	NA	< 50	107%	60%	140%	115%	60%	140%	116%	60%	140%
F4 (C34 to C50)	2596071		< 50	< 50	NA	< 50	104%	60%	140%	96%	60%	140%	88%	60%	140%
<b>O. Reg. 153(511) - PAHs (Soil)</b>															
Naphthalene	2607690		< 0.05	< 0.05	NA	< 0.05	89%	50%	140%	98%	50%	140%	101%	50%	140%
Acenaphthylene	2607690		< 0.05	< 0.05	NA	< 0.05	85%	50%	140%	75%	50%	140%	98%	50%	140%
Acenaphthene	2607690		< 0.05	< 0.05	NA	< 0.05	75%	50%	140%	86%	50%	140%	85%	50%	140%
Fluorene	2607690		< 0.05	< 0.05	NA	< 0.05	96%	50%	140%	95%	50%	140%	85%	50%	140%
Phenanthrene	2607690		< 0.05	< 0.05	NA	< 0.05	85%	50%	140%	84%	50%	140%	96%	50%	140%
Anthracene	2607690		< 0.05	< 0.05	NA	< 0.05	85%	50%	140%	95%	50%	140%	85%	50%	140%
Fluoranthene	2607690		< 0.05	< 0.05	NA	< 0.05	75%	50%	140%	75%	50%	140%	95%	50%	140%
Pyrene	2607690		< 0.05	< 0.05	NA	< 0.05	96%	50%	140%	85%	50%	140%	84%	50%	140%
Benz(a)anthracene	2607690		< 0.05	< 0.05	NA	< 0.05	85%	50%	140%	96%	50%	140%	96%	50%	140%
Chrysene	2607690		< 0.05	< 0.05	NA	< 0.05	75%	50%	140%	85%	50%	140%	85%	50%	140%
Benzo(b)fluoranthene	2607690		< 0.05	< 0.05	NA	< 0.05	96%	50%	140%	85%	50%	140%	94%	50%	140%
Benzo(k)fluoranthene	2607690		< 0.05	< 0.05	NA	< 0.05	84%	50%	140%	75%	50%	140%	98%	50%	140%
Benzo(a)pyrene	2607690		< 0.05	< 0.05	NA	< 0.05	75%	50%	140%	96%	50%	140%	75%	50%	140%
Indeno(1,2,3-cd)pyrene	2607690		< 0.05	< 0.05	NA	< 0.05	96%	50%	140%	95%	50%	140%	85%	50%	140%
Dibenz(a,h)anthracene	2607690		< 0.05	< 0.05	NA	< 0.05	98%	50%	140%	75%	50%	140%	95%	50%	140%
Benzo(g,h,i)perylene	2607690		< 0.05	< 0.05	NA	< 0.05	85%	50%	140%	98%	50%	140%	75%	50%	140%
1 and 2 Methylnaphthalene	2607690		< 0.05	< 0.05	NA	< 0.05	85%	50%	140%	85%	50%	140%	85%	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: \_\_\_\_\_





## Method Summary

**CLIENT NAME:** GOLDER ASSOCIATES LTD  
**PROJECT:** 21451149  
**SAMPLING SITE:** Ottawa Hospital

**AGAT WORK ORDER:** 21T761059  
**ATTENTION TO:** Laura Jones  
**SAMPLED BY:** Robert Ireland

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
<b>Soil Analysis</b>			
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
Mercury	MET-93-6103	modified from EPA 7471B and SM 3112 B	ICP-MS

## Method Summary

**CLIENT NAME: GOLDER ASSOCIATES LTD**
**AGAT WORK ORDER: 21T761059**
**PROJECT: 21451149**
**ATTENTION TO: Laura Jones**
**SAMPLING SITE: Ottawa Hospital**
**SAMPLED BY: Robert Ireland**

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
<b>Trace Organics Analysis</b>			
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 Methylnaphthalene	ORG-91-5106	modified from EPA 3570 and EPA 8270E	GC/MS
Naphthalene-d8	ORG-91-5106	modified from EPA 3541 and EPA 8270E	GC/MS
Acenaphthene-d10	ORG-91-5106	modified from EPA 3541 and EPA 8270E	GC/MS
Chrysene-d12	ORG-91-5106	modified from EPA 3541 and EPA 8270E	GC/MS
Moisture Content	ORG-91-5009	CCME Tier 1 Method	BALANCE
Benzene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
Toluene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
Ethylbenzene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
m & p-Xylene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
o-Xylene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
Xylenes (Total)	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
F1 (C6 - C10)	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/FID
F1 (C6 to C10) minus BTEX	VOL-91-5009	modified from CCME Tier 1 Method	P&T GC/FID
Toluene-d8	VOL-91-5009	modified from EPA SW-846 5030C & 8260D	(P&T)GC/MS
F2 (C10 to C16)	VOL-91-5009	modified from CCME Tier 1 Method	GC/FID
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



## Method Summary

**CLIENT NAME:** GOLDER ASSOCIATES LTD

**AGAT WORK ORDER:** 21T761059

**PROJECT:** 21451149

**ATTENTION TO:** Laura Jones

**SAMPLING SITE:** Ottawa Hospital

**SAMPLED BY:** Robert Ireland

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
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





CLIENT NAME: GOLDER ASSOCIATES LTD  
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(613) 592-9600

ATTENTION TO: Laura Jones

PROJECT: 21451149

AGAT WORK ORDER: 21Z746829

SOIL ANALYSIS REVIEWED BY: Jacky Zhu, Spectroscopy Technician

TRACE ORGANICS REVIEWED BY: Neli Popnikolova, Senior Chemist

DATE REPORTED: Jun 07, 2021

PAGES (INCLUDING COVER): 30

VERSION\*: 1

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

\*Notes

VERSION 1: Revised report with re-analysis for Metals on sample BH21-218 SA3. 2021/06/01

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- 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.
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- All reportable information as specified by ISO/IEC 17025:2017 is available from AGAT Laboratories upon request.



## Certificate of Analysis

AGAT WORK ORDER: 21Z746829

PROJECT: 21451149

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CLIENT NAME: GOLDER ASSOCIATES LTD

SAMPLING SITE: Ottawa Hospital

ATTENTION TO: Laura Jones

SAMPLED BY: Robert Ireland

### O. Reg. 153(511) - All Metals (Soil)

DATE RECEIVED: 2021-05-13

DATE REPORTED: 2021-06-07

SAMPLE DESCRIPTION: BH21-218 SA9

SAMPLE TYPE: Soil

DATE SAMPLED: 2021-05-07

2468493

Parameter	Unit	G / S	RDL	2468493
Antimony	µg/g	7.5	0.8	<0.8
Arsenic	µg/g	18	1	1
Barium	µg/g	390	2.0	32.2
Beryllium	µg/g	4	0.4	<0.4
Boron	µg/g	120	5	<5
Cadmium	µg/g	1.2	0.5	<0.5
Chromium	µg/g	160	5	11
Cobalt	µg/g	22	0.5	3.6
Copper	µg/g	140	1.0	7.9
Lead	µg/g	120	1	3
Molybdenum	µg/g	6.9	0.5	<0.5
Nickel	µg/g	100	1	7
Selenium	µg/g	2.4	0.8	<0.8
Silver	µg/g	20	0.5	<0.5
Thallium	µg/g	1	0.5	<0.5
Uranium	µg/g	23	0.50	<0.50
Vanadium	µg/g	86	0.4	18.5
Zinc	µg/g	340	5	17
Mercury	µg/g	0.27	0.10	<0.10

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

Analysis performed at AGAT Toronto (unless marked by \*)

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## Certificate of Analysis

AGAT WORK ORDER: 21Z746829

PROJECT: 21451149

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CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Laura Jones

SAMPLING SITE: Ottawa Hospital

SAMPLED BY: Robert Ireland

### O. Reg. 153(511) - All Metals (Soil)

DATE RECEIVED: 2021-05-13

DATE REPORTED: 2021-06-07

Parameter	Unit	SAMPLE DESCRIPTION: BH21-216 SA4 BH21-217 SA1 BH21-217 SA7 BH21-217 SA77 BH21-219 SA2 BH21-218 SA3 BH21-224 SA3 BH21-224 SA10											
		SAMPLE TYPE: Soil		Soil		Soil		Soil		Soil		Soil	
		G / S	RDL	2467863	2468266	2468267	2468300	2468472	2468490	2468593	2468594		
Antimony	µg/g	7.5	0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	
Arsenic	µg/g	18	1	69	2	1	<1	3	3	3	3	2	
Barium	µg/g	390	2.0	169	89.3	65.4	49.8	167	63.8	60.7	42.0	42.0	
Beryllium	µg/g	4	0.4	0.5	<0.4	<0.4	<0.4	0.5	<0.4	<0.4	<0.4	<0.4	
Boron	µg/g	120	5	6	<5	8	8	<5	18	14	6	6	
Boron (Hot Water Soluble)	µg/g	1.5	0.10	0.33	0.31	<0.10	<0.10	0.18	0.51	0.35	0.25	0.25	
Cadmium	µg/g	1.2	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	
Chromium	µg/g	160	5	35	24	17	11	54	17	17	13	13	
Cobalt	µg/g	22	0.5	9.4	5.3	5.8	4.8	11.2	4.1	4.2	4.0	4.0	
Copper	µg/g	140	1.0	25.7	11.2	10.0	8.9	21.0	10.5	15.3	16.1	16.1	
Lead	µg/g	120	1	29	10	6	3	13	13	17	16	16	
Molybdenum	µg/g	6.9	0.5	1.6	<0.5	0.6	<0.5	2.0	2.3	2.3	0.7	0.7	
Nickel	µg/g	100	1	21	12	8	7	31	7	8	7	7	
Selenium	µg/g	2.4	0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	
Silver	µg/g	20	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Thallium	µg/g	1	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Uranium	µg/g	23	0.50	0.71	0.59	0.75	1.06	0.78	0.67	0.62	<0.50	<0.50	
Vanadium	µg/g	86	0.4	38.9	28.6	26.4	17.7	51.8	21.6	25.5	21.2	21.2	
Zinc	µg/g	340	5	59	40	21	18	84	58	275	39	39	
Chromium, Hexavalent	µg/g	8	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	
Mercury	µg/g	0.27	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	

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## Certificate of Analysis

AGAT WORK ORDER: 21Z746829

PROJECT: 21451149

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CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Laura Jones

SAMPLING SITE: Ottawa Hospital

SAMPLED BY: Robert Ireland

### O. Reg. 153(511) - All Metals (Soil)

DATE RECEIVED: 2021-05-13

DATE REPORTED: 2021-06-07

Parameter	Unit	BH21-224					
		SAMPLE DESCRIPTION:		SA100	BH21-225 SA4	BH21-225 SA44	BH21-226 SA1
		SAMPLE TYPE:		Soil	Soil	Soil	Soil
		DATE SAMPLED:		2021-05-10	2021-05-03	2021-05-03	2021-05-04
	G / S	RDL	2468595	2468627	2468628	2468633	
Antimony	µg/g	7.5	0.8	<0.8	<0.8	<0.8	<0.8
Arsenic	µg/g	18	1	2	2	2	2
Barium	µg/g	390	2.0	46.1	211	236	115
Beryllium	µg/g	4	0.4	<0.4	0.6	0.7	<0.4
Boron	µg/g	120	5	5	6	6	8
Boron (Hot Water Soluble)	µg/g	1.5	0.10	0.15	0.50	0.49	0.58
Cadmium	µg/g	1.2	0.5	<0.5	<0.5	<0.5	<0.5
Chromium	µg/g	160	5	13	52	55	27
Cobalt	µg/g	22	0.5	4.4	12.3	13.6	7.1
Copper	µg/g	140	1.0	15.9	25.9	28.3	39.7
Lead	µg/g	120	1	20	8	7	9
Molybdenum	µg/g	6.9	0.5	<0.5	<0.5	<0.5	0.5
Nickel	µg/g	100	1	8	27	30	14
Selenium	µg/g	2.4	0.8	<0.8	<0.8	<0.8	<0.8
Silver	µg/g	20	0.5	<0.5	<0.5	<0.5	<0.5
Thallium	µg/g	1	0.5	<0.5	<0.5	<0.5	<0.5
Uranium	µg/g	23	0.50	<0.50	0.64	0.59	0.59
Vanadium	µg/g	86	0.4	16.8	58.9	59.8	34.5
Zinc	µg/g	340	5	31	75	84	50
Chromium, Hexavalent	µg/g	8	0.2	<0.2	<0.2	<0.2	<0.2
Mercury	µg/g	0.27	0.10	<0.10	<0.10	<0.10	<0.10

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

2468490 Revised 2021 May 31  
Revision: This report replaces the Certificate of Analysis issued on 2021 May 25. The certificate of analysis has been revised to report the re-analyzed value for Selenium.

Analysis performed at AGAT Toronto (unless marked by \*)

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## Certificate of Analysis

AGAT WORK ORDER: 21Z746829

PROJECT: 21451149

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CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Laura Jones

SAMPLING SITE: Ottawa Hospital

SAMPLED BY: Robert Ireland

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

DATE RECEIVED: 2021-05-13

DATE REPORTED: 2021-06-07

Parameter	Unit	SAMPLE DESCRIPTION:																						
		BH21-216 SA7		BH21-217 SA1		BH21-217 SA7		BH21-217 SA77		BH21-219 SA2		BH21-218 SA1		BH21-218 SA8		BH21-224 SA3								
		SAMPLE TYPE:	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil								
DATE SAMPLED:	2021-05-05	2021-05-06	2021-05-06	2021-05-06	2021-05-05	2021-05-06	2021-05-07	2021-05-07	2021-05-07	2021-05-07	2021-05-07	2021-05-10	G / S	RDL	2467865	2468266	2468267	2468300	2468472	2468489	2468491	2468593		
Naphthalene	µg/g	0.6	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
Acenaphthylene	µg/g	0.15	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
Acenaphthene	µg/g	7.9	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
Fluorene	µg/g	62	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
Phenanthrene	µg/g	6.2	0.05	<0.05	<0.05	0.06	<0.05	<0.05	<0.05	0.35	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.07	<0.05	
Anthracene	µg/g	0.67	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.13	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
Fluoranthene	µg/g	0.69	0.05	<0.05	<0.05	0.15	<0.05	<0.05	<0.05	0.51	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.07	<0.05	
Pyrene	µg/g	78	0.05	<0.05	<0.05	0.13	<0.05	<0.05	<0.05	0.45	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	<0.05	
Benz(a)anthracene	µg/g	0.5	0.05	<0.05	<0.05	0.10	<0.05	<0.05	<0.05	0.32	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
Chrysene	µg/g	7	0.05	<0.05	<0.05	0.09	<0.05	<0.05	<0.05	0.31	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
Benzo(b)fluoranthene	µg/g	0.78	0.05	<0.05	<0.05	0.13	<0.05	<0.05	<0.05	0.37	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
Benzo(k)fluoranthene	µg/g	0.78	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.13	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
Benzo(a)pyrene	µg/g	0.3	0.05	<0.05	<0.05	0.09	<0.05	<0.05	<0.05	0.24	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<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	<0.05	<0.05	<0.05	0.08	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
Dibenz(a,h)anthracene	µg/g	0.1	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<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	<0.05	<0.05	<0.05	0.07	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
1 and 2 Methylnaphthalene	µg/g	0.99	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
Moisture Content	%		0.1	14.7	13.4	15.8	11.0	13.6	16.5	17.6	7.8													
Surrogate	Unit	Acceptable Limits																						
Naphthalene-d8	%	50-140	63	80	69	74	72	67	70	61														
Acenaphthene-d10	%	50-140	85	73	63	68	68	78	64	70														
Chrysene-d12	%	50-140	84	75	75	110	85	96	103	87														

Certified By:



## Certificate of Analysis

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PROJECT: 21451149

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CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Laura Jones

SAMPLING SITE: Ottawa Hospital

SAMPLED BY: Robert Ireland

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

DATE RECEIVED: 2021-05-13

DATE REPORTED: 2021-06-07

Parameter	Unit	BH21-224							
		SAMPLE DESCRIPTION: BH21-224 SA10				SA100			
		SAMPLE TYPE: Soil				Soil			
		DATE SAMPLED: 2021-05-10				2021-05-10			
	G / S	RDL	2468594	2468595	2468627	2468628	2468633	2468634	
Naphthalene	µg/g	0.6	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthylene	µg/g	0.15	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthene	µg/g	7.9	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fluorene	µg/g	62	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Phenanthrene	µg/g	6.2	0.05	<0.05	<0.05	<0.05	<0.05	0.13	<0.05
Anthracene	µg/g	0.67	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fluoranthene	µg/g	0.69	0.05	<0.05	<0.05	<0.05	<0.05	0.25	0.09
Pyrene	µg/g	78	0.05	<0.05	<0.05	<0.05	<0.05	0.23	0.09
Benz(a)anthracene	µg/g	0.5	0.05	<0.05	<0.05	<0.05	<0.05	0.18	0.08
Chrysene	µg/g	7	0.05	<0.05	<0.05	<0.05	<0.05	0.17	0.08
Benzo(b)fluoranthene	µg/g	0.78	0.05	<0.05	<0.05	<0.05	<0.05	0.21	0.08
Benzo(k)fluoranthene	µg/g	0.78	0.05	<0.05	<0.05	<0.05	<0.05	0.07	<0.05
Benzo(a)pyrene	µg/g	0.3	0.05	<0.05	<0.05	<0.05	<0.05	0.14	0.05
Indeno(1,2,3-cd)pyrene	µg/g	0.38	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	0.05	<0.05	<0.05	<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	<0.05	<0.05	<0.05
1 and 2 Methyl naphthalene	µg/g	0.99	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Moisture Content	%		0.1	16.5	17.3	19.7	22.6	12.4	9.0
Surrogate	Unit	Acceptable Limits							
Naphthalene-d8	%	50-140		72	90	68	63	67	62
Acenaphthene-d10	%	50-140		64	77	69	65	77	70
Chrysene-d12	%	50-140		91	87	90	94	91	83

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard; Refers to Table 3: Full Depth Generic Site Condition Standards 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.

2467865-2468634 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:



## Certificate of Analysis

AGAT WORK ORDER: 21Z746829

PROJECT: 21451149

5835 COOPERS AVENUE  
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CLIENT NAME: GOLDER ASSOCIATES LTD

SAMPLING SITE: Ottawa Hospital

ATTENTION TO: Laura Jones

SAMPLED BY: Robert Ireland

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

DATE RECEIVED: 2021-05-13

DATE REPORTED: 2021-06-07

SAMPLE DESCRIPTION: BH21-219 SA7

SAMPLE TYPE: Soil

DATE SAMPLED: 2021-05-06

Parameter	Unit	G / S	RDL	2468479
F1 (C6 - C10)	µg/g	55	5	<5
F1 (C6 to C10) minus BTEX	µg/g	55	5	<5
F2 (C10 to C16)	µg/g	98	10	<10
F3 (C16 to C34)	µg/g	300	50	<50
F4 (C34 to C50)	µg/g	2800	50	<50
Gravimetric Heavy Hydrocarbons	µg/g	2800	50	NA
Moisture Content	%		0.1	9.4
Surrogate	Unit	Acceptable Limits		
Toluene-d8	% Recovery	50-140		89
Terphenyl	%	60-140		82

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

2468479 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 contribution.  
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.  
nC6 and nC10 response factors are within 30% of Toluene response factor.  
nC10, nC16 and nC34 response factors are within 10% of their average.  
C50 response factor is within 70% of nC10 + nC16 + nC34 average.  
Linearity is within 15%.  
Extraction and holding times were met for this sample.  
Fractions 1-4 are quantified without the contribution of PAHs. Under Ontario Regulation 153, results are considered valid without determining the PAH contribution if not requested by the client.

Analysis performed at AGAT Toronto (unless marked by \*)

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AGAT WORK ORDER: 21Z746829

PROJECT: 21451149

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CLIENT NAME: GOLDER ASSOCIATES LTD

SAMPLING SITE: Ottawa Hospital

ATTENTION TO: Laura Jones

SAMPLED BY: Robert Ireland

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

DATE RECEIVED: 2021-05-13

DATE REPORTED: 2021-06-07

SAMPLE DESCRIPTION: BH21-216 SA4

SAMPLE TYPE: Soil

DATE SAMPLED: 2021-05-05

2467863

Parameter	Unit	G / S	RDL	2467863
Benzene	µg/g	0.21	0.02	<0.02
Toluene	µg/g	2.3	0.05	<0.05
Ethylbenzene	µg/g	2	0.05	<0.05
m & p-Xylene	µg/g		0.05	<0.05
o-Xylene	µg/g		0.05	<0.05
Xylenes (Total)	µg/g	3.1	0.05	<0.05
F1 (C6 - C10)	µg/g	55	5	<5
F1 (C6 to C10) minus BTEX	µg/g	55	5	<5
F2 (C10 to C16)	µg/g	98	10	<10
F3 (C16 to C34)	µg/g	300	50	<50
F4 (C34 to C50)	µg/g	2800	50	<50
Gravimetric Heavy Hydrocarbons	µg/g	2800	50	NA
Moisture Content	%		0.1	20.3
Surrogate	Unit	Acceptable Limits		
Toluene-d8	% Recovery	60-140		106
Terphenyl	%	60-140		65

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PROJECT: 21451149

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CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Laura Jones

SAMPLING SITE: Ottawa Hospital

SAMPLED BY: Robert Ireland

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

DATE RECEIVED: 2021-05-13

DATE REPORTED: 2021-06-07

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

2467863 Results are based on sample dry weight.  
The C6-C10 fraction is calculated using Toluene response factor.  
Xylenes is a calculated parameter. The calculated value is the sum of m&p-Xylene and o-Xylene.  
C6-C10 (F1 minus BTEX) is a calculated parameter. The calculated value is F1 minus BTEX.  
The calculated parameters are non-accredited. The parameters that are components of the calculation are accredited.  
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and n-C34.  
Gravimetric Heavy Hydrocarbons are not included in the Total C16-C50 and are only determined if the chromatogram of the C34 - C50 hydrocarbons indicates that hydrocarbons >C50 are present.  
The chromatogram has returned to baseline by the retention time of nC50.  
Total C6 - C50 results are corrected for BTEX contribution.  
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.  
nC6 and nC10 response factors are within 30% of Toluene response factor.  
nC10, nC16 and nC34 response factors are within 10% of their average.  
C50 response factor is within 70% of nC10 + nC16 + nC34 average.  
Linearity is within 15%.  
Extraction and holding times were met for this sample.  
Fractions 1-4 are quantified with the contribution of PAHs. Under Ontario Regulation 153, results are considered valid without determining the PAH contribution if not requested by the client.  
Quality Control Data is available upon request.

Analysis performed at AGAT Toronto (unless marked by \*)

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AGAT WORK ORDER: 21Z746829

PROJECT: 21451149

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CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Laura Jones

SAMPLING SITE: Ottawa Hospital

SAMPLED BY: Robert Ireland

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

DATE RECEIVED: 2021-05-13

DATE REPORTED: 2021-06-07

Parameter	Unit	SAMPLE DESCRIPTION: BH21-218 SA1 BH21-218 SA8 BH21-224 SA3 BH21-224 SA10 BH21-224 SA100 BH21-225 SA4 BH21-225 SA44 BH21-226 SA3									
		SAMPLE TYPE: Soil Soil Soil Soil Soil Soil Soil Soil Soil Soil									
		DATE SAMPLED: 2021-05-07 2021-05-07 2021-05-10 2021-05-10 2021-05-10 2021-05-10 2021-05-10 2021-05-03 2021-05-03 2021-05-04									
		G / S	RDL	2468489	2468491	2468593	2468594	2468595	2468627	2468628	2468634
F1 (C6 - C10)	µg/g	55	5	<5	<5	<5	<5	<5	<5	<5	<5
F1 (C6 to C10) minus BTEX	µg/g	55	5	<5	<5	<5	<5	<5	<5	<5	<5
F2 (C10 to C16)	µg/g	98	10	<10	<10	<10	<10	<10	<10	<10	<10
F2 (C10 to C16) minus Naphthalene	µg/g		10	<10	<10	<10	<10	<10	<10	<10	<10
F3 (C16 to C34)	µg/g	300	50	<50	<10	120	<10	<10	<10	<10	<10
F3 (C16 to C34) minus PAHs	µg/g		50	<50	<50	120	<50	<50	<50	<50	<50
F4 (C34 to C50)	µg/g	2800	50	<50	<50	100	<50	<50	<50	<50	<50
Gravimetric Heavy Hydrocarbons	µg/g	2800	50	NA	NA	NA	NA	NA	NA	NA	NA
Moisture Content	%		0.1	16.5	17.6	7.8	16.5	17.3	19.7	22.6	9.0
Surrogate	Unit	Acceptable Limits									
Toluene-d8	% Recovery		50-140	86	90	85	89	90	90	90	86
Terphenyl	%		60-140	84	76	71	76	80	101	84	83

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

2468489-2468634 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 \*)

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AGAT WORK ORDER: 21Z746829

PROJECT: 21451149

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CLIENT NAME: GOLDER ASSOCIATES LTD

SAMPLING SITE: Ottawa Hospital

ATTENTION TO: Laura Jones

SAMPLED BY: Robert Ireland

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

DATE RECEIVED: 2021-05-13

DATE REPORTED: 2021-06-07

Parameter	Unit	SAMPLE DESCRIPTION: BH21-216 SA7 BH21-217 SA7 BH21-217 SA77				
		SAMPLE TYPE: Soil			Soil	Soil
		DATE SAMPLED: 2021-05-05			2021-05-06	2021-05-05
		G / S	RDL	2467865	2468267	2468300
Benzene	µg/g	0.21	0.02	<0.02	<0.02	<0.02
Toluene	µg/g	2.3	0.05	<0.05	<0.05	<0.05
Ethylbenzene	µg/g	2	0.05	<0.05	<0.05	<0.05
m & p-Xylene	µg/g		0.05	<0.05	<0.05	<0.05
o-Xylene	µg/g		0.05	<0.05	<0.05	<0.05
Xylenes (Total)	µg/g	3.1	0.05	<0.05	<0.05	<0.05
F1 (C6 - C10)	µg/g	55	5	<5	<5	<5
F1 (C6 to C10) minus BTEX	µg/g	55	5	<5	<5	<5
F2 (C10 to C16)	µg/g	98	10	<10	<10	<10
F2 (C10 to C16) minus Naphthalene	µg/g		10	<10	<10	<10
F3 (C16 to C34)	µg/g	300	50	<50	<10	<10
F3 (C16 to C34) minus PAHs	µg/g		50	<50	<50	<50
F4 (C34 to C50)	µg/g	2800	50	<50	<50	<50
Gravimetric Heavy Hydrocarbons	µg/g	2800	50	NA	NA	NA
Moisture Content	%		0.1	14.7	15.8	11.0
Surrogate	Unit	Acceptable Limits				
Toluene-d8	% Recovery	60-140	95	91	86	86
Terphenyl	%	60-140	97	76	87	87

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CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Laura Jones

SAMPLING SITE: Ottawa Hospital

SAMPLED BY: Robert Ireland

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

DATE RECEIVED: 2021-05-13

DATE REPORTED: 2021-06-07

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

2467865-2468300 Results are based on sample dry weight.  
The C6-C10 fraction is calculated using toluene response factor.  
Xylenes total is a calculated parameter. The calculated value is the sum of m&p-Xylene and o-Xylene.  
C6-C10 (F1 minus BTEX) is a calculated parameter. The calculated value is F1 minus BTEX.  
The calculated parameters are non-accredited. The parameters that are components of the calculation are accredited.  
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and 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 \*)

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CLIENT NAME: GOLDER ASSOCIATES LTD

SAMPLING SITE: Ottawa Hospital

ATTENTION TO: Laura Jones

SAMPLED BY: Robert Ireland

### O. Reg. 153(511) - VOCs (Soil)

DATE RECEIVED: 2021-05-13

DATE REPORTED: 2021-06-07

Parameter	Unit	SAMPLE DESCRIPTION: BH21-219 SA7 BH21-218 SA1 BH21-218 SA8 BH21-224 SA3 BH21-224 SA10 BH21-224 SA100 BH21-225 SA4 BH21-225 SA44													
		SAMPLE TYPE:		Soil		Soil		Soil		Soil		Soil		Soil	
		DATE SAMPLED:		2021-05-06		2021-05-07		2021-05-07		2021-05-10		2021-05-10		2021-05-10	
		G / S	RDL	2468479	2468489	2468491	2468593	2468594	2468595	2468627	2468628				
Dichlorodifluoromethane	µg/g	16	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		
Vinyl Chloride	µg/g	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
Bromomethane	µg/g	0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		
Trichlorofluoromethane	µg/g	4	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		
Acetone	µg/g	16	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50		
1,1-Dichloroethylene	µg/g	0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		
Methylene Chloride	µg/g	0.1	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		
Trans- 1,2-Dichloroethylene	µg/g	0.084	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		
Methyl tert-butyl Ether	µg/g	0.75	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		
1,1-Dichloroethane	µg/g	3.5	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
Methyl Ethyl Ketone	µg/g	16	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50		
Cis- 1,2-Dichloroethylene	µg/g	3.4	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
Chloroform	µg/g	0.05	0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04		
1,2-Dichloroethane	µg/g	0.05	0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		
1,1,1-Trichloroethane	µg/g	0.38	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		
Carbon Tetrachloride	µg/g	0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		
Benzene	µg/g	0.21	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02		
1,2-Dichloropropane	µg/g	0.05	0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		
Trichloroethylene	µg/g	1.6	0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		
Bromodichloromethane	µg/g	13	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		
Methyl Isobutyl Ketone	µg/g	1.7	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50		
1,1,2-Trichloroethane	µg/g	0.05	0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04		
Toluene	µg/g	2.3	0.05	<0.05	<0.05	<0.05	0.21	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		
Dibromochloromethane	µg/g	9.4	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		
Ethylene Dibromide	µg/g	0.05	0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04		
Tetrachloroethylene	µg/g	0.28	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		
1,1,1,2-Tetrachloroethane	µg/g	0.058	0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04		
Chlorobenzene	µg/g	2.4	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		
Ethylbenzene	µg/g	2	0.05	<0.05	<0.05	<0.05	0.10	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		

Certified By:



## Certificate of Analysis

AGAT WORK ORDER: 21Z746829

PROJECT: 21451149

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CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Laura Jones

SAMPLING SITE: Ottawa Hospital

SAMPLED BY: Robert Ireland

### O. Reg. 153(511) - VOCs (Soil)

DATE RECEIVED: 2021-05-13

DATE REPORTED: 2021-06-07

Parameter	Unit	SAMPLE DESCRIPTION: BH21-219 SA7 BH21-218 SA1 BH21-218 SA8 BH21-224 SA3 BH21-224 SA10 BH21-224 SA100 BH21-225 SA4 BH21-225 SA44									
		SAMPLE TYPE: Soil Soil Soil Soil Soil Soil Soil Soil Soil									
		DATE SAMPLED: 2021-05-06 2021-05-07 2021-05-07 2021-05-10 2021-05-10 2021-05-10 2021-05-03 2021-05-03									
		G / S	RDL	2468479	2468489	2468491	2468593	2468594	2468595	2468627	2468628
m & p-Xylene	ug/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Bromoform	ug/g	0.27	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Styrene	ug/g	0.7	0.05	<0.05	<0.05	<0.05	<0.05	<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	<0.05	<0.05	<0.05	<0.05	<0.05
o-Xylene	ug/g		0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,3-Dichlorobenzene	ug/g	4.8	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,4-Dichlorobenzene	ug/g	0.083	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,2-Dichlorobenzene	ug/g	3.4	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Xylenes (Total)	ug/g	3.1	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1,3-Dichloropropene (Cis + Trans)	µg/g	0.05	0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
n-Hexane	µg/g	2.8	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Moisture Content	%		0.1	9.4	16.5	17.6	7.8	16.5	17.3	19.7	22.6
Surrogate	Unit	Acceptable Limits									
Toluene-d8	% Recovery	50-140	73	81	78	83	75	89	70	76	
4-Bromofluorobenzene	% Recovery	50-140	109	111	106	116	117	105	104	89	

Certified By:



## Certificate of Analysis

AGAT WORK ORDER: 21Z746829

PROJECT: 21451149

5835 COOPERS AVENUE  
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CLIENT NAME: GOLDER ASSOCIATES LTD

SAMPLING SITE: Ottawa Hospital

ATTENTION TO: Laura Jones

SAMPLED BY: Robert Ireland

### O. Reg. 153(511) - VOCs (Soil)

DATE RECEIVED: 2021-05-13

DATE REPORTED: 2021-06-07

SAMPLE DESCRIPTION: BH21-226 SA3

SAMPLE TYPE: Soil

DATE SAMPLED: 2021-05-04

2468634

Parameter	Unit	G / S	RDL	2468634
Dichlorodifluoromethane	µg/g	16	0.05	<0.05
Vinyl Chloride	ug/g	0.02	0.02	<0.02
Bromomethane	ug/g	0.05	0.05	<0.05
Trichlorofluoromethane	ug/g	4	0.05	<0.05
Acetone	ug/g	16	0.50	<0.50
1,1-Dichloroethylene	ug/g	0.05	0.05	<0.05
Methylene Chloride	ug/g	0.1	0.05	<0.05
Trans- 1,2-Dichloroethylene	ug/g	0.084	0.05	<0.05
Methyl tert-butyl Ether	ug/g	0.75	0.05	<0.05
1,1-Dichloroethane	ug/g	3.5	0.02	<0.02
Methyl Ethyl Ketone	ug/g	16	0.50	<0.50
Cis- 1,2-Dichloroethylene	ug/g	3.4	0.02	<0.02
Chloroform	ug/g	0.05	0.04	<0.04
1,2-Dichloroethane	ug/g	0.05	0.03	<0.03
1,1,1-Trichloroethane	ug/g	0.38	0.05	<0.05
Carbon Tetrachloride	ug/g	0.05	0.05	<0.05
Benzene	ug/g	0.21	0.02	<0.02
1,2-Dichloropropane	ug/g	0.05	0.03	<0.03
Trichloroethylene	ug/g	1.6	0.03	<0.03
Bromodichloromethane	ug/g	13	0.05	<0.05
Methyl Isobutyl Ketone	ug/g	1.7	0.50	<0.50
1,1,2-Trichloroethane	ug/g	0.05	0.04	<0.04
Toluene	ug/g	2.3	0.05	<0.05
Dibromochloromethane	ug/g	9.4	0.05	<0.05
Ethylene Dibromide	ug/g	0.05	0.04	<0.04
Tetrachloroethylene	ug/g	0.28	0.05	<0.05
1,1,1,2-Tetrachloroethane	ug/g	0.058	0.04	<0.04
Chlorobenzene	ug/g	2.4	0.05	<0.05
Ethylbenzene	ug/g	2	0.05	<0.05
m & p-Xylene	ug/g		0.05	<0.05

Certified By:



## Certificate of Analysis

AGAT WORK ORDER: 21Z746829

PROJECT: 21451149

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CLIENT NAME: GOLDER ASSOCIATES LTD

SAMPLING SITE: Ottawa Hospital

ATTENTION TO: Laura Jones

SAMPLED BY: Robert Ireland

### O. Reg. 153(511) - VOCs (Soil)

DATE RECEIVED: 2021-05-13

DATE REPORTED: 2021-06-07

SAMPLE DESCRIPTION: BH21-226 SA3

SAMPLE TYPE: Soil

DATE SAMPLED: 2021-05-04

Parameter	Unit	G / S	RDL	2468634
Bromoform	ug/g	0.27	0.05	<0.05
Styrene	ug/g	0.7	0.05	<0.05
1,1,2,2-Tetrachloroethane	ug/g	0.05	0.05	<0.05
o-Xylene	ug/g		0.05	<0.05
1,3-Dichlorobenzene	ug/g	4.8	0.05	<0.05
1,4-Dichlorobenzene	ug/g	0.083	0.05	<0.05
1,2-Dichlorobenzene	ug/g	3.4	0.05	<0.05
Xylenes (Total)	ug/g	3.1	0.05	<0.05
1,3-Dichloropropene (Cis + Trans)	µg/g	0.05	0.04	<0.04
n-Hexane	µg/g	2.8	0.05	<0.05
Moisture Content	%		0.1	9.0
Surrogate	Unit	Acceptable Limits		
Toluene-d8	% Recovery	50-140		73
4-Bromofluorobenzene	% Recovery	50-140		115

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

2468479-2468634 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:



## Certificate of Analysis

AGAT WORK ORDER: 21Z746829

PROJECT: 21451149

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CLIENT NAME: GOLDER ASSOCIATES LTD

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ATTENTION TO: Laura Jones

SAMPLED BY: Robert Ireland

### Total PCBs (soil)

DATE RECEIVED: 2021-05-13

DATE REPORTED: 2021-06-07

SAMPLE DESCRIPTION: BH21-219 SA1

SAMPLE TYPE: Soil

DATE SAMPLED: 2021-05-06

Parameter	Unit	G / S	RDL	2468469
Polychlorinated Biphenyls	µg/g	0.35	0.1	<0.1
Moisture Content	%		0.1	13.4
Surrogate	Unit	Acceptable Limits		
Decachlorobiphenyl	%	60-130		96

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

2468469 Results are based on the dry weight of soil extracted.

Analysis performed at AGAT Toronto (unless marked by \*)

Certified By:

## Quality Assurance

CLIENT NAME: GOLDR ASSOCIATES LTD  
 PROJECT: 21451149  
 SAMPLING SITE: Ottawa Hospital

AGAT WORK ORDER: 21Z746829  
 ATTENTION TO: Laura Jones  
 SAMPLED BY: Robert Ireland

Soil Analysis															
RPT Date: Jun 07, 2021			DUPLICATE				Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE		MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Measured Value		Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

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

Antimony	2467863	2467863	<0.8	<0.8	NA	< 0.8	70%	70%	130%	101%	80%	120%	98%	70%	130%
Arsenic	2467863	2467863	6	6	0.0%	< 1	114%	70%	130%	103%	80%	120%	101%	70%	130%
Barium	2467863	2467863	169	176	4.1%	< 2.0	111%	70%	130%	101%	80%	120%	94%	70%	130%
Beryllium	2467863	2467863	0.5	0.5	NA	< 0.4	104%	70%	130%	97%	80%	120%	93%	70%	130%
Boron	2467863	2467863	6	6	NA	< 5	82%	70%	130%	97%	80%	120%	92%	70%	130%
Boron (Hot Water Soluble)	2468300	2468300	<0.10	<0.10	NA	< 0.10	88%	60%	140%	105%	70%	130%	107%	60%	140%
Cadmium	2467863	2467863	<0.5	<0.5	NA	< 0.5	88%	70%	130%	101%	80%	120%	100%	70%	130%
Chromium	2467863	2467863	35	36	2.8%	< 5	108%	70%	130%	107%	80%	120%	109%	70%	130%
Cobalt	2467863	2467863	9.4	9.9	5.2%	< 0.5	104%	70%	130%	104%	80%	120%	96%	70%	130%
Copper	2467863	2467863	25.7	25.4	1.2%	< 1.0	95%	70%	130%	107%	80%	120%	106%	70%	130%
Lead	2467863	2467863	29	27	7.1%	< 1	109%	70%	130%	98%	80%	120%	87%	70%	130%
Molybdenum	2467863	2467863	1.6	1.6	NA	< 0.5	109%	70%	130%	107%	80%	120%	103%	70%	130%
Nickel	2467863	2467863	21	21	0.0%	< 1	99%	70%	130%	101%	80%	120%	92%	70%	130%
Selenium	2467863	2467863	<0.8	<0.8	NA	< 0.8	129%	70%	130%	102%	80%	120%	99%	70%	130%
Silver	2467863	2467863	<0.5	<0.5	NA	< 0.5	99%	70%	130%	100%	80%	120%	93%	70%	130%
Thallium	2467863	2467863	<0.5	<0.5	NA	< 0.5	105%	70%	130%	103%	80%	120%	95%	70%	130%
Uranium	2467863	2467863	0.71	0.72	NA	< 0.50	109%	70%	130%	105%	80%	120%	93%	70%	130%
Vanadium	2467863	2467863	38.9	39.8	2.3%	< 0.4	109%	70%	130%	104%	80%	120%	102%	70%	130%
Zinc	2467863	2467863	59	60	1.7%	< 5	103%	70%	130%	108%	80%	120%	103%	70%	130%
Chromium, Hexavalent	2466307		<0.2	<0.2	NA	< 0.2	101%	70%	130%	104%	80%	120%	79%	70%	130%
Mercury	2467863	2467863	<0.10	<0.10	NA	< 0.10	97%	70%	130%	101%	80%	120%	98%	70%	130%

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

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

Selenium	2488350		<0.8	<0.8	NA	< 0.8	103%	70%	130%	106%	80%	120%	108%	70%	130%
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Comments: NA signifies Not Applicable.  
 If the RPD value is NA, the results of the duplicates are under 5X the RDL and will not be calculated.

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

Antimony	2486214		<0.8	<0.8	NA	< 0.8	113%	70%	130%	106%	80%	120%	100%	70%	130%
Arsenic	2486214		7	7	0.0%	< 1	114%	70%	130%	108%	80%	120%	107%	70%	130%
Barium	2486214		123	120	2.5%	< 2.0	104%	70%	130%	101%	80%	120%	100%	70%	130%
Beryllium	2486214		0.6	0.6	NA	< 0.4	75%	70%	130%	112%	80%	120%	70%	70%	130%
Boron	2486214		8	8	NA	< 5	98%	70%	130%	110%	80%	120%	92%	70%	130%
Cadmium	2486214		<0.5	<0.5	NA	< 0.5	114%	70%	130%	107%	80%	120%	107%	70%	130%
Chromium	2486214		24	25	NA	< 5	101%	70%	130%	108%	80%	120%	101%	70%	130%
Cobalt	2486214		13.5	13.6	0.7%	< 0.5	98%	70%	130%	109%	80%	120%	104%	70%	130%
Copper	2486214		37.0	36.1	2.5%	< 1.0	92%	70%	130%	113%	80%	120%	99%	70%	130%

## Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD  
 PROJECT: 21451149  
 SAMPLING SITE: Ottawa Hospital

AGAT WORK ORDER: 21Z746829  
 ATTENTION TO: Laura Jones  
 SAMPLED BY: Robert Ireland

### Soil Analysis (Continued)

RPT Date: Jun 07, 2021			DUPLICATE				Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Measured Value		Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits		
								Lower	Upper		Lower	Upper		Lower	Upper	
Lead	2486214		12	13	8.0%	< 1	103%	70%	130%	98%	80%	120%	92%	70%	130%	
Molybdenum	2486214		<0.5	<0.5	NA	< 0.5	112%	70%	130%	115%	80%	120%	112%	70%	130%	
Nickel	2486214		28	28	0.0%	< 1	96%	70%	130%	109%	80%	120%	102%	70%	130%	
Selenium	2486214		<0.8	<0.8	NA	< 0.8	118%	70%	130%	107%	80%	120%	106%	70%	130%	
Silver	2486214		<0.5	<0.5	NA	< 0.5	96%	70%	130%	108%	80%	120%	102%	70%	130%	
Thallium	2486214		<0.5	<0.5	NA	< 0.5	101%	70%	130%	105%	80%	120%	102%	70%	130%	
Uranium	2486214		0.74	0.76	NA	< 0.50	112%	70%	130%	109%	80%	120%	109%	70%	130%	
Vanadium	2486214		35.1	34.8	0.9%	< 0.4	106%	70%	130%	109%	80%	120%	112%	70%	130%	
Zinc	2486214		70	69	1.4%	< 5	99%	70%	130%	114%	80%	120%	107%	70%	130%	
Mercury	2486214		<0.10	<0.10	NA	< 0.10	101%	70%	130%	100%	80%	120%	97%	70%	130%	

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

Certified By: \_\_\_\_\_





## Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD  
 PROJECT: 21451149  
 SAMPLING SITE: Ottawa Hospital

AGAT WORK ORDER: 21Z746829  
 ATTENTION TO: Laura Jones  
 SAMPLED BY: Robert Ireland

### Trace Organics Analysis

RPT Date: Jun 07, 2021			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE		MATRIX SPIKE			
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

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

Benzene	2466673		<0.02	<0.02	NA	< 0.02	105%	60%	140%	99%	60%	140%	82%	60%	140%
Toluene	2466673		<0.05	<0.05	NA	< 0.05	109%	60%	140%	104%	60%	140%	82%	60%	140%
Ethylbenzene	2466673		<0.05	<0.05	NA	< 0.05	87%	60%	140%	96%	60%	140%	108%	60%	140%
m & p-Xylene	2466673		<0.05	<0.05	NA	< 0.05	103%	60%	140%	104%	60%	140%	101%	60%	140%
o-Xylene	2466673		<0.05	<0.05	NA	< 0.05	84%	60%	140%	94%	60%	140%	82%	60%	140%
F1 (C6 - C10)	2466673		<5	<5	NA	< 5	106%	60%	140%	105%	60%	140%	98%	60%	140%
F2 (C10 to C16)	2464850		< 10	< 10	NA	< 10	101%	60%	140%	81%	60%	140%	88%	60%	140%
F3 (C16 to C34)	2464850		54	63	15.4%	< 10	103%	60%	140%	86%	60%	140%	101%	60%	140%
F4 (C34 to C50)	2464850		< 50	< 50	NA	< 50	99%	60%	140%	117%	60%	140%	108%	60%	140%

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

Benzene	2466673		<0.02	<0.02	NA	< 0.02	105%	60%	140%	99%	60%	140%	82%	60%	140%
Toluene	2466673		<0.05	<0.05	NA	< 0.05	109%	60%	140%	104%	60%	140%	82%	60%	140%
Ethylbenzene	2466673		<0.05	<0.05	NA	< 0.05	87%	60%	140%	96%	60%	140%	108%	60%	140%
m & p-Xylene	2466673		<0.05	<0.05	NA	< 0.05	103%	60%	140%	104%	60%	140%	101%	60%	140%
o-Xylene	2466673		<0.05	<0.05	NA	< 0.05	84%	60%	140%	94%	60%	140%	82%	60%	140%
F1 (C6 - C10)	2466673		<5	<5	NA	< 5	106%	60%	140%	105%	60%	140%	98%	60%	140%
F2 (C10 to C16)	2470096		< 10	< 10	NA	< 10	101%	60%	140%	83%	60%	140%	95%	60%	140%
F3 (C16 to C34)	2470096		< 10	< 10	NA	< 10	101%	60%	140%	91%	60%	140%	88%	60%	140%
F4 (C34 to C50)	2470096		< 50	< 50	NA	< 50	95%	60%	140%	103%	60%	140%	93%	60%	140%

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

Naphthalene	2468300	2468300	<0.05	<0.05	NA	< 0.05	92%	50%	140%	76%	50%	140%	105%	50%	140%
Acenaphthylene	2468300	2468300	<0.05	<0.05	NA	< 0.05	112%	50%	140%	88%	50%	140%	99%	50%	140%
Acenaphthene	2468300	2468300	<0.05	<0.05	NA	< 0.05	109%	50%	140%	86%	50%	140%	96%	50%	140%
Fluorene	2468300	2468300	<0.05	<0.05	NA	< 0.05	111%	50%	140%	87%	50%	140%	92%	50%	140%
Phenanthrene	2468300	2468300	<0.05	<0.05	NA	< 0.05	111%	50%	140%	90%	50%	140%	105%	50%	140%
Anthracene	2468300	2468300	<0.05	<0.05	NA	< 0.05	118%	50%	140%	92%	50%	140%	77%	50%	140%
Fluoranthene	2468300	2468300	<0.05	<0.05	NA	< 0.05	101%	50%	140%	96%	50%	140%	98%	50%	140%
Pyrene	2468300	2468300	<0.05	<0.05	NA	< 0.05	103%	50%	140%	99%	50%	140%	93%	50%	140%
Benz(a)anthracene	2468300	2468300	<0.05	<0.05	NA	< 0.05	114%	50%	140%	106%	50%	140%	95%	50%	140%
Chrysene	2468300	2468300	<0.05	<0.05	NA	< 0.05	119%	50%	140%	106%	50%	140%	99%	50%	140%
Benzo(b)fluoranthene	2468300	2468300	<0.05	<0.05	NA	< 0.05	92%	50%	140%	90%	50%	140%	105%	50%	140%
Benzo(k)fluoranthene	2468300	2468300	<0.05	<0.05	NA	< 0.05	80%	50%	140%	80%	50%	140%	77%	50%	140%
Benzo(a)pyrene	2468300	2468300	<0.05	<0.05	NA	< 0.05	94%	50%	140%	78%	50%	140%	98%	50%	140%
Indeno(1,2,3-cd)pyrene	2468300	2468300	<0.05	<0.05	NA	< 0.05	74%	50%	140%	71%	50%	140%	85%	50%	140%
Dibenz(a,h)anthracene	2468300	2468300	<0.05	<0.05	NA	< 0.05	71%	50%	140%	79%	50%	140%	96%	50%	140%
Benzo(g,h,i)perylene	2468300	2468300	<0.05	<0.05	NA	< 0.05	104%	50%	140%	90%	50%	140%	99%	50%	140%

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

F2 (C10 to C16)	2471075		< 10	< 10	NA	< 10	92%	60%	140%	84%	60%	140%	80%	60%	140%
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## Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 21Z746829

PROJECT: 21451149

ATTENTION TO: Laura Jones

SAMPLING SITE: Ottawa Hospital

SAMPLED BY: Robert Ireland

### Trace Organics Analysis (Continued)

RPT Date: Jun 07, 2021			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
F3 (C16 to C34)	2471075		78	90	14.3%	< 10	106%	60%	140%	85%	60%	140%	84%	60%	140%
F4 (C34 to C50)	2471075		110	120	NA	< 50	96%	60%	140%	100%	60%	140%	106%	60%	140%
Total PCBs (soil)															
Polychlorinated Biphenyls	2464937		< 0.1	< 0.1	NA	< 0.1	109%	60%	140%	84%	60%	140%	90%	60%	140%
Comments: When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).															
O. Reg. 153(511) - PHCs F1 - F4 (-BTEX) (Soil)															
F1 (C6 - C10)	2466673		< 5	< 5	NA	< 5	106%	60%	140%	105%	60%	140%	98%	60%	140%
O. Reg. 153(511) - VOCs (Soil)															
Dichlorodifluoromethane	2461313		< 0.05	< 0.05	NA	< 0.05	86%	50%	140%	108%	50%	140%	94%	50%	140%
Vinyl Chloride	2461313		< 0.02	< 0.02	NA	< 0.02	110%	50%	140%	112%	50%	140%	72%	50%	140%
Bromomethane	2461313		< 0.05	< 0.05	NA	< 0.05	118%	50%	140%	106%	50%	140%	101%	50%	140%
Trichlorofluoromethane	2461313		< 0.05	< 0.05	NA	< 0.05	116%	50%	140%	115%	50%	140%	104%	50%	140%
Acetone	2461313		< 0.50	< 0.50	NA	< 0.50	126%	50%	140%	110%	50%	140%	109%	50%	140%
1,1-Dichloroethylene	2461313		< 0.05	< 0.05	NA	< 0.05	126%	50%	140%	71%	60%	130%	77%	50%	140%
Methylene Chloride	2461313		< 0.05	< 0.05	NA	< 0.05	106%	50%	140%	115%	60%	130%	114%	50%	140%
Trans- 1,2-Dichloroethylene	2461313		< 0.05	< 0.05	NA	< 0.05	97%	50%	140%	73%	60%	130%	71%	50%	140%
Methyl tert-butyl Ether	2461313		< 0.05	< 0.05	NA	< 0.05	110%	50%	140%	108%	60%	130%	91%	50%	140%
1,1-Dichloroethane	2461313		< 0.02	< 0.02	NA	< 0.02	104%	50%	140%	98%	60%	130%	107%	50%	140%
Methyl Ethyl Ketone	2461313		< 0.50	< 0.50	NA	< 0.50	116%	50%	140%	100%	50%	140%	118%	50%	140%
Cis- 1,2-Dichloroethylene	2461313		< 0.02	< 0.02	NA	< 0.02	102%	50%	140%	96%	60%	130%	94%	50%	140%
Chloroform	2461313		< 0.04	< 0.04	NA	< 0.04	104%	50%	140%	108%	60%	130%	103%	50%	140%
1,2-Dichloroethane	2461313		< 0.03	< 0.03	NA	< 0.03	115%	50%	140%	99%	60%	130%	109%	50%	140%
1,1,1-Trichloroethane	2461313		< 0.05	< 0.05	NA	< 0.05	87%	50%	140%	91%	60%	130%	115%	50%	140%
Carbon Tetrachloride	2461313		< 0.05	< 0.05	NA	< 0.05	81%	50%	140%	111%	60%	130%	113%	50%	140%
Benzene	2461313		< 0.02	< 0.02	NA	< 0.02	100%	50%	140%	114%	60%	130%	103%	50%	140%
1,2-Dichloropropane	2461313		< 0.03	< 0.03	NA	< 0.03	111%	50%	140%	115%	60%	130%	100%	50%	140%
Trichloroethylene	2461313		< 0.03	< 0.03	NA	< 0.03	110%	50%	140%	110%	60%	130%	114%	50%	140%
Bromodichloromethane	2461313		< 0.05	< 0.05	NA	< 0.05	113%	50%	140%	115%	60%	130%	115%	50%	140%
Methyl Isobutyl Ketone	2461313		< 0.50	< 0.50	NA	< 0.50	117%	50%	140%	85%	50%	140%	96%	50%	140%
1,1,2-Trichloroethane	2461313		< 0.04	< 0.04	NA	< 0.04	104%	50%	140%	114%	60%	130%	102%	50%	140%
Toluene	2461313		< 0.05	< 0.05	NA	< 0.05	81%	50%	140%	89%	60%	130%	94%	50%	140%
Dibromochloromethane	2461313		< 0.05	< 0.05	NA	< 0.05	112%	50%	140%	91%	60%	130%	92%	50%	140%
Ethylene Dibromide	2461313		< 0.04	< 0.04	NA	< 0.04	90%	50%	140%	105%	60%	130%	103%	50%	140%
Tetrachloroethylene	2461313		< 0.05	< 0.05	NA	< 0.05	112%	50%	140%	102%	60%	130%	96%	50%	140%
1,1,1,2-Tetrachloroethane	2461313		< 0.04	< 0.04	NA	< 0.04	100%	50%	140%	111%	60%	130%	92%	50%	140%
Chlorobenzene	2461313		< 0.05	< 0.05	NA	< 0.05	116%	50%	140%	111%	60%	130%	103%	50%	140%
Ethylbenzene	2461313		< 0.05	< 0.05	NA	< 0.05	101%	50%	140%	101%	60%	130%	95%	50%	140%

## Quality Assurance

 CLIENT NAME: GOLDER ASSOCIATES LTD  
 PROJECT: 21451149  
 SAMPLING SITE: Ottawa Hospital

 AGAT WORK ORDER: 21Z746829  
 ATTENTION TO: Laura Jones  
 SAMPLED BY: Robert Ireland

### Trace Organics Analysis (Continued)

RPT Date: Jun 07, 2021			DUPLICATE				Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Measured Value		Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits		
								Lower	Upper		Lower	Upper		Lower	Upper	
m & p-Xylene	2461313		< 0.05	< 0.05	NA	< 0.05	101%	50%	140%	71%	60%	130%	124%	50%	140%	
Bromoform	2461313		< 0.05	< 0.05	NA	< 0.05	114%	50%	140%	107%	60%	130%	100%	50%	140%	
Styrene	2461313		< 0.05	< 0.05	NA	< 0.05	92%	50%	140%	115%	60%	130%	95%	50%	140%	
1,1,2,2-Tetrachloroethane	2461313		< 0.05	< 0.05	NA	< 0.05	106%	50%	140%	110%	60%	130%	82%	50%	140%	
o-Xylene	2461313		< 0.05	< 0.05	NA	< 0.05	102%	50%	140%	94%	60%	130%	106%	50%	140%	
1,3-Dichlorobenzene	2461313		< 0.05	< 0.05	NA	< 0.05	89%	50%	140%	116%	60%	130%	105%	50%	140%	
1,4-Dichlorobenzene	2461313		< 0.05	< 0.05	NA	< 0.05	106%	50%	140%	117%	60%	130%	117%	50%	140%	
1,2-Dichlorobenzene	2461313		< 0.05	< 0.05	NA	< 0.05	115%	50%	140%	107%	60%	130%	113%	50%	140%	
n-Hexane	2461313		< 0.05	< 0.05	NA	< 0.05	91%	50%	140%	77%	60%	130%	104%	50%	140%	
O. Reg. 153(511) - PHCs F1 - F4 (with PAHs and VOC) (Soil)																
F1 (C6 - C10)	2466673		<5	<5	NA	< 5	106%	60%	140%	105%	60%	140%	98%	60%	140%	
O. Reg. 153(511) - PHCs F1 - F4 (with PAHs and VOC) (Soil)																
F1 (C6 - C10)	2477781		<5	<5	NA	< 5	100%	60%	140%	100%	60%	140%	99%	60%	140%	

Certified By:





## Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD  
 PROJECT: 21451149  
 SAMPLING SITE: Ottawa Hospital

AGAT WORK ORDER: 21Z746829  
 ATTENTION TO: Laura Jones  
 SAMPLED BY: Robert Ireland

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Antimony	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Arsenic	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Barium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Beryllium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Boron	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Cadmium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Chromium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Cobalt	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Copper	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Lead	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Molybdenum	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Nickel	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Selenium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Silver	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Thallium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Uranium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Vanadium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Zinc	MET 93 -6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Mercury	MET-93-6103	modified from EPA 7471B and SM 3112 B	ICP-MS
Boron (Hot Water Soluble)	MET-93-6104	modified from EPA 6010D and MSA PART 3, CH 21	ICP/OES
Chromium, Hexavalent	INOR-93-6068	modified from EPA 3060 and EPA 7196	SPECTROPHOTOMETER

## Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 21Z746829

PROJECT: 21451149

ATTENTION TO: Laura Jones

SAMPLING SITE: Ottawa Hospital

SAMPLED BY: Robert Ireland

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 Methylnaphthalene	ORG-91-5106	modified from EPA 3570 and EPA 8270E	GC/MS
Naphthalene-d8	ORG-91-5106	modified from EPA 3541 and EPA 8270E	GC/MS
Acenaphthene-d10	ORG-91-5106	modified from EPA 3541 and EPA 8270E	GC/MS
Chrysene-d12	ORG-91-5106	modified from EPA 3541 and EPA 8270E	GC/MS
Moisture Content	ORG-91-5009	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-91-5009	modified from EPA SW-846 5030C & 8260D	(P&T)GC/MS
F2 (C10 to C16)	VOL-91-5009	modified from CCME Tier 1 Method	GC/FID
F3 (C16 to C34)	VOL-91-5009	modified from CCME Tier 1 Method	GC/FID
F4 (C34 to C50)	VOL-91-5009	modified from CCME Tier 1 Method	GC/FID
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
Benzene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
Toluene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
Ethylbenzene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
m & p-Xylene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS

## Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 21Z746829

PROJECT: 21451149

ATTENTION TO: Laura Jones

SAMPLING SITE: Ottawa Hospital

SAMPLED BY: Robert Ireland

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
o-Xylene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
Xylenes (Total)	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
F1 (C6 to C10) minus BTEX	VOL-91-5009	modified from CCME Tier 1 Method	P&T 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
Dichlorodifluoromethane	VOL-91-5002	modified from EPA 5035C and EPA 8260D	(P&T)GC/MS
Vinyl Chloride	VOL-91-5002	modified from EPA 5035C and EPA 8260D	(P&T)GC/MS
Bromomethane	VOL-91-5002	modified from EPA 5035C and EPA 8260D	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5002	modified from EPA 5035C and EPA 8260D	(P&T)GC/MS
Acetone	VOL-91-5002	modified from EPA 5035C and EPA 8260D	(P&T)GC/MS
1,1-Dichloroethylene	VOL-91-5002	modified from EPA 5035C and EPA 8260D	(P&T)GC/MS
Methylene Chloride	VOL-91-5002	modified from EPA 5035C and EPA 8260D	(P&T)GC/MS
Trans- 1,2-Dichloroethylene	VOL-91-5002	modified from EPA 5035C and EPA 8260D	(P&T)GC/MS
Methyl tert-butyl Ether	VOL-91-5002	modified from EPA 5035C and EPA 8260D	(P&T)GC/MS
1,1-Dichloroethane	VOL-91-5002	modified from EPA 5035C and EPA 8260D	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5002	modified from EPA 5035C and EPA 8260D	(P&T)GC/MS
Cis- 1,2-Dichloroethylene	VOL-91-5002	modified from EPA 5035C and EPA 8260D	(P&T)GC/MS
Chloroform	VOL-91-5002	modified from EPA 5035C and EPA 8260D	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5002	modified from EPA 5035C and EPA 8260D	(P&T)GC/MS
1,1,1-Trichloroethane	VOL-91-5002	modified from EPA 5035C and EPA 8260D	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5002	modified from EPA 5035C and EPA 8260D	(P&T)GC/MS
Benzene	VOL-91-5002	modified from EPA 5035C and EPA 8260D	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5002	modified from EPA 5035C and EPA 8260D	(P&T)GC/MS
Trichloroethylene	VOL-91-5002	modified from EPA 5035C and EPA 8260D	(P&T)GC/MS
Bromodichloromethane	VOL-91-5002	modified from EPA 5035C and EPA 8260D	(P&T)GC/MS
Methyl Isobutyl Ketone	VOL-91-5002	modified from EPA 5035C and EPA 8260D	(P&T)GC/MS
1,1,2-Trichloroethane	VOL-91-5002	modified from EPA 5035C and EPA 8260D	(P&T)GC/MS
Toluene	VOL-91-5002	modified from EPA 5035C and EPA 8260D	(P&T)GC/MS
Dibromochloromethane	VOL-91-5002	modified from EPA 5035C and EPA 8260D	(P&T)GC/MS
Ethylene Dibromide	VOL-91-5002	modified from EPA 5035C and EPA 8260D	(P&T)GC/MS

## Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 21Z746829

PROJECT: 21451149

ATTENTION TO: Laura Jones

SAMPLING SITE: Ottawa Hospital

SAMPLED BY: Robert Ireland

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Tetrachloroethylene	VOL-91-5002	modified from EPA 5035C and EPA 8260D	(P&T)GC/MS
1,1,1,2-Tetrachloroethane	VOL-91-5002	modified from EPA 5035C and EPA 8260D	(P&T)GC/MS
Chlorobenzene	VOL-91-5002	modified from EPA 5035C and EPA 8260D	(P&T)GC/MS
Ethylbenzene	VOL-91-5002	modified from EPA 5035C and EPA 8260D	(P&T)GC/MS
m & p-Xylene	VOL-91-5002	modified from EPA 5035C and EPA 8260D	(P&T)GC/MS
Bromoform	VOL-91-5002	modified from EPA 5035C and EPA 8260D	(P&T)GC/MS
Styrene	VOL-91-5002	modified from EPA 5035C and EPA 8260D	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5002	modified from EPA 5035C and EPA 8260D	(P&T)GC/MS
o-Xylene	VOL-91-5002	modified from EPA 5035C and EPA 8260D	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5002	modified from EPA 5035C and EPA 8260D	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5002	modified from EPA 5035C and EPA 8260D	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5002	modified from EPA 5035C and EPA 8260D	(P&T)GC/MS
Xylenes (Total)	VOL-91-5002	modified from EPA 5035C and EPA 8260D	(P&T)GC/MS
1,3-Dichloropropene (Cis + Trans)	VOL-91-5002	modified from EPA 5035C and EPA 8260D	(P&T)GC/MS
n-Hexane	VOL-91-5002	modified from EPA 5035C and EPA 8260D	(P&T)GC/MS
Toluene-d8	VOL-91-5002	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91-5002	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Polychlorinated Biphenyls	ORG-91-5113	modified from EPA SW-846 3541 & 8082	GC/ECD
Decachlorobiphenyl	ORG-91-5113	modified from EPA SW-846 3541 & 8082	GC/ECD



# AGAT

## Laboratories

2 LG BUC (LT Lice - packs) - ① 7-7/8-4/9-3  
 ② 8-4/9-3/9-9  
 5835 Coopers Avenue  
 Mississauga, Ontario L4Z 1Y2  
 Ph: 905.712.5100 Fax: 905.712.5122  
 www.agatlabs.com webearth.agatlabs.com

### Laboratory Use Only

Work Order #: 212746829

Cooler Quantity: 1

Arrival Temperatures: 6.8 | 6.7 | 6.7

Custody Seal Intact:  Yes  No  N/A

Notes:

## Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water intended for human consumption)

### Report Information:

Company: Golder Associates

Contact: Laura Jones

Address: 1931 Robertson Road, Nepean Ontario

Phone: (226) 378-2489 Fax: \_\_\_\_\_

Reports to be sent to:

1. Email: Laura\_Jones@golder.com; GAL\_EQUIS@golder.com

2. Email: Rochelle\_Mathew@Golder.com

### Regulatory Requirements: No Regulatory Requirement

(Please check all applicable boxes)

Regulation 153/04 Table 3 Indicate One

Sewer Use

Regulation 558

Ind/Com

Sanitary

CCME

Res/Park

Storm

Prov. Water Quality Objectives (PWQO)

Agriculture

Soil Texture (Check One)

Coarse

Fine

Region \_\_\_\_\_ Indicate One

Other \_\_\_\_\_ Indicate One

### Project Information:

Project: 21451149

Site Location: Ottawa Hospital

Sampled By: Robert Ireland

AGAT Quote #: SO

Please note: If quotation number is not provided, client will be billed full price for analysis.

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

Report Guideline on Certificate of Analysis  Yes  No

### 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	(Check Applicable)																																	
						Metals and Inorganics	Metal Scan	Hydride Forming Metals	Client Custom Metals	ORPs: <input type="checkbox"/> BHWS <input type="checkbox"/> Cl <input type="checkbox"/> CN <input type="checkbox"/> Cr <input type="checkbox"/> EC <input type="checkbox"/> FOC <input type="checkbox"/> NO <sub>2</sub> /NO <sub>3</sub> <input type="checkbox"/> Total N <input type="checkbox"/> Hg <input type="checkbox"/> pH <input type="checkbox"/> SAR	Nutrients: <input type="checkbox"/> TP <input type="checkbox"/> NH <sub>3</sub> <input type="checkbox"/> TKN <input type="checkbox"/> NO <sub>2</sub> <input type="checkbox"/> NO <sub>3</sub> <input type="checkbox"/> NO <sub>2</sub> /NO <sub>3</sub>	Volatiles: <input type="checkbox"/> VOC <input type="checkbox"/> BTEX <input type="checkbox"/> THM	CCME Fractions 1 to 4	ABNS	PAHs	Chlorophenols	PCBs	Organochlorine Pesticides	TCLP Metals/Inorganics	Sewer Use	As, Sb, Se	PHC Ft-F4	VOCs																
BH21-216 SA4	05/05/21		3	Soil		<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>																				
BH21-216 SA7	05/05/21		3	Soil		<input checked="" type="checkbox"/>						<input checked="" type="checkbox"/>						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>																				
BH21-216 SA10	05/05/21		3	Soil	Extract & Hold for PHC/BTEX																																		
BH21-217 SA1	05/06/21		3	Soil		<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>																											
BH21-217 SA7	05/06/21		3	Soil		<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>																											
* DUP-1	05/06/21		3	Soil		<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>																											
BH21-219 SA1	05/06/21		3	Soil		<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>																											
BH21-219 SA2	05/06/21		3	Soil		<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>																											
BH21-219 SA3	05/06/21		3	Soil	Hold for metals, PCBs, PAHs																																		
BH21-219 SA7	05/08/21		3	Soil																																			
BH21-219 SA9 <sup>SA8</sup>	05/06/21		3	Soil	Extract and hold PHC/VOCs																																		

Samples Relinquished By (Print Name and Sig):		Date:	Time:	Samples Received By (Print Name and Sig):		Date:	Time:	Page:
ARTHUR KUITANWA		21-05-13	11:50	JULIA JONES		13 May 21	1225	1 of 3
Samples Relinquished By (Print Name and Sig):		Date:	Time:	Samples Received By (Print Name and Sig):		Date:	Time:	Nº:
				SIMRAN		14 May 21	9:25 am	

\* Limited samples for DUP1





## Laboratory Use Only

Work Order #: \_\_\_\_\_  
Cooler Quantity: 1  
Arrival Temperatures: 6.8 | 6.8 | 6.7  
Custody Seal Intact;  Yes  No  N/A  
Notes: Ja

## Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water intended for human consumption)

### Report Information:

Company: Golder Associates  
Contact: Laura Jones  
Address: 1931 Robertson Road, Nepean Ontario  
(226) 378-2489 Fax: \_\_\_\_\_  
Reports to be sent to:  
1. Email: Laura\_Jones@golder.com; GAL\_EQUIS@golder.com  
2. Email: Rochelle\_Mathew@Golder.com

### Regulatory Requirements: No Regulatory Requirement

(Please check all applicable boxes)

 Regulation 153/04  
Table 3  
Indicate One  
 Sewer Use  Regulation 558  
 Ind/Com  Sanitary  CCME  
 Res/Park  Storm  Prov. Water Quality Objectives (PWQO)  
 Agriculture  
Soil Texture (Check One)  Coarse  Other  
 Fine Indicate One

### Turnaround Time (TAT) Required:

Regular TAT  5 to 7 Business Days  
Rush TAT (Rush Surcharges Apply)  
 3 Business Days  2 Business Days  1 Business Day

OR Data Required (Rush Surcharges May Apply):

### Project Information:

Project: 21451149  
Site Location: Ottawa Hospital  
Sampled By: Robert Ireland  
AGAT Quote #: SOPlease note: If quotation number is not provided, client will be billed full price for analysis.

### Is this submission for a Record of Site Condition?

 Yes  No

### Report Guideline on Certificate of Analysis

 Yes  No*Please provide prior notification for rush TAT*  
*\*TAT is exclusive of weekends and statutory holidays*

### 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	(Check Applicable)																									
						Metals and Inorganics	Metal Scan	Hydride Forming Metals	Client Custom Metals	ORPs: <input type="checkbox"/> B-HWS <input type="checkbox"/> Cl <sup>-</sup> <input type="checkbox"/> CN <sup>-</sup>	<input type="checkbox"/> Ca* <input type="checkbox"/> EC <input type="checkbox"/> FOC <input type="checkbox"/> NO <sub>2</sub> /NO <sub>3</sub>	<input type="checkbox"/> Total N <input type="checkbox"/> Hg <input type="checkbox"/> pH <input type="checkbox"/> SAR	Nutrients: <input type="checkbox"/> TP <input type="checkbox"/> NH <sub>3</sub> <input type="checkbox"/> TKN	<input type="checkbox"/> NO <sub>3</sub> <input type="checkbox"/> NO <sub>2</sub> <input type="checkbox"/> NO <sub>x</sub> /NO <sub>2</sub>	Volatiles: <input type="checkbox"/> VOC <input type="checkbox"/> BTEX <input type="checkbox"/> THM	CCME Fractions 1 to 4	ABNS	PAHs	Chlorophenols	PCBs	Organochlorine Pesticides	TCLP Metals/Inorganics	Sewer Use	As, Sb, Se	PHC F1-F4	Hold for PHC/VOC/PAH/Metal					
BH21-218 SA1	05/07/21		3	Soil							<input checked="" type="checkbox"/>																				<input checked="" type="checkbox"/>
BH21-218 SA3	05/07/21		3	Soil			<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>																			<input checked="" type="checkbox"/>	
BH21-218 SA8	05/07/21		3	Soil																										<input checked="" type="checkbox"/>	
BH21-218 SA9	05/07/21		3	Soil	Extract and Hold all																										
BH21-224 SA3	05/10/21		3	Soil			<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>																		<input checked="" type="checkbox"/>		
BH21-224 SA10	05/10/21		3	Soil			<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>																		<input checked="" type="checkbox"/>		
*DUP-2	05/10/21		3	Soil			<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>																		<input checked="" type="checkbox"/>		
BH21-224 SA14	05/10/21		3	Soil	Extract+Hold PHC/VOC/PAH																										
BH21-225 SA4	05/03/21		3	Soil			<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>																		<input checked="" type="checkbox"/>		
DUP-3	05/03/21		3	Soil			<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>																		<input checked="" type="checkbox"/>		
BH21-225 SA6	05/03/21		3	Soil	Extract+Hold all																										

Samples Relinquished By (Print Name and Sign): <u>ARTHUR KOITCHEVA</u> <i>AK</i>		Date: <u>21-05-13</u>	Time: <u>11:50</u>	Samples Received By (Print Name and Sign): <u>Jeff Jones</u> <i>JJ</i>		Date: <u>13 May 21</u>	Time: <u>1225</u>	Page <u>2</u> of <u>3</u>	
Samples Relinquished By (Print Name and Sign): <u>ARTHUR KOITCHEVA</u>		Date: _____	Time: _____	Samples Received By (Print Name and Sign): <u>SIMRAN</u> <i>S</i>		Date: <u>May 14/21</u>	Time: <u>9:25 am</u>	N <sup>o</sup> : _____	

*\* limited samples*



### Laboratory Use Only

Work Order #: \_\_\_\_\_

Cooler Quantity: \_\_\_\_\_

Arrival Temperatures: 6.8 | 6.8 | 6.7

Custody Seal Intact:  Yes  No  N/A

Notes: Ja

## Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water intended for human consumption)

### Report Information:

Company: Golder Associates

Contact: Laura Jones

Address: 1931 Robertson Road, Nepean Ontario

Phone: (226) 378-2489 Fax: \_\_\_\_\_

Reports to be sent to:

1. Email: Laura\_Jones@golder.com; GAL\_EQUIS@golder.com

2. Email: Rochelle\_Mathew@Golder.com

### Regulatory Requirements: No Regulatory Requirement

(Please check all applicable boxes)

Regulation 153/04 Table 3 Indicate One

Sewer Use

Regulation 558

Ind/Com

Res/Park

Sanitary

CCME

Agriculture

Storm

Prov. Water Quality Objectives (PWQO)

Soil Texture (Check One):  Coarse  Fine Indicate One

Region: \_\_\_\_\_ Indicate One

Other Indicate One

### Project Information:

Project: 21451149

Site Location: Ottawa Hospital

Sampled By: Robert Ireland

AGAT Quote #: SO

### Is this submission for a Record of Site Condition?

Yes  No

### Report Guideline on Certificate of Analysis

Yes  No

### Invoice Information:

Bill To Same: Yes  No

Company: \_\_\_\_\_

Contact: \_\_\_\_\_

Address: \_\_\_\_\_

Email: \_\_\_\_\_

Please note: If quotation number is not provided, client will be billed full price for analysis.

### 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	Metals and Inorganics	Metal Scan	Hydride Forming Metals	Client Custom Metals	ORPs: <input type="checkbox"/> B-HWS <input type="checkbox"/> Cl <sup>-</sup> <input type="checkbox"/> CN <sup>-</sup>	<input type="checkbox"/> Cr <sup>6+</sup> <input type="checkbox"/> EC <input type="checkbox"/> FOC <input type="checkbox"/> NO <sub>2</sub> /NO <sub>3</sub>	<input type="checkbox"/> Total N <input type="checkbox"/> Hg <input type="checkbox"/> pH <input type="checkbox"/> SAR	Nutrients: <input type="checkbox"/> TP <input type="checkbox"/> NH <sub>3</sub> <input type="checkbox"/> TKN	<input type="checkbox"/> NO <sub>2</sub> <input type="checkbox"/> NO <sub>3</sub> <input type="checkbox"/> NO <sub>x</sub> /NO <sub>y</sub>	Volatiles: <input type="checkbox"/> VOC <input type="checkbox"/> BTEX <input type="checkbox"/> THM	CCME Fractions 1 to 4	ABNS	PAHs	Chlorophenols	PCBs	Organochlorine Pesticides	TCLP Metals/Inorganics	Sewer Use	As, Sb, Se	PHC F1-F4	Hold PHC/BTX/VOC/PAH/MetI
BH21-226 SA1	05/04/21		3	Soil			<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>									<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>			
BH21-226 SA3	05/04/21		3	Soil											<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>							<input checked="" type="checkbox"/>	
BH21-226 SA9	05/04/21		3	Soil	Extract+Hold PHC/VOC/PAH																					
BH21-217 SA9 <i>SA8</i>	05/06/21		3	Soil	Extract +hold for PHC/BTEX																					

Samples Relinquished By (Print Name and Sign): <u>ARTHUR KUITCHOVA</u>	Date: <u>21-05-13</u>	Time: <u>11:50</u>	Samples Received By (Print Name and Sign): <u>Jess Jones</u>	Date: <u>13 May 21</u>	Time: <u>1225</u>	Page <u>3</u> of <u>3</u>
Samples Relinquished By (Print Name and Sign): _____	Date: _____	Time: _____	Samples Received By (Print Name and Sign): <u>SMIRAN</u>	Date: <u>May 14 2021</u>	Time: <u>9:25am</u>	



# AGAT

LT (Ice Bags) - 4.8/5.0/4.3  
**Laboratories**  
 1CA BIK

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

**Laboratory Use Only** 217746829  
 Work Order #: R1279808  
 Cooler Quantity: one - drive  
 Arrival Temperatures: 4.0 4.5 4.3  
 Custody Seal Intact:  Yes  No  N/A  
 Notes:

## Chain of Custody Record

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

**Report Information:**  
 Company: Golder Associates Ltd.  
 Contact: Laura Jones  
 Address: 931 ROBERTSON ROAD  
 Phone: (226) 318-2489 Fax: \_\_\_\_\_  
 Reports to be sent to:  
 1. Email: Laura.Jones@golder.com  
Rochelle.Matthew@golder.com  
 2. Email:

**Regulatory Requirements:**  
 (Please check all applicable boxes)  
 Regulation 153/04  Excess Soils R406  Sewer Use  
 Ind/Com  Sanitary  Storm  
 Res/Park  Agriculture  Regulation 558  Prov. Water Quality Objectives (PWQO)  
 Agriculture  CCME  Other  
 Soil Texture (Check One)  
 Coarse  Fine  
 Indicate One

**Project Information:**  
 Project: GAL EQUIS @ Golder.com  
 Site Location: 21451149  
OTTAWA HOSPITAL  
 Sampled By: Robert Ireland  
 AGAT ID #: 50 PO: \_\_\_\_\_  
 Please note: If quotation number is not provided, client will be billed full price for analysis.

**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**

**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

Field Filtered - Metals, Hg, CrVI, DOC	O. Reg 153				Total PCBs	VOC	Landfill Disposal Characterization TOLP: TCP: <input type="checkbox"/> M&I <input type="checkbox"/> VOCs <input type="checkbox"/> ABNs <input type="checkbox"/> B/a/P <input type="checkbox"/> PCBs	Excess Soils SPLP Rainwater Leach SPLP: <input type="checkbox"/> Metals <input type="checkbox"/> VOCs <input type="checkbox"/> SVOCs	Excess Soils Characterization Package PH, IC PMS Metals, BTEX, F1-F4	Sat - EC, SAR	Potentially Hazardous or High Concentration (Y/N)
	Metals & Inorganics	Metals: <input checked="" type="checkbox"/> CrVI, <input checked="" type="checkbox"/> Hg, <input checked="" type="checkbox"/> HWSB	BTEX (1,1-FA PHCS)	Analyze P&G T required <input type="checkbox"/> Yes <input type="checkbox"/> No							

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Y/N
BH 21-216 SA9	2021/05/05	AM PM	3	Soil	Extract/hold PHC/BTEX	
BH 21-219 SA8	2021/05/06	AM PM	2	Soil	Extract/hold PHC/BTEX	
BH 21-226 SA8	2021/05/04	AM PM	1	Soil	Extract/hold PAHs/MHC	
BH 21-217 SAT1	2021/05/05	AM PM	2	Soil	limited sample	
BH 21-224 SA100	2021/05/10	AM PM	2	Soil	limited sample	
		AM PM				
		AM PM				
		AM PM				
		AM PM				
		AM PM				
		AM PM				

Samples Relinquished By (Print Name and Sign): <u>Rochelle Matthew</u>	Date: <u>2021/05/17</u>	Time: <u>12:16</u>	Samples Received By (Print Name and Sign): <u>U. Ben the left</u>	Date: <u>21/5/17</u>	Time: <u>1:55 PM</u>
Samples Relinquished By (Print Name and Sign): <u>Upto Anne</u>	Date: <u>21/5/17</u>	Time: <u>16:00</u>	Samples Received By (Print Name and Sign): <u>JIMRAN</u>	Date: <u>May 18/21</u>	Time: <u>9:15 am</u>
Page <u>1</u> of <u>1</u> <b>No: T117043</b>					



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

ATTENTION TO: Laura Jones

PROJECT: 21451149

AGAT WORK ORDER: 21Z750740

SOIL ANALYSIS REVIEWED BY: Nivine Basily, Inorganics Report Writer

TRACE ORGANICS REVIEWED BY: Neli Popnikolova, Senior Chemist

DATE REPORTED: Jun 01, 2021

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

VERSION 1: Revised report with ID updated. 2021/06/01

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.



## Certificate of Analysis

AGAT WORK ORDER: 21Z750740

PROJECT: 21451149

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

SAMPLING SITE: Ottawa Hospital

ATTENTION TO: Laura Jones

SAMPLED BY: Robert Ireland

### O. Reg. 153(511) - All Metals (Soil)

DATE RECEIVED: 2021-05-21

DATE REPORTED: 2021-06-01

SAMPLE DESCRIPTION: BH21-222 SA1

SAMPLE TYPE: Soil

DATE SAMPLED: 2021-05-12

Parameter	Unit	G / S	RDL	2502027
Antimony	µg/g	7.5	0.8	<0.8
Arsenic	µg/g	18	1	3
Barium	µg/g	390	2.0	114
Beryllium	µg/g	4	0.4	<0.4
Boron	µg/g	120	5	<5
Boron (Hot Water Soluble)	µg/g	1.5	0.10	<0.10
Cadmium	µg/g	1.2	0.5	<0.5
Chromium	µg/g	160	5	30
Cobalt	µg/g	22	0.5	7.4
Copper	µg/g	140	1.0	18.1
Lead	µg/g	120	1	19
Molybdenum	µg/g	6.9	0.5	0.9
Nickel	µg/g	100	1	16
Selenium	µg/g	2.4	0.8	<0.8
Silver	µg/g	20	0.5	<0.5
Thallium	µg/g	1	0.5	<0.5
Uranium	µg/g	23	0.50	0.62
Vanadium	µg/g	86	0.4	34.5
Zinc	µg/g	340	5	67
Chromium, Hexavalent	µg/g	8	0.2	<0.2
Mercury	µg/g	0.27	0.10	<0.10

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

Analysis performed at AGAT Toronto (unless marked by \*)

Certified By:



*Robert Ireland*



## Certificate of Analysis

AGAT WORK ORDER: 21Z750740

PROJECT: 21451149

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

SAMPLING SITE: Ottawa Hospital

ATTENTION TO: Laura Jones

SAMPLED BY: Robert Ireland

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

DATE RECEIVED: 2021-05-21

DATE REPORTED: 2021-06-01

Parameter	Unit	SAMPLE DESCRIPTION: BH21-222 SA1    BH21-222 SA5			
		SAMPLE TYPE: Soil		Soil	
		DATE SAMPLED: 2021-05-12		2021-05-12	
		G / S	RDL	2502027	2502030
Naphthalene	µg/g	0.6	0.05	<0.05	<0.05
Acenaphthylene	µg/g	0.15	0.05	<0.05	<0.05
Acenaphthene	µg/g	7.9	0.05	<0.05	<0.05
Fluorene	µg/g	62	0.05	<0.05	<0.05
Phenanthrene	µg/g	6.2	0.05	<0.05	<0.05
Anthracene	µg/g	0.67	0.05	<0.05	<0.05
Fluoranthene	µg/g	0.69	0.05	<0.05	<0.05
Pyrene	µg/g	78	0.05	<0.05	<0.05
Benz(a)anthracene	µg/g	0.5	0.05	<0.05	<0.05
Chrysene	µg/g	7	0.05	<0.05	<0.05
Benzo(b)fluoranthene	µg/g	0.78	0.05	0.07	<0.05
Benzo(k)fluoranthene	µg/g	0.78	0.05	0.06	<0.05
Benzo(a)pyrene	µg/g	0.3	0.05	<0.05	<0.05
Indeno(1,2,3-cd)pyrene	µg/g	0.38	0.05	<0.05	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	0.05	<0.05	<0.05
Benzo(g,h,i)perylene	µg/g	6.6	0.05	<0.05	<0.05
1 and 2 Methylnaphthalene	µg/g	0.99	0.05	<0.05	<0.05
Moisture Content	%		0.1	13.4	24.5
Surrogate	Unit	Acceptable Limits			
Naphthalene-d8	%	50-140		82	78
Acenaphthene-d10	%	50-140		97	91
Chrysene-d12	%	50-140		101	102

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

2502027-2502030 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:



## Certificate of Analysis

AGAT WORK ORDER: 21Z750740

PROJECT: 21451149

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

ATTENTION TO: Laura Jones

SAMPLING SITE: Ottawa Hospital

SAMPLED BY: Robert Ireland

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

DATE RECEIVED: 2021-05-21

DATE REPORTED: 2021-06-01

Parameter	Unit	SAMPLE DESCRIPTION: BH21-222 SA1		BH21-222 SA5	
		G / S	RDL	2502027	2502030
F1 (C6 - C10)	µg/g	55	5	<5	<5
F1 (C6 to C10) minus BTEX	µg/g	55	5	<5	<5
F2 (C10 to C16)	µg/g	98	10	<10	<10
F2 (C10 to C16) minus Naphthalene	µg/g		10	<10	<10
F3 (C16 to C34)	µg/g	300	50	250	<50
F3 (C16 to C34) minus PAHs	µg/g		50	250	<50
F4 (C34 to C50)	µg/g	2800	50	430	<50
Gravimetric Heavy Hydrocarbons	µg/g	2800	50	NA	NA
Moisture Content	%		0.1	13.4	24.5
Surrogate	Unit	Acceptable Limits			
Toluene-d8	% Recovery	50-140		78	79
Terphenyl	%	60-140		96	92

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

2502027-2502030 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:



## Certificate of Analysis

AGAT WORK ORDER: 21Z750740

PROJECT: 21451149

5835 COOPERS AVENUE  
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<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD

SAMPLING SITE: Ottawa Hospital

ATTENTION TO: Laura Jones

SAMPLED BY: Robert Ireland

### O. Reg. 153(511) - VOCs (Soil)

DATE RECEIVED: 2021-05-21

DATE REPORTED: 2021-06-01

Parameter	Unit	SAMPLE DESCRIPTION: BH21-222 SA1		BH21-222 SA5	
		SAMPLE TYPE: Soil		Soil	
		DATE SAMPLED:	2021-05-12	2021-05-12	2021-05-12
		G / S	RDL	2502027	2502030
Dichlorodifluoromethane	µg/g	16	0.05	<0.05	<0.05
Vinyl Chloride	ug/g	0.02	0.02	<0.02	<0.02
Bromomethane	ug/g	0.05	0.05	<0.05	<0.05
Trichlorofluoromethane	ug/g	4	0.05	<0.05	<0.05
Acetone	ug/g	16	0.50	<0.50	<0.50
1,1-Dichloroethylene	ug/g	0.05	0.05	<0.05	<0.05
Methylene Chloride	ug/g	0.1	0.05	<0.05	<0.05
Trans- 1,2-Dichloroethylene	ug/g	0.084	0.05	<0.05	<0.05
Methyl tert-butyl Ether	ug/g	0.75	0.05	<0.05	<0.05
1,1-Dichloroethane	ug/g	3.5	0.02	<0.02	<0.02
Methyl Ethyl Ketone	ug/g	16	0.50	<0.50	<0.50
Cis- 1,2-Dichloroethylene	ug/g	3.4	0.02	<0.02	<0.02
Chloroform	ug/g	0.05	0.04	<0.04	<0.04
1,2-Dichloroethane	ug/g	0.05	0.03	<0.03	<0.03
1,1,1-Trichloroethane	ug/g	0.38	0.05	<0.05	<0.05
Carbon Tetrachloride	ug/g	0.05	0.05	<0.05	<0.05
Benzene	ug/g	0.21	0.02	<0.02	<0.02
1,2-Dichloropropane	ug/g	0.05	0.03	<0.03	<0.03
Trichloroethylene	ug/g	0.061	0.03	<0.03	<0.03
Bromodichloromethane	ug/g	13	0.05	<0.05	<0.05
Methyl Isobutyl Ketone	ug/g	1.7	0.50	<0.50	<0.50
1,1,2-Trichloroethane	ug/g	0.05	0.04	<0.04	<0.04
Toluene	ug/g	2.3	0.05	<0.05	<0.05
Dibromochloromethane	ug/g	9.4	0.05	<0.05	<0.05
Ethylene Dibromide	ug/g	0.05	0.04	<0.04	<0.04
Tetrachloroethylene	ug/g	0.28	0.05	<0.05	<0.05
1,1,1,2-Tetrachloroethane	ug/g	0.058	0.04	<0.04	<0.04
Chlorobenzene	ug/g	2.4	0.05	<0.05	<0.05
Ethylbenzene	ug/g	2	0.05	<0.05	<0.05
m & p-Xylene	ug/g		0.05	<0.05	<0.05

Certified By:





## Certificate of Analysis

AGAT WORK ORDER: 21Z750740

PROJECT: 21451149

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CLIENT NAME: GOLDER ASSOCIATES LTD

SAMPLING SITE: Ottawa Hospital

ATTENTION TO: Laura Jones

SAMPLED BY: Robert Ireland

### O. Reg. 153(511) - VOCs (Soil)

DATE RECEIVED: 2021-05-21

DATE REPORTED: 2021-06-01

Parameter	Unit	SAMPLE DESCRIPTION: BH21-222 SA1		BH21-222 SA5	
		G / S	RDL	2502027	2502030
Bromoform	ug/g	0.27	0.05	<0.05	<0.05
Styrene	ug/g	0.7	0.05	<0.05	<0.05
1,1,2,2-Tetrachloroethane	ug/g	0.05	0.05	<0.05	<0.05
o-Xylene	ug/g		0.05	<0.05	<0.05
1,3-Dichlorobenzene	ug/g	4.8	0.05	<0.05	<0.05
1,4-Dichlorobenzene	ug/g	0.083	0.05	<0.05	<0.05
1,2-Dichlorobenzene	ug/g	3.4	0.05	<0.05	<0.05
Xylenes (Total)	ug/g	3.1	0.05	<0.05	<0.05
1,3-Dichloropropene (Cis + Trans)	µg/g	0.05	0.04	<0.04	<0.04
n-Hexane	µg/g	2.8	0.05	<0.05	<0.05
Moisture Content	%		0.1	13.4	24.5
Surrogate	Unit	Acceptable Limits			
Toluene-d8	% Recovery	50-140		92	88
4-Bromofluorobenzene	% Recovery	50-140		93	89

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

2502027-2502030 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:



## Certificate of Analysis

AGAT WORK ORDER: 21Z750740

PROJECT: 21451149

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<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD

SAMPLING SITE: Ottawa Hospital

ATTENTION TO: Laura Jones

SAMPLED BY: Robert Ireland

### Total PCBs (soil)

DATE RECEIVED: 2021-05-21

DATE REPORTED: 2021-06-01

SAMPLE DESCRIPTION: BH21-222 SA1

SAMPLE TYPE: Soil

DATE SAMPLED: 2021-05-12

Parameter	Unit	G / S	RDL	2502027
Polychlorinated Biphenyls	µg/g	0.35	0.1	<0.1
Moisture Content	%		0.1	13.4
Surrogate	Unit	Acceptable Limits		
Decachlorobiphenyl	%	60-130		108

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

2502027 Results are based on the dry weight of soil extracted.

Analysis performed at AGAT Toronto (unless marked by \*)

Certified By:

## Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD  
 PROJECT: 21451149  
 SAMPLING SITE: Ottawa Hospital

AGAT WORK ORDER: 21Z750740  
 ATTENTION TO: Laura Jones  
 SAMPLED BY: Robert Ireland

Soil Analysis															
RPT Date: Jun 01, 2021			DUPLICATE				Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE		MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Measured Value		Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - All Metals (Soil)															
Antimony	2519108		<0.8	<0.8	NA	< 0.8	130%	70%	130%	108%	80%	120%	101%	70%	130%
Arsenic	2519108		2	2	NA	< 1	113%	70%	130%	109%	80%	120%	110%	70%	130%
Barium	2519108		12.1	12.3	1.6%	< 2.0	109%	70%	130%	105%	80%	120%	104%	70%	130%
Beryllium	2519108		<0.4	<0.4	NA	< 0.4	73%	70%	130%	106%	80%	120%	100%	70%	130%
Boron	2519108		5	5	NA	< 5	98%	70%	130%	98%	80%	120%	90%	70%	130%
Boron (Hot Water Soluble)	2502027	2502027	<0.10	<0.10	NA	< 0.10	82%	60%	140%	92%	70%	130%	92%	60%	140%
Cadmium	2519108		<0.5	<0.5	NA	< 0.5	88%	70%	130%	106%	80%	120%	103%	70%	130%
Chromium	2519108		8	8	NA	< 5	96%	70%	130%	109%	80%	120%	112%	70%	130%
Cobalt	2519108		3.1	3.1	0.0%	< 0.5	99%	70%	130%	110%	80%	120%	106%	70%	130%
Copper	2519108		7.7	7.8	1.3%	< 1.0	85%	70%	130%	107%	80%	120%	94%	70%	130%
Lead	2519108		6	6	0.0%	< 1	107%	70%	130%	103%	80%	120%	93%	70%	130%
Molybdenum	2519108		<0.5	<0.5	NA	< 0.5	114%	70%	130%	114%	80%	120%	113%	70%	130%
Nickel	2519108		6	5	18.2%	< 1	97%	70%	130%	109%	80%	120%	100%	70%	130%
Selenium	2519108		<0.8	<0.8	NA	< 0.8	131%	70%	130%	103%	80%	120%	106%	70%	130%
Silver	2519108		<0.5	<0.5	NA	< 0.5	98%	70%	130%	110%	80%	120%	94%	70%	130%
Thallium	2519108		<0.5	<0.5	NA	< 0.5	98%	70%	130%	105%	80%	120%	98%	70%	130%
Uranium	2519108		<0.50	<0.50	NA	< 0.50	103%	70%	130%	103%	80%	120%	102%	70%	130%
Vanadium	2519108		13.9	14.0	0.7%	< 0.4	104%	70%	130%	108%	80%	120%	117%	70%	130%
Zinc	2519108		32	32	0.0%	< 5	101%	70%	130%	112%	80%	120%	113%	70%	130%
Chromium, Hexavalent	2512724		<0.2	<0.2	NA	< 0.2	92%	70%	130%	93%	80%	120%	73%	70%	130%
Mercury	2519108		<0.10	<0.10	NA	< 0.10	107%	70%	130%	104%	80%	120%	100%	70%	130%

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

More than 90% of the elements met acceptance limits and overall data quality is acceptable for use. For a multi-element scan up to 10% of analytes may exceed the quoted limits by up to 10% absolute.

Certified By:



*Nivine Basily*

## Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD  
 PROJECT: 21451149  
 SAMPLING SITE: Ottawa Hospital

AGAT WORK ORDER: 21Z750740  
 ATTENTION TO: Laura Jones  
 SAMPLED BY: Robert Ireland

Trace Organics Analysis															
RPT Date: Jun 01, 2021			DUPLICATE				Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE		MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	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)	2509529		<5	<5	NA	< 5	103%	60%	140%	100%	60%	140%	100%	60%	140%
F2 (C10 to C16)	2502030	2502030	< 10	< 10	NA	< 10	97%	60%	140%	84%	60%	140%	79%	60%	140%
F3 (C16 to C34)	2502030	2502030	< 10	< 10	NA	< 10	101%	60%	140%	80%	60%	140%	92%	60%	140%
F4 (C34 to C50)	2502030	2502030	< 50	< 50	NA	< 50	101%	60%	140%	97%	60%	140%	86%	60%	140%

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

Naphthalene	2502030	2502030	<0.05	<0.05	NA	< 0.05	85%	50%	140%	89%	50%	140%	66%	50%	140%
Acenaphthylene	2502030	2502030	<0.05	<0.05	NA	< 0.05	103%	50%	140%	75%	50%	140%	75%	50%	140%
Acenaphthene	2502030	2502030	<0.05	<0.05	NA	< 0.05	107%	50%	140%	86%	50%	140%	78%	50%	140%
Fluorene	2502030	2502030	<0.05	<0.05	NA	< 0.05	111%	50%	140%	85%	50%	140%	82%	50%	140%
Phenanthrene	2502030	2502030	<0.05	<0.05	NA	< 0.05	90%	50%	140%	84%	50%	140%	72%	50%	140%

Anthracene	2502030	2502030	<0.05	<0.05	NA	< 0.05	121%	50%	140%	102%	50%	140%	91%	50%	140%
Fluoranthene	2502030	2502030	<0.05	<0.05	NA	< 0.05	126%	50%	140%	87%	50%	140%	96%	50%	140%
Pyrene	2502030	2502030	<0.05	<0.05	NA	< 0.05	120%	50%	140%	85%	50%	140%	93%	50%	140%
Benz(a)anthracene	2502030	2502030	<0.05	<0.05	NA	< 0.05	85%	50%	140%	86%	50%	140%	76%	50%	140%
Chrysene	2502030	2502030	<0.05	<0.05	NA	< 0.05	132%	50%	140%	98%	50%	140%	99%	50%	140%

Benzo(b)fluoranthene	2502030	2502030	<0.05	<0.05	NA	< 0.05	64%	50%	140%	85%	50%	140%	64%	50%	140%
Benzo(k)fluoranthene	2502030	2502030	<0.05	<0.05	NA	< 0.05	93%	50%	140%	84%	50%	140%	83%	50%	140%
Benzo(a)pyrene	2502030	2502030	<0.05	<0.05	NA	< 0.05	84%	50%	140%	75%	50%	140%	81%	50%	140%
Indeno(1,2,3-cd)pyrene	2502030	2502030	<0.05	<0.05	NA	< 0.05	65%	50%	140%	89%	50%	140%	57%	50%	140%
Dibenz(a,h)anthracene	2502030	2502030	<0.05	<0.05	NA	< 0.05	68%	50%	140%	85%	50%	140%	62%	50%	140%

Benzo(g,h,i)perylene	2502030	2502030	<0.05	<0.05	NA	< 0.05	63%	50%	140%	84%	50%	140%	56%	50%	140%
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O. Reg. 153(511) - VOCs (Soil)

Dichlorodifluoromethane	2502030	2502030	<0.05	<0.05	NA	< 0.05	88%	50%	140%	99%	50%	140%	101%	50%	140%
Vinyl Chloride	2502030	2502030	<0.02	<0.02	NA	< 0.02	104%	50%	140%	99%	50%	140%	86%	50%	140%
Bromomethane	2502030	2502030	<0.05	<0.05	NA	< 0.05	81%	50%	140%	73%	50%	140%	76%	50%	140%
Trichlorofluoromethane	2502030	2502030	<0.05	<0.05	NA	< 0.05	78%	50%	140%	79%	50%	140%	75%	50%	140%
Acetone	2502030	2502030	<0.50	<0.50	NA	< 0.50	75%	50%	140%	88%	50%	140%	89%	50%	140%

1,1-Dichloroethylene	2502030	2502030	<0.05	<0.05	NA	< 0.05	87%	50%	140%	116%	60%	130%	76%	50%	140%
Methylene Chloride	2502030	2502030	<0.05	<0.05	NA	< 0.05	94%	50%	140%	112%	60%	130%	99%	50%	140%
Trans- 1,2-Dichloroethylene	2502030	2502030	<0.05	<0.05	NA	< 0.05	88%	50%	140%	106%	60%	130%	76%	50%	140%
Methyl tert-butyl Ether	2502030	2502030	<0.05	<0.05	NA	< 0.05	82%	50%	140%	87%	60%	130%	83%	50%	140%
1,1-Dichloroethane	2502030	2502030	<0.02	<0.02	NA	< 0.02	92%	50%	140%	112%	60%	130%	86%	50%	140%

Methyl Ethyl Ketone	2502030	2502030	<0.50	<0.50	NA	< 0.50	99%	50%	140%	88%	50%	140%	81%	50%	140%
Cis- 1,2-Dichloroethylene	2502030	2502030	<0.02	<0.02	NA	< 0.02	77%	50%	140%	96%	60%	130%	79%	50%	140%
Chloroform	2502030	2502030	<0.04	<0.04	NA	< 0.04	80%	50%	140%	103%	60%	130%	82%	50%	140%
1,2-Dichloroethane	2502030	2502030	<0.03	<0.03	NA	< 0.03	106%	50%	140%	101%	60%	130%	101%	50%	140%
1,1,1-Trichloroethane	2502030	2502030	<0.05	<0.05	NA	< 0.05	73%	50%	140%	94%	60%	130%	102%	50%	140%

Carbon Tetrachloride	2502030	2502030	<0.05	<0.05	NA	< 0.05	90%	50%	140%	95%	60%	130%	81%	50%	140%
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## Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 21Z750740

PROJECT: 21451149

ATTENTION TO: Laura Jones

SAMPLING SITE: Ottawa Hospital

SAMPLED BY: Robert Ireland

### Trace Organics Analysis (Continued)

RPT Date: Jun 01, 2021			DUPLICATE				Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Measured Value		Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits		
								Lower	Upper		Lower	Upper		Lower	Upper	
Benzene	2502030	2502030	<0.02	<0.02	NA	< 0.02	113%	50%	140%	95%	60%	130%	110%	50%	140%	
1,2-Dichloropropane	2502030	2502030	<0.03	<0.03	NA	< 0.03	105%	50%	140%	85%	60%	130%	108%	50%	140%	
Trichloroethylene	2502030	2502030	<0.03	<0.03	NA	< 0.03	107%	50%	140%	94%	60%	130%	106%	50%	140%	
Bromodichloromethane	2502030	2502030	<0.05	<0.05	NA	< 0.05	76%	50%	140%	93%	60%	130%	80%	50%	140%	
Methyl Isobutyl Ketone	2502030	2502030	<0.50	<0.50	NA	< 0.50	94%	50%	140%	97%	50%	140%	87%	50%	140%	
1,1,2-Trichloroethane	2502030	2502030	<0.04	<0.04	NA	< 0.04	100%	50%	140%	93%	60%	130%	117%	50%	140%	
Toluene	2502030	2502030	<0.05	<0.05	NA	< 0.05	96%	50%	140%	103%	60%	130%	111%	50%	140%	
Dibromochloromethane	2502030	2502030	<0.05	<0.05	NA	< 0.05	79%	50%	140%	81%	60%	130%	76%	50%	140%	
Ethylene Dibromide	2502030	2502030	<0.04	<0.04	NA	< 0.04	95%	50%	140%	85%	60%	130%	109%	50%	140%	
Tetrachloroethylene	2502030	2502030	<0.05	<0.05	NA	< 0.05	89%	50%	140%	101%	60%	130%	104%	50%	140%	
1,1,1,2-Tetrachloroethane	2502030	2502030	<0.04	<0.04	NA	< 0.04	100%	50%	140%	109%	60%	130%	84%	50%	140%	
Chlorobenzene	2502030	2502030	<0.05	<0.05	NA	< 0.05	91%	50%	140%	97%	60%	130%	113%	50%	140%	
Ethylbenzene	2502030	2502030	<0.05	<0.05	NA	< 0.05	91%	50%	140%	95%	60%	130%	108%	50%	140%	
m & p-Xylene	2502030	2502030	<0.05	<0.05	NA	< 0.05	93%	50%	140%	109%	60%	130%	114%	50%	140%	
Bromoform	2502030	2502030	<0.05	<0.05	NA	< 0.05	78%	50%	140%	77%	60%	130%	70%	50%	140%	
Styrene	2502030	2502030	<0.05	<0.05	NA	< 0.05	114%	50%	140%	94%	60%	130%	105%	50%	140%	
1,1,2,2-Tetrachloroethane	2502030	2502030	<0.05	<0.05	NA	< 0.05	100%	50%	140%	102%	60%	130%	98%	50%	140%	
o-Xylene	2502030	2502030	<0.05	<0.05	NA	< 0.05	94%	50%	140%	98%	60%	130%	97%	50%	140%	
1,3-Dichlorobenzene	2502030	2502030	<0.05	<0.05	NA	< 0.05	104%	50%	140%	109%	60%	130%	116%	50%	140%	
1,4-Dichlorobenzene	2502030	2502030	<0.05	<0.05	NA	< 0.05	82%	50%	140%	90%	60%	130%	75%	50%	140%	
1,2-Dichlorobenzene	2502030	2502030	<0.05	<0.05	NA	< 0.05	100%	50%	140%	101%	60%	130%	110%	50%	140%	
n-Hexane	2502030	2502030	<0.05	<0.05	NA	< 0.05	94%	50%	140%	78%	60%	130%	107%	50%	140%	
Total PCBs (soil)																
Polychlorinated Biphenyls	2502027	2502027	< 0.1	< 0.1	NA	< 0.1	98%	60%	140%	102%	60%	140%	96%	60%	140%	

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

Certified By:



## QA Violation

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 21Z750740

PROJECT: 21451149

ATTENTION TO: Laura Jones

RPT Date: Jun 01, 2021			REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Sample Id	Sample Description	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
				Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - All Metals (Soil)											
Selenium		BH21-222 SA1	131%	70%	130%	103%	80%	120%	106%	70%	130%

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

More than 90% of the elements met acceptance limits and overall data quality is acceptable for use. For a multi-element scan up to 10% of analytes may exceed the quoted limits by up to 10% absolute.



## Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD  
 PROJECT: 21451149  
 SAMPLING SITE: Ottawa Hospital

AGAT WORK ORDER: 21Z750740  
 ATTENTION TO: Laura Jones  
 SAMPLED BY: Robert Ireland

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
Mercury	MET-93-6103	modified from EPA 7471B and SM 3112 B	ICP-MS

## Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 21Z750740

PROJECT: 21451149

ATTENTION TO: Laura Jones

SAMPLING SITE: Ottawa Hospital

SAMPLED BY: Robert Ireland

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 Methylnaphthalene	ORG-91-5106	modified from EPA 3570 and EPA 8270E	GC/MS
Naphthalene-d8	ORG-91-5106	modified from EPA 3541 and EPA 8270E	GC/MS
Acenaphthene-d10	ORG-91-5106	modified from EPA 3541 and EPA 8270E	GC/MS
Chrysene-d12	ORG-91-5106	modified from EPA 3541 and EPA 8270E	GC/MS
Moisture Content	ORG-91-5009	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-91-5009	modified from EPA SW-846 5030C & 8260D	(P&T)GC/MS
F2 (C10 to C16)	VOL-91-5009	modified from CCME Tier 1 Method	GC/FID
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 5035C and EPA 8260D	(P&T)GC/MS



## Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 21Z750740

PROJECT: 21451149

ATTENTION TO: Laura Jones

SAMPLING SITE: Ottawa Hospital

SAMPLED BY: Robert Ireland

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

## Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 21Z750740

PROJECT: 21451149

ATTENTION TO: Laura Jones

SAMPLING SITE: Ottawa Hospital

SAMPLED BY: Robert Ireland

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
m & p-Xylene	VOL-91-5002	modified from EPA 5035C and EPA 8260D	(P&T)GC/MS
Bromoform	VOL-91-5002	modified from EPA 5035C and EPA 8260D	(P&T)GC/MS
Styrene	VOL-91-5002	modified from EPA 5035C and EPA 8260D	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5002	modified from EPA 5035C and EPA 8260D	(P&T)GC/MS
o-Xylene	VOL-91-5002	modified from EPA 5035C and EPA 8260D	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5002	modified from EPA 5035C and EPA 8260D	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5002	modified from EPA 5035C and EPA 8260D	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5002	modified from EPA 5035C and EPA 8260D	(P&T)GC/MS
Xylenes (Total)	VOL-91-5002	modified from EPA 5035C and EPA 8260D	(P&T)GC/MS
1,3-Dichloropropene (Cis + Trans)	VOL-91-5002	modified from EPA 5035C and EPA 8260D	(P&T)GC/MS
n-Hexane	VOL-91-5002	modified from EPA 5035C and EPA 8260D	(P&T)GC/MS
Toluene-d8	VOL-91-5002	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91-5002	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
Polychlorinated Biphenyls	ORG-91-5113	modified from EPA SW-846 3541 & 8082	GC/ECD
Decachlorobiphenyl	ORG-91-5113	modified from EPA SW-846 3541 & 8082	GC/ECD



ILLB11C

**Laboratory Use Only**  
Work Order #: 212750740  
Cooler Quantity: one - ice  
Arrival Temperatures: 9.3 | 9.5 | 9.1  
LT (ice) 7.1 | 5.1 | 3.1  
Custody Seal Intact:  Yes  No  N/A  
Notes:

## Chain of Custody Record If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water intended for human consumption)

**Report Information:**  
Company: Golder Associates  
Contact: Laura Jones  
Address: 1931 Robertson Road, Nepean Ontario  
Phone: (226) 378-2489 Fax: \_\_\_\_\_  
Reports to be sent to:  
1. Email: Laura\_Jones@golder.com; GAL\_EQUIS@golder.com  
2. Email: Rochelle\_Mathew@Golder.com

**Regulatory Requirements:**  **No Regulatory Requirement**  
(Please check all applicable boxes)

Regulation 153/04 Table 3 Indicate One  
 Sewer Use  Regulation 558  
 Sanitary  CCME  
 Storm  Prov. Water Quality Objectives (PWQO)  
 Other  
 Ind/Com  Agriculture  
 Res/Park  
 Soil Texture (Check One) Region: \_\_\_\_\_ Indicate One  
 Coarse  Fine  Fine

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  1 Business Day  
OR Date Required (Rush Surcharges May Apply):  
          
*Please provide prior notification for rush TAT*  
*\*TAT is exclusive of weekends and statutory holidays*

**Project Information:**  
Project: 21451149  
Site Location: Ottawa Hospital  
Sampled By: Robert Ireland  
AGAT Quote #: SO  
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	Metals and Inorganics	Metal Scan	Hydride Forming Metals	Client Custom Metals	ORPs: <input type="checkbox"/> B-HWS <input type="checkbox"/> Cr <input type="checkbox"/> CN <input type="checkbox"/> Cr6 <input type="checkbox"/> EC <input type="checkbox"/> FOC <input type="checkbox"/> NO3/NO2 <input type="checkbox"/> Total N <input type="checkbox"/> Hg <input type="checkbox"/> pH <input type="checkbox"/> SAR Nutrients: <input type="checkbox"/> TP <input type="checkbox"/> NH3 <input type="checkbox"/> TKN <input type="checkbox"/> NO3 <input type="checkbox"/> NO2 <input type="checkbox"/> NO/NO2 Volatiles: <input type="checkbox"/> VOC <input type="checkbox"/> BTEX <input type="checkbox"/> THM	CCME Fractions 1 to 4	ABNs	PAHs	Chlorophenols	PCBs	Organochlorine Pesticides	TCLP Metals/Inorganics	Sewer Use	As, Sb, Se	PHC F1-F4	VOCs	pH	XtrHd PhC/VOC/PAH/PCB/mll
BH21-222 SA1	05/12/21		3	Soil			<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
BH21-222 SA3	05/12/21		2	Soil	limited sample, hold VOCs		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>								<input checked="" type="checkbox"/>						
BH21-222 SA5	05/12/21		3	Soil									<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				
BH21-222 SA12	05/12/21		3	Soil	Extract+Hold for all																<input checked="" type="checkbox"/>		

Samples Relinquished By (Print Name and Sign): <u>Rochelle Mathew</u> <i>mathew</i>	Date: <u>05/21/2021</u>	Time: <u>13:00</u>	Samples Received By (Print Name and Sign): <u>LAB</u>	Date: <u>21-5-21</u>	Time: <u>15h30</u>	Page <u>1</u> of <u>3</u>
Samples Relinquished By (Print Name and Sign): <u>Robert Ireland</u> <i>rotopiw</i>	Date: <u>21-5-21</u>	Time: <u>16h00</u>	Samples Received By (Print Name and Sign): <u>Adriana Bellavia</u> <i>Abellovia</i>	Date: <u>May 22/21</u>	Time: <u>11:30</u>	N#:



## Certificate of Analysis

AGAT WORK ORDER: 21Z753729

PROJECT: 229413340

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

ATTENTION TO: Laura Jones

SAMPLING SITE:

SAMPLED BY:

### O. Reg. 153(511) - All Metals (Soil)

DATE RECEIVED: 2021-05-28

DATE REPORTED: 2021-06-04

Parameter	Unit	SAMPLE DESCRIPTION: 21-221 SA1		
		G / S	RDL	2534927
Antimony	µg/g	7.5	0.8	<0.8
Arsenic	µg/g	18	1	2
Barium	µg/g	390	2.0	105
Beryllium	µg/g	4	0.4	<0.4
Boron	µg/g	120	5	<5
Boron (Hot Water Soluble)	µg/g	1.5	0.10	0.25
Cadmium	µg/g	1.2	0.5	<0.5
Chromium	µg/g	160	5	23
Cobalt	µg/g	22	0.5	6.6
Copper	µg/g	140	1.0	12.5
Lead	µg/g	120	1	12
Molybdenum	µg/g	6.9	0.5	<0.5
Nickel	µg/g	100	1	13
Selenium	µg/g	2.4	0.8	<0.8
Silver	µg/g	20	0.5	<0.5
Thallium	µg/g	1	0.5	<0.5
Uranium	µg/g	23	0.50	0.73
Vanadium	µg/g	86	0.4	31.4
Zinc	µg/g	340	5	41
Chromium, Hexavalent	µg/g	8	0.2	<0.2
Mercury	µg/g	0.27	0.10	<0.10

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

Analysis performed at AGAT Toronto (unless marked by \*)

Certified By:





## Certificate of Analysis

AGAT WORK ORDER: 21Z753729

PROJECT: 229413340

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

ATTENTION TO: Laura Jones

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2021-05-28

DATE REPORTED: 2021-06-04

Parameter	Unit	SAMPLE DESCRIPTION:		21-221 SA1	21-221 SA3
		G / S	RDL	2534927	2534928
Naphthalene	µg/g	0.6	0.05	<0.05	<0.05
Acenaphthylene	µg/g	0.15	0.05	<0.05	<0.05
Acenaphthene	µg/g	7.9	0.05	<0.05	<0.05
Fluorene	µg/g	62	0.05	<0.05	<0.05
Phenanthrene	µg/g	6.2	0.05	<0.05	<0.05
Anthracene	µg/g	0.67	0.05	<0.05	<0.05
Fluoranthene	µg/g	0.69	0.05	<0.05	<0.05
Pyrene	µg/g	78	0.05	<0.05	<0.05
Benz(a)anthracene	µg/g	0.5	0.05	<0.05	<0.05
Chrysene	µg/g	7	0.05	<0.05	<0.05
Benzo(b)fluoranthene	µg/g	0.78	0.05	<0.05	<0.05
Benzo(k)fluoranthene	µg/g	0.78	0.05	<0.05	<0.05
Benzo(a)pyrene	µg/g	0.3	0.05	<0.05	<0.05
Indeno(1,2,3-cd)pyrene	µg/g	0.38	0.05	<0.05	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	0.05	<0.05	<0.05
Benzo(g,h,i)perylene	µg/g	6.6	0.05	<0.05	<0.05
1 and 2 Methylnaphthalene	µg/g	0.99	0.05	<0.05	<0.05
Moisture Content	%		0.1	11.0	11.5
Surrogate	Unit	Acceptable Limits			
Naphthalene-d8	%	50-140		79	76
Acenaphthene-d10	%	50-140		83	74
Chrysene-d12	%	50-140		75	69

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

2534927-2534928 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:



## Certificate of Analysis

AGAT WORK ORDER: 21Z753729

PROJECT: 229413340

5835 COOPERS AVENUE  
MISSISSAUGA, ONTARIO  
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FAX (905)712-5122  
<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Laura Jones

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2021-05-28

DATE REPORTED: 2021-06-04

SAMPLE DESCRIPTION: 21-221 SA1				
SAMPLE TYPE: Soil				
DATE SAMPLED: 2021-05-20				
Parameter	Unit	G / S	RDL	2534927
F1 (C6 - C10)	µg/g	55	5	<5
F1 (C6 to C10) minus BTEX	µg/g	55	5	<5
F2 (C10 to C16)	µg/g	98	10	<10
F2 (C10 to C16) minus Naphthalene	µg/g		10	<10
F3 (C16 to C34)	µg/g	300	50	<50
F3 (C16 to C34) minus PAHs	µg/g		50	<50
F4 (C34 to C50)	µg/g	2800	50	<50
Gravimetric Heavy Hydrocarbons	µg/g	2800	50	NA
Moisture Content	%		0.1	11.0
Surrogate	Unit	Acceptable Limits		
Toluene-d8	% Recovery	50-140		91
Terphenyl	%	60-140		107

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

2534927 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:



## Certificate of Analysis

AGAT WORK ORDER: 21Z753729

PROJECT: 229413340

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

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Laura Jones

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2021-05-28

DATE REPORTED: 2021-06-04

SAMPLE DESCRIPTION: 21-221 SA3

SAMPLE TYPE: Soil

DATE SAMPLED: 2021-05-20

Parameter	Unit	G / S	RDL	2534928
Benzene	µg/g	0.21	0.02	<0.02
Toluene	µg/g	2.3	0.05	<0.05
Ethylbenzene	µg/g	2	0.05	<0.05
m & p-Xylene	µg/g		0.05	<0.05
o-Xylene	µg/g		0.05	<0.05
Xylenes (Total)	µg/g	3.1	0.05	<0.05
F1 (C6 - C10)	µg/g	55	5	<5
F1 (C6 to C10) minus BTEX	µg/g	55	5	<5
F2 (C10 to C16)	µg/g	98	10	<10
F2 (C10 to C16) minus Naphthalene	µg/g		10	<10
F3 (C16 to C34)	µg/g	300	50	<50
F3 (C16 to C34) minus PAHs	µg/g		50	<50
F4 (C34 to C50)	µg/g	2800	50	<50
Gravimetric Heavy Hydrocarbons	µg/g	2800	50	NA
Moisture Content	%		0.1	11.5
Surrogate	Unit	Acceptable Limits		
Toluene-d8	% Recovery	60-140		78
Terphenyl	%	60-140		101

Certified By:



## Certificate of Analysis

AGAT WORK ORDER: 21Z753729

PROJECT: 229413340

5835 COOPERS AVENUE  
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<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Laura Jones

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2021-05-28

DATE REPORTED: 2021-06-04

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

2534928 Results are based on sample dry weight.  
The C6-C10 fraction is calculated using toluene response factor.  
Xylenes total is a calculated parameter. The calculated value is the sum of m&p-Xylene and o-Xylene.  
C6-C10 (F1 minus BTEX) is a calculated parameter. The calculated value is F1 minus BTEX.  
The calculated parameters are non-accredited. The parameters that are components of the calculation are accredited.  
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and 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:





## Certificate of Analysis

AGAT WORK ORDER: 21Z753729

PROJECT: 229413340

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CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Laura Jones

SAMPLING SITE:

SAMPLED BY:

### O. Reg. 153(511) - VOCs (Soil)

DATE RECEIVED: 2021-05-28

DATE REPORTED: 2021-06-04

SAMPLE DESCRIPTION: 21-221 SA1

SAMPLE TYPE: Soil

DATE SAMPLED: 2021-05-20

Parameter	Unit	G / S	RDL	2534927
Dichlorodifluoromethane	ug/g	16	0.05	<0.05
Vinyl Chloride	ug/g	0.02	0.02	<0.02
Bromomethane	ug/g	0.05	0.05	<0.05
Trichlorofluoromethane	ug/g	4	0.05	<0.05
Acetone	ug/g	16	0.50	<0.50
1,1-Dichloroethylene	ug/g	0.05	0.05	<0.05
Methylene Chloride	ug/g	0.1	0.05	<0.05
Trans- 1,2-Dichloroethylene	ug/g	0.084	0.05	<0.05
Methyl tert-butyl Ether	ug/g	0.75	0.05	<0.05
1,1-Dichloroethane	ug/g	3.5	0.02	<0.02
Methyl Ethyl Ketone	ug/g	16	0.50	<0.50
Cis- 1,2-Dichloroethylene	ug/g	3.4	0.02	<0.02
Chloroform	ug/g	0.05	0.04	<0.04
1,2-Dichloroethane	ug/g	0.05	0.03	<0.03
1,1,1-Trichloroethane	ug/g	0.38	0.05	<0.05
Carbon Tetrachloride	ug/g	0.05	0.05	<0.05
Benzene	ug/g	0.21	0.02	<0.02
1,2-Dichloropropane	ug/g	0.05	0.03	<0.03
Trichloroethylene	ug/g	0.061	0.03	<0.03
Bromodichloromethane	ug/g	13	0.05	<0.05
Methyl Isobutyl Ketone	ug/g	1.7	0.50	<0.50
1,1,2-Trichloroethane	ug/g	0.05	0.04	<0.04
Toluene	ug/g	2.3	0.05	<0.05
Dibromochloromethane	ug/g	9.4	0.05	<0.05
Ethylene Dibromide	ug/g	0.05	0.04	<0.04
Tetrachloroethylene	ug/g	0.28	0.05	<0.05
1,1,1,2-Tetrachloroethane	ug/g	0.058	0.04	<0.04
Chlorobenzene	ug/g	2.4	0.05	<0.05
Ethylbenzene	ug/g	2	0.05	<0.05
m & p-Xylene	ug/g		0.05	<0.05

Certified By:





## Certificate of Analysis

AGAT WORK ORDER: 21Z753729

PROJECT: 229413340

5835 COOPERS AVENUE  
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<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Laura Jones

SAMPLING SITE:

SAMPLED BY:

### O. Reg. 153(511) - VOCs (Soil)

DATE RECEIVED: 2021-05-28

DATE REPORTED: 2021-06-04

SAMPLE DESCRIPTION: 21-221 SA1

SAMPLE TYPE: Soil

DATE SAMPLED: 2021-05-20

Parameter	Unit	G / S	RDL	2534927
Bromoform	ug/g	0.27	0.05	<0.05
Styrene	ug/g	0.7	0.05	<0.05
1,1,2,2-Tetrachloroethane	ug/g	0.05	0.05	<0.05
o-Xylene	ug/g		0.05	<0.05
1,3-Dichlorobenzene	ug/g	4.8	0.05	<0.05
1,4-Dichlorobenzene	ug/g	0.083	0.05	<0.05
1,2-Dichlorobenzene	ug/g	3.4	0.05	<0.05
Xylenes (Total)	ug/g	3.1	0.05	<0.05
1,3-Dichloropropene (Cis + Trans)	µg/g	0.05	0.04	<0.04
n-Hexane	µg/g	2.8	0.05	<0.05
Moisture Content	%		0.1	11.0
Surrogate	Unit	Acceptable Limits		
Toluene-d8	% Recovery	50-140		91
4-Bromofluorobenzene	% Recovery	50-140		88

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

2534927 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:



## Certificate of Analysis

AGAT WORK ORDER: 21Z753729

PROJECT: 229413340

5835 COOPERS AVENUE  
MISSISSAUGA, ONTARIO  
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CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Laura Jones

SAMPLING SITE:

SAMPLED BY:

### Total PCBs (soil)

DATE RECEIVED: 2021-05-28

DATE REPORTED: 2021-06-04

Parameter	Unit	SAMPLE DESCRIPTION:		21-221 SA1	21-221 SA3	21-221 SA66	21-221 SA6
		G / S	RDL	2534927	2534928	2534929	2534930
Polychlorinated Biphenyls	µg/g	0.35	0.1	<0.1	<0.1	<0.1	<0.1
Moisture Content	%		0.1	11.0	11.5	29.3	32.8
Surrogate	Unit	Acceptable Limits					
Decachlorobiphenyl	%	60-130		76	72	100	92

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

2534927-2534930 Results are based on the dry weight of soil extracted.

Analysis performed at AGAT Toronto (unless marked by \*)

Certified By:



# AGAT

## Laboratories

*L-T → 10.1/10.4/9.9*  
*8.1/8.4/9.6*  
*on ice packs.*

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

### Laboratory Use Only

Work Order #: 212753729  
Cooler Quantity: two - on ice  
Arrival Temperatures: 29 12.4 12.6  
2.4 13.2 13.2  
Custody Seal Intact:  Yes  No  N/A  
Notes:

### Chain of Custody Record

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

#### Report Information:

Company: Golder Associates Ltd  
Contact: Laura Jones  
Address: 193 Robertson Rd, Ottawa, ON  
Bar-Equis@Golder.com  
Phone: Bar-Equis@Golder.com  
Reports to be sent to:  
1. Email: R.Matthew@Golder.com  
2. Email: Laura Jones@Golder.com

#### Regulatory Requirements:

(Please check all applicable boxes)  
 Regulation 153/04  Excess Soils R406  Sewer Use  
 Ind/Com  Sanitary  Storm  
 Res/Park  Agriculture  Regulation 558  Prov. Water Quality Objectives (PWQO)  
 Agriculture  CCME  Other  
Soil Texture (Check One)  Coarse  Fine  
Indicate One

#### Is this submission for a Record of Site Condition?

Yes  No

#### Report Guideline on Certificate of Analysis

Yes  No

#### Project Information:

Project: Ottawa Hospital  
Site Location: Rob Ireland  
Sampled By: Rob Ireland  
AGAT Quote #: SO PO: 21451149-2000  
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	Y/N	Field Filtered - Metals, Hg, CrVI, DOC	O. Reg 153	O. Reg 406	O. Reg 556	Potentially Hazardous or High Concentration (Y/N)
21-221 SA1	20/05/21	AM	3	Soil				Metals & Inorganics	Metals: <input checked="" type="checkbox"/> CrVI, <input checked="" type="checkbox"/> Hg, <input checked="" type="checkbox"/> WWSB	Landfill Disposal Characterization ToLP: <input type="checkbox"/> TCLP, <input type="checkbox"/> MML, <input type="checkbox"/> VOCs, <input type="checkbox"/> ASNs, <input type="checkbox"/> BSLP, <input type="checkbox"/> PCBs	
21-221 SA3	20/05/21	AM	3	Soil				Metals & Inorganics	BTEX, FLFA, PHCs	Excess Soils SPLP Rainwater Leach	
21-221 SA6b	20/05/21	AM	2	Soil	old sample			Metals & Inorganics	Analyze F403 if required <input type="checkbox"/> Yes <input type="checkbox"/> No	SPLP: <input type="checkbox"/> Metals, <input type="checkbox"/> VOCs, <input type="checkbox"/> SVOCs	
21-221 SA6	20/05/21	AM	3	Soil	old & extract for other analysis at 21-221 SA6b and 21-221 SA6			Metals & Inorganics		Excess Soils Characterization Package	
		AM						Metals & Inorganics		pH, IOPMS Metals, BTEX, FLFA	
		AM						Metals & Inorganics		Salt - EC/SAR	
		AM						Metals & Inorganics		AS, Se, Sb	
		AM						Metals & Inorganics		Hold extract for other	
		AM						Metals & Inorganics			
		AM						Metals & Inorganics			
		AM						Metals & Inorganics			
		AM						Metals & Inorganics			

Samples Relinquished By (Print Name and Sign): <u>Rochelle Mathew</u>	Date: <u>May 21/21</u>	Time: <u>16:00</u>	Samples Received By (Print Name and Sign): <u>Uperthelet</u>	Date: <u>2/15/28</u>	Time: <u>9h30</u>
Samples Relinquished By (Print Name and Sign): <u>to Pius</u>	Date: <u>2/15/28</u>	Time: <u>16:00</u>	Samples Received By (Print Name and Sign): <u>Jakesburgs</u>	Date: <u>May 29</u>	Time: <u>11:30am</u>

Page 1 of 1  
N: 112528



## Certificate of Analysis

AGAT WORK ORDER: 21Z756465

PROJECT: 229413340

5835 COOPERS AVENUE  
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<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Laura Jones

SAMPLING SITE:

SAMPLED BY:

### O. Reg. 153(511) - All Metals (Soil)

DATE RECEIVED: 2021-06-04

DATE REPORTED: 2021-06-11

Parameter	Unit	SAMPLE DESCRIPTION:		21-210 SA2	21-205 SA6	21-206 SA2	21-208 SA2	21-214 SA1	21-215 SA1	21-215 SA3	21-215 SA33
		SAMPLE TYPE:		Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
		DATE SAMPLED:		2021-06-02	2021-06-02	2021-05-19	2021-06-01	2021-05-27	2021-05-28	2021-05-28	2021-05-28
	G / S	RDL	2563544	2563569	2563586	2563607	2563643	2563647	2563648	2563650	
Antimony	µg/g	7.5	0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Arsenic	µg/g	18	1	2	<1	7	2	4	3	2	2
Barium	µg/g	390	2.0	334	77.0	114	153	103	78.5	191	286
Beryllium	µg/g	4	0.4	0.9	<0.4	<0.4	0.6	0.5	0.5	0.6	0.8
Boron	µg/g	120	5	<5	7	8	<5	8	<5	5	8
Boron (Hot Water Soluble)	µg/g	1.5	0.10	<0.10	<0.10	0.21	<0.10	0.39	0.22	<0.10	<0.10
Cadmium	µg/g	1.2	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	µg/g	160	5	114	13	15	52	27	28	41	59
Cobalt	µg/g	22	0.5	23.0	5.8	6.7	11.4	8.3	6.1	10.6	16.1
Copper	µg/g	140	1.0	48.5	9.4	8.6	22.8	21.4	11.7	22.3	31.0
Lead	µg/g	120	1	9	3	17	5	20	11	5	6
Molybdenum	µg/g	6.9	0.5	<0.5	<0.5	5.7	<0.5	0.9	0.6	0.5	0.6
Nickel	µg/g	100	1	58	8	13	27	14	14	21	32
Selenium	µg/g	2.4	0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Silver	µg/g	20	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Thallium	µg/g	1	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Uranium	µg/g	23	0.50	0.83	0.59	0.76	0.56	0.79	0.99	0.62	0.65
Vanadium	µg/g	86	0.4	115	24.0	19.5	67.9	38.0	36.0	62.8	83.8
Zinc	µg/g	340	5	132	21	84	59	87	45	64	97
Chromium, Hexavalent	µg/g	8	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Mercury	µg/g	0.27	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

Analysis performed at AGAT Toronto (unless marked by \*)

Certified By:





## Certificate of Analysis

AGAT WORK ORDER: 21Z756465

PROJECT: 229413340

5835 COOPERS AVENUE  
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<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Laura Jones

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2021-06-04

DATE REPORTED: 2021-06-11

Parameter	Unit	SAMPLE DESCRIPTION:		21-210 SA2	21-205 SA4	21-205 SA44	21-205 SA6	21-206 SA2	21-206 SA6	21-208 SA2	21-214 SA1
		SAMPLE TYPE:		Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
		DATE SAMPLED:		2021-06-02	2021-06-02	2021-06-02	2021-06-02	2021-05-19	2021-05-19	2021-06-01	2021-05-27
		G / S	RDL	2563544	2563567	2563568	2563569	2563586	2563606	2563607	2563643
Naphthalene	µg/g	28	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthylene	µg/g	0.17	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthene	µg/g	96	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fluorene	µg/g	69	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Phenanthrene	µg/g	16	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Anthracene	µg/g	0.74	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fluoranthene	µg/g	9.6	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Pyrene	µg/g	96	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benz(a)anthracene	µg/g	0.96	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chrysene	µg/g	9.6	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(b)fluoranthene	µg/g	0.96	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(k)fluoranthene	µg/g	0.96	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene	µg/g	0.3	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-cd)pyrene	µg/g	0.95	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(g,h,i)perylene	µg/g	9.6	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1 and 2 Methylnaphthalene	µg/g	85	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Moisture Content	%		0.1	24.4	18.8	18.8	9.4	5.4	7.4	25.3	9.0
Surrogate	Unit	Acceptable Limits									
Naphthalene-d8	%	50-140		76	74	86	64	80	80	112	62
Acenaphthene-d10	%	50-140		80	76	89	66	82	84	118	65
Chrysene-d12	%	50-140		85	87	84	87	84	87	65	87

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

DATE RECEIVED: 2021-06-04

DATE REPORTED: 2021-06-11

Parameter	Unit	SAMPLE DESCRIPTION:		21-214 SA4	21-214 SA7	21-214 SA12	21-215 SA1	21-215 SA3
		SAMPLE TYPE:		Soil	Soil	Soil	Soil	Soil
		DATE SAMPLED:		2021-05-27	2021-05-27	2021-05-27	2021-05-28	2021-05-28
		G / S	RDL	2563644	2563645	2563646	2563647	2563648
Naphthalene	µg/g	28	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthylene	µg/g	0.17	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthene	µg/g	96	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fluorene	µg/g	69	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Phenanthrene	µg/g	16	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Anthracene	µg/g	0.74	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fluoranthene	µg/g	9.6	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Pyrene	µg/g	96	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benz(a)anthracene	µg/g	0.96	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chrysene	µg/g	9.6	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(b)fluoranthene	µg/g	0.96	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(k)fluoranthene	µg/g	0.96	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene	µg/g	0.3	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-cd)pyrene	µg/g	0.95	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(g,h,i)perylene	µg/g	9.6	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1 and 2 Methylnaphthalene	µg/g	85	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Moisture Content	%		0.1	9.4	12.0	6.9	7.9	27.9
Surrogate	Unit	Acceptable Limits						
Naphthalene-d8	%	50-140	72	67	81	91	80	
Acenaphthene-d10	%	50-140	74	69	79	89	84	
Chrysene-d12	%	50-140	98	98	87	98	82	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Industrial/Commercial/Community Property Use - Medium and Fine 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.

2563544-2563648 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.

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

DATE RECEIVED: 2021-06-04

DATE REPORTED: 2021-06-11

Parameter	Unit	SAMPLE DESCRIPTION:		21-213 SA5	21-213 SA6
		G / S	RDL	2563609	2563638
F1 (C6 - C10)	µg/g	55	5	<5	<5
F1 (C6 to C10) minus BTEX	µg/g	55	5	<5	<5
F2 (C10 to C16)	µg/g	98	10	<10	<10
F3 (C16 to C34)	µg/g	300	50	<50	<50
F4 (C34 to C50)	µg/g	2800	50	<50	<50
Gravimetric Heavy Hydrocarbons	µg/g	2800	50	NA	NA
Moisture Content	%		0.1	14.7	17.5
Surrogate	Unit	Acceptable Limits			
Toluene-d8	% Recovery	50-140		113	82
Terphenyl	%	60-140		81	95

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

2563609-2563638 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 contribution.  
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.  
nC6 and nC10 response factors are within 30% of Toluene response factor.  
nC10, nC16 and nC34 response factors are within 10% of their average.  
C50 response factor is within 70% of nC10 + nC16 + nC34 average.  
Linearity is within 15%.  
Extraction and holding times were met for this sample.  
Fractions 1-4 are quantified without the contribution of PAHs. Under Ontario Regulation 153, results are considered valid without determining the PAH contribution if not requested by the client.

Analysis performed at AGAT Toronto (unless marked by \*)

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

DATE RECEIVED: 2021-06-04

DATE REPORTED: 2021-06-11

Parameter	Unit	SAMPLE DESCRIPTION:		21-210 SA2	21-205 SA4	21-205 SA44	21-205 SA6	21-206 SA6	21-208 SA2	21-214 SA1	21-214 SA4
		G / S	RDL	2563544	2563567	2563568	2563569	2563606	2563607	2563643	2563644
Benzene	µg/g	0.21	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Toluene	µg/g	2.3	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	µg/g	2	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
m & p-Xylene	µg/g		0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
o-Xylene	µg/g		0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Xylenes (Total)	µg/g	3.1	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
F1 (C6 - C10)	µg/g	55	5	<5	<5	<5	<5	<5	<5	<5	<5
F1 (C6 to C10) minus BTEX	µg/g	55	5	<5	<5	<5	<5	<5	<5	<5	<5
F2 (C10 to C16)	µg/g	98	10	<10	<10	<10	<10	<10	<10	<10	<10
F2 (C10 to C16) minus Naphthalene	µg/g		10	<10	<10	<10	<10	<10	<10	<10	<10
F3 (C16 to C34)	µg/g	300	50	<50	<50	<50	<50	<50	<50	<50	<50
F3 (C16 to C34) minus PAHs	µg/g		50	<50	<50	<50	<50	<50	<50	<50	<50
F4 (C34 to C50)	µg/g	2800	50	<50	<50	<50	<50	<50	<50	<50	<50
Gravimetric Heavy Hydrocarbons	µg/g	2800	50	NA	NA	NA	NA	NA	NA	NA	NA
Moisture Content	%		0.1	24.4	18.8	18.8	9.4	7.4	25.3	9.0	9.4
Surrogate	Unit	Acceptable Limits									
Toluene-d8	% Recovery	60-140		91	91	89	84	90	76	74	80
Terphenyl	%	60-140		120	115	110	122	108	125	120	120

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

DATE RECEIVED: 2021-06-04

DATE REPORTED: 2021-06-11

Parameter	Unit	SAMPLE DESCRIPTION:		21-214 SA7	21-214 SA12	21-215 SA1	21-215 SA3
		G / S	RDL	2563645	2563646	2563647	2563648
Benzene	µg/g	0.21	0.02	<0.02	<0.02	<0.02	<0.02
Toluene	µg/g	2.3	0.05	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	µg/g	2	0.05	<0.05	<0.05	<0.05	<0.05
m & p-Xylene	µg/g		0.05	<0.05	<0.05	<0.05	<0.05
o-Xylene	µg/g		0.05	<0.05	<0.05	<0.05	<0.05
Xylenes (Total)	µg/g	3.1	0.05	<0.05	<0.05	<0.05	<0.05
F1 (C6 - C10)	µg/g	55	5	<5	<5	<5	<5
F1 (C6 to C10) minus BTEX	µg/g	55	5	<5	<5	<5	<5
F2 (C10 to C16)	µg/g	98	10	<10	<10	<10	<10
F2 (C10 to C16) minus Naphthalene	µg/g		10	<10	<10	<10	<10
F3 (C16 to C34)	µg/g	300	50	<50	<50	<50	<50
F3 (C16 to C34) minus PAHs	µg/g		50	<50	<50	<50	<50
F4 (C34 to C50)	µg/g	2800	50	<50	<50	<50	<50
Gravimetric Heavy Hydrocarbons	µg/g	2800	50	NA	NA	NA	NA
Moisture Content	%		0.1	12.0	6.9	7.9	27.9
Surrogate	Unit	Acceptable Limits					
Toluene-d8	% Recovery	60-140	76	78	118	78	
Terphenyl	%	60-140	110	109	106	108	

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

DATE RECEIVED: 2021-06-04

DATE REPORTED: 2021-06-11

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

2563544-2563648 Results are based on sample dry weight.  
The C6-C10 fraction is calculated using toluene response factor.  
Xylenes total is a calculated parameter. The calculated value is the sum of m&p-Xylene and o-Xylene.  
C6-C10 (F1 minus BTEX) is a calculated parameter. The calculated value is F1 minus BTEX.  
The calculated parameters are non-accredited. The parameters that are components of the calculation are accredited.  
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and 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 \*)

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CLIENT NAME: GOLDER ASSOCIATES LTD

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### O. Reg. 153(511) - VOCs (Soil)

DATE RECEIVED: 2021-06-04

DATE REPORTED: 2021-06-11

Parameter	Unit	SAMPLE DESCRIPTION:		21-213 SA5	21-213 SA6
		SAMPLE TYPE:		Soil	Soil
		DATE SAMPLED:		2021-05-31	2021-05-31
		G / S	RDL	2563609	2563638
Dichlorodifluoromethane	µg/g	16	0.05	<0.05	<0.05
Vinyl Chloride	ug/g	0.02	0.02	<0.02	<0.02
Bromomethane	ug/g	0.05	0.05	<0.05	<0.05
Trichlorofluoromethane	ug/g	4	0.05	<0.05	<0.05
Acetone	ug/g	16	0.50	<0.50	<0.50
1,1-Dichloroethylene	ug/g	0.05	0.05	<0.05	<0.05
Methylene Chloride	ug/g	0.1	0.05	<0.05	<0.05
Trans- 1,2-Dichloroethylene	ug/g	0.084	0.05	<0.05	<0.05
Methyl tert-butyl Ether	ug/g	0.75	0.05	<0.05	<0.05
1,1-Dichloroethane	ug/g	3.5	0.02	<0.02	<0.02
Methyl Ethyl Ketone	ug/g	16	0.50	<0.50	<0.50
Cis- 1,2-Dichloroethylene	ug/g	3.4	0.02	<0.02	<0.02
Chloroform	ug/g	0.05	0.04	<0.04	<0.04
1,2-Dichloroethane	ug/g	0.05	0.03	<0.03	<0.03
1,1,1-Trichloroethane	ug/g	0.38	0.05	<0.05	<0.05
Carbon Tetrachloride	ug/g	0.05	0.05	<0.05	<0.05
Benzene	ug/g	0.21	0.02	<0.02	<0.02
1,2-Dichloropropane	ug/g	0.05	0.03	<0.03	<0.03
Trichloroethylene	ug/g	0.061	0.03	<0.03	<0.03
Bromodichloromethane	ug/g	13	0.05	<0.05	<0.05
Methyl Isobutyl Ketone	ug/g	1.7	0.50	<0.50	<0.50
1,1,2-Trichloroethane	ug/g	0.05	0.04	<0.04	<0.04
Toluene	ug/g	2.3	0.05	<0.05	<0.05
Dibromochloromethane	ug/g	9.4	0.05	<0.05	<0.05
Ethylene Dibromide	ug/g	0.05	0.04	<0.04	<0.04
Tetrachloroethylene	ug/g	0.28	0.05	<0.05	<0.05
1,1,1,2-Tetrachloroethane	ug/g	0.058	0.04	<0.04	<0.04
Chlorobenzene	ug/g	2.4	0.05	<0.05	<0.05
Ethylbenzene	ug/g	2	0.05	<0.05	<0.05
m & p-Xylene	ug/g		0.05	<0.05	<0.05

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AGAT WORK ORDER: 21Z756465

PROJECT: 229413340

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### O. Reg. 153(511) - VOCs (Soil)

DATE RECEIVED: 2021-06-04

DATE REPORTED: 2021-06-11

Parameter	Unit	SAMPLE DESCRIPTION:		21-213 SA5	21-213 SA6
		G / S	RDL	2563609	2563638
Bromoform	ug/g	0.27	0.05	<0.05	<0.05
Styrene	ug/g	0.7	0.05	<0.05	<0.05
1,1,2,2-Tetrachloroethane	ug/g	0.05	0.05	<0.05	<0.05
o-Xylene	ug/g		0.05	<0.05	<0.05
1,3-Dichlorobenzene	ug/g	4.8	0.05	<0.05	<0.05
1,4-Dichlorobenzene	ug/g	0.083	0.05	<0.05	<0.05
1,2-Dichlorobenzene	ug/g	3.4	0.05	<0.05	<0.05
Xylenes (Total)	ug/g	3.1	0.05	<0.05	<0.05
1,3-Dichloropropene (Cis + Trans)	µg/g	0.05	0.04	<0.04	<0.04
n-Hexane	µg/g	2.8	0.05	<0.05	<0.05
Moisture Content	%		0.1	14.7	17.5
Surrogate	Unit	Acceptable Limits			
Toluene-d8	% Recovery	50-140		87	104
4-Bromofluorobenzene	% Recovery	50-140		100	108

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

2563609-2563638 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:



## Exceedance Summary

AGAT WORK ORDER: 21Z756465

PROJECT: 229413340

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

ATTENTION TO: Laura Jones

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
2563544	21-210 SA2	ON T3 S RPI CT	O. Reg. 153(511) - All Metals (Soil)	Cobalt	µg/g	22	23.0
2563544	21-210 SA2	ON T3 S RPI CT	O. Reg. 153(511) - All Metals (Soil)	Vanadium	µg/g	86	115



# AGAT

## Laboratories

266 Btk CT (onice) - ① 5-314-614-7  
 ② 3-613-914-2

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

### Laboratory Use Only

Work Order #: 212756465  
 Cooler Quantity: two onice  
 Arrival Temperatures: 8.6 18.3 18.5  
5.6 15.9 15.3  
 Custody Seal Intact:  Yes  No  N/A  
 Notes:

### Chain of Custody Record

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

**Report Information:**  
 Company: Golder Associates Ltd  
 Contact: Laura Jones / Rochelle Mathew  
 Address: 1931 Robertson Road, Ottawa, ON  
Gail Egus @ Golder.com  
 Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
 Reports to be sent to:  
 1. Email: Laura Jones @ Golder.com  
 2. Email: Rochelle Mathew @ Golder.com

### Regulatory Requirements:

(Please check all applicable boxes)

Regulation 153/04  Excess Soils R406  Sewer Use  
 Ind/Com  Sanitary  Storm  
 Table 3 Indicate One Table \_\_\_\_\_ Indicate One \_\_\_\_\_ Region  
 Res/Park  Regulation 558  Prov. Water Quality Objectives (PWQO)  
 Agriculture  CCME  Other  
 Soil Texture (Check One) \_\_\_\_\_ Indicate One  
 Coarse  Fine

**Project Information:**  
 Project: Ottawa Hospital 21451149  
 Site Location: Robert Ireland  
 Sampled By: SO  
 AGAT Quote #: \_\_\_\_\_ PO: \_\_\_\_\_  
Please note: if quotation number is not provided, client will be billed full price for analysis.

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

Report Guideline on Certificate of Analysis  Yes  No

**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	Y/N	0. Reg 153		PAHs	PCBs	VOC	0. Reg 558	0. Reg 406	Salt - EC/SAR	Potentially Hazardous or High Concentration (Y/N)
							Metals & Inorganics	Metals - Cu, Ni, Zn, Pb, Cd, Hg, HWSB							
21-210 SA2	02/06/21	AM	3	Soil											
21-210 SA5	02/06/21	AM	3	Soil	please hold										
21-205 SA2	02/06/21	AM	2	S	hd sample										
21-205 SA4	02/06/21	AM	3	S											
21-205 SA44	02/06/21	AM	3	S											
21-205 SA6	02/06/21	AM	3	S											
21-206 SA2	19/05/21	AM	2	S	hold BTEX										
21-206 SA6	19/05/21	AM	3	S	hd sample past hold time										
21-208 SA2	01/06/21	AM	3	S											
21-208 SA6	01/06/21	AM	5	S	please hold										
21-213 SA5	31/05/21	AM	3	S											

Samples Relinquished By (Print Name and Sign): <u>Rochelle Mathew Kattell</u>	Date: <u>June 31</u>	Time: <u>05:00</u>	Samples Received By (Print Name and Sign): <u>CB - Thelet</u>	Date: <u>21/06/04</u>	Time: <u>11:36</u>
Samples Relinquished By (Print Name and Sign): <u>(Signature)</u>	Date: <u>21/6/14</u>	Time: <u>(Signature)</u>	Samples Received By (Print Name and Sign): <u>Simran SG</u>	Date: <u>June 5/21</u>	Time: <u>11:40 am</u>
Samples Relinquished By (Print Name and Sign): _____	Date: _____	Time: _____	Samples Received By (Print Name and Sign): _____	Date: _____	Time: _____

Page 1 of 2  
 No: **112530**



# AGAT Laboratories

226 BIK

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

### Laboratory Use Only

Work Order #: 2TES 212756465  
Cooler Quantity: \_\_\_\_\_  
Arrival Temperatures: see pg 11  
Custody Seal Intact:  Yes  No  N/A  
Notes: \_\_\_\_\_

## Chain of Custody Record

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

### Report Information:

Company: Golder Associates Ltd.  
Contact: Laura Jones / Rochelle Mathew  
Address: 1931 Robertson Road  
Gol-Equis@golder.com  
Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
Reports to be sent to: Laura Jones@golder.com  
1. Email: \_\_\_\_\_  
2. Email: Rochelle.Mathew@golder.com

### Regulatory Requirements:

No Regulatory Requirement  
(Please check all applicable boxes)  
 Regulation 153/04  
Table 3 Indicate One  
 Ind/Com  
 Res/Park  
 Agriculture  
Soil Texture (Check One)  
 Coarse  
 Fine  
Region \_\_\_\_\_ Indicate One  
 MISA  
 Sewer Use  
 Sanitary  
 Storm  
 Regulation 558  
 CCME  
 Prov. Water Quality Objectives (PWQO)  
 Other  
Indicate One

### Project Information:

Project: Ottawa Hospital  
Site Location: \_\_\_\_\_  
Sampled By: Robert Ireland  
AGAT Quote #: 21451149 PO: 21451149  
Please note: If quotation number is not provided, client will be billed full price for analysis.

### 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

### 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

Field Filtered - Metals, Hg, CrVI

### O. Reg 153

Metals and Inorganics	Field Filtered - Metals, Hg, CrVI	Regulation/Custom Metals	Nutrients: TP, NH <sub>3</sub> , TKN, NO <sub>2</sub> , NO <sub>3</sub>	Volatiles: VOC, BTEX, THM	PHCS F1-F4	ABNs	PAHs	PCBs: Total, Aroclors	Organochlorine Pesticides	TCLP: M&I, VOCs, ABNs, Bl(a)p, PCBs	Sewer Use
<input type="checkbox"/> All Metals <input type="checkbox"/> 153 Metals (excl. Hydrides) <input type="checkbox"/> Hydride Metals <input type="checkbox"/> 153 Metals (Incl. Hydrides)											
ORPs: <input type="checkbox"/> B-HWS <input type="checkbox"/> Cl <input type="checkbox"/> CN <input checked="" type="checkbox"/> Cr <input type="checkbox"/> EC <input type="checkbox"/> FOC <input checked="" type="checkbox"/> Hg <input type="checkbox"/> pH <input type="checkbox"/> SAR											
Full Metals Scan											
Regulation/Custom Metals											
Nutrients: <input type="checkbox"/> TP <input type="checkbox"/> NH <sub>3</sub> <input type="checkbox"/> TKN <input type="checkbox"/> NO <sub>2</sub> <input type="checkbox"/> NO <sub>3</sub>											
Volatiles: <input checked="" type="checkbox"/> VOC <input type="checkbox"/> BTEX <input type="checkbox"/> THM											
PHCS F1-F4											
ABNs											
PAHs											
PCBs: <input type="checkbox"/> Total <input type="checkbox"/> Aroclors											
Organochlorine Pesticides											
TCLP: <input type="checkbox"/> M&I <input type="checkbox"/> VOCs <input type="checkbox"/> ABNs <input type="checkbox"/> Bl(a)p <input type="checkbox"/> PCBs											
Sewer Use											
Metals											
AS, Sg, Sb											
BTEX											

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/Special Instructions	Y/N
21-213 SAG	31/05/21		2	S	limited sample	
21-214 SA1	27/05/21		3	S		
21-214 SA4	27/05/21		3	S		
21-214 SA7	27/05/21		2	S	limited sample	
21-214 SA12	27/05/21		2	S	limited sample	
21-215 SA1	28/05/21		3	S		
21-215 SA3	28/05/21		3	S		
21-215 SA33	28/05/21		2	S	limited sample	
21-215 SA8	28/05/21		3	S	please hold	
21-206 SA8	21/05/21		2	S	limited sample / please hold	

Samples Relinquished By (Print Name and Sign): <u>Rochelle Mathew Mathew</u>	Date: <u>June 3/21</u>	Time: <u>0500</u>	Samples Received By (Print Name and Sign): <u>YG</u>	Date: <u>21/06/04</u>	Time: <u>11h36</u>
Samples Relinquished By (Print Name and Sign): <u>Christina</u>	Date: <u>21/06/21</u>	Time: <u>11h00</u>	Samples Received By (Print Name and Sign): <u>YG</u>	Date: <u>June 6/21</u>	Time: <u>11:40am</u>
Samples Relinquished By (Print Name and Sign): _____	Date: _____	Time: _____	Samples Received By (Print Name and Sign): _____	Date: _____	Time: _____

No: **T 067378**





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

ATTENTION TO: Laura Jones

PROJECT: 21451149

AGAT WORK ORDER: 21Z765000

SOIL ANALYSIS REVIEWED BY: Nivine Basily, Inorganics Report Writer

TRACE ORGANICS REVIEWED BY: Neli Popnikolova, Senior Chemist

DATE REPORTED: Jun 29, 2021

PAGES (INCLUDING COVER): 13

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.



## Certificate of Analysis

AGAT WORK ORDER: 21Z765000

PROJECT: 21451149

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

ATTENTION TO: Laura Jones

SAMPLING SITE:

SAMPLED BY:

### O. Reg. 153(511) - All Metals (Soil)

DATE RECEIVED: 2021-06-22

DATE REPORTED: 2021-06-29

Parameter	Unit	SAMPLE DESCRIPTION:				
		G / S		21-204 SA1	21-209 SA1	21-212 SA1
		RDL	Soil	Soil	Soil	
DATE SAMPLED:		2021-06-09	2021-06-10	2021-06-10		
		2645263	2645356	2645360		
Antimony	µg/g	7.5	0.8	<0.8	<0.8	<0.8
Arsenic	µg/g	18	1	3	2	3
Barium	µg/g	390	2.0	79.9	125	57.0
Beryllium	µg/g	4	0.4	<0.4	0.4	<0.4
Boron	µg/g	120	5	5	5	<5
Boron (Hot Water Soluble)	µg/g	1.5	0.10	0.53	0.22	0.16
Cadmium	µg/g	1.2	0.5	<0.5	<0.5	<0.5
Chromium	µg/g	160	5	31	42	26
Cobalt	µg/g	22	0.5	6.3	8.8	5.7
Copper	µg/g	140	1.0	11.7	17.2	10.5
Lead	µg/g	120	1	17	9	9
Molybdenum	µg/g	6.9	0.5	<0.5	<0.5	<0.5
Nickel	µg/g	100	1	15	21	13
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	0.67	1.03	0.55
Vanadium	µg/g	86	0.4	33.8	44.0	31.4
Zinc	µg/g	340	5	49	58	51
Chromium, Hexavalent	µg/g	8	0.2	<0.2	<0.2	<0.2
Mercury	µg/g	0.27	0.10	<0.10	<0.10	<0.10

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

Analysis performed at AGAT Toronto (unless marked by \*)

Certified By:



*Nivine Basly*



## Certificate of Analysis

AGAT WORK ORDER: 21Z765000

PROJECT: 21451149

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

ATTENTION TO: Laura Jones

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2021-06-22

DATE REPORTED: 2021-06-29

Parameter	Unit	SAMPLE DESCRIPTION:		21-204 SA1	21-209 SA1	21-212 SA1	21-101 SA1	21-102 SA1	21-103 SA1	21-104 SA1	21-105 SA1
		SAMPLE TYPE:		Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
		DATE SAMPLED:		2021-06-09	2021-06-10	2021-06-10	2021-06-11	2021-06-11	2021-06-11	2021-06-11	2021-06-11
		G / S	RDL	2645263	2645356	2645360	2645367	2645369	2645370	2645371	2645372
Naphthalene	µg/g	0.6	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthylene	µg/g	0.15	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthene	µg/g	7.9	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fluorene	µg/g	62	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Phenanthrene	µg/g	6.2	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Anthracene	µg/g	0.67	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fluoranthene	µg/g	0.69	0.05	0.12	<0.05	0.09	<0.05	<0.05	<0.05	<0.05	<0.05
Pyrene	µg/g	78	0.05	0.10	<0.05	0.07	<0.05	<0.05	<0.05	<0.05	<0.05
Benz(a)anthracene	µg/g	0.5	0.05	0.07	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chrysene	µg/g	7	0.05	0.11	<0.05	0.07	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(b)fluoranthene	µg/g	0.78	0.05	0.09	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(k)fluoranthene	µg/g	0.78	0.05	0.06	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene	µg/g	0.3	0.05	<0.05	<0.05	<0.05	<0.05	<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	<0.05	<0.05	<0.05	<0.05	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	0.05	<0.05	<0.05	<0.05	<0.05	<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	<0.05	<0.05	<0.05	<0.05	<0.05
1 and 2 Methylnaphthalene	µg/g	0.99	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Moisture Content	%		0.1	13.6	10.6	14.1	14.2	13.2	11.6	13.2	12.4
Surrogate	Unit	Acceptable Limits									
Naphthalene-d8	%	50-140		66	80	61	112	95	95	72	70
Acridine-d9	%	50-140		103	67	102	63	64	71	86	77
Terphenyl-d14	%	50-140		61	77	80	69	68	86	97	114

Certified By:



## Certificate of Analysis

AGAT WORK ORDER: 21Z765000

PROJECT: 21451149

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

ATTENTION TO: Laura Jones

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2021-06-22

DATE REPORTED: 2021-06-29

Parameter	Unit	SAMPLE DESCRIPTION:				
		G / S		21-106 SA1	21-107 SA1	21-108 SA1
		RDL		Soil	Soil	Soil
		DATE SAMPLED:		2021-06-11	2021-06-11	2021-06-11
		2645373	2645374	2645378		
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 Methylnaphthalene	µg/g	0.99	0.05	<0.05	<0.05	<0.05
Moisture Content	%		0.1	13.3	12.8	13.5
Surrogate	Unit	Acceptable Limits				
Naphthalene-d8	%	50-140		122	73	90
Acridine-d9	%	50-140		106	65	70
Terphenyl-d14	%	50-140		86	86	86

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

2645263-2645378 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:



## Certificate of Analysis

AGAT WORK ORDER: 21Z765000

PROJECT: 21451149

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

ATTENTION TO: Laura Jones

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2021-06-22

DATE REPORTED: 2021-06-29

Parameter	Unit	SAMPLE DESCRIPTION:				
		G / S	RDL	21-204 SA1	21-209 SA1	21-212 SA1
				Soil	Soil	Soil
				2021-06-09	2021-06-10	2021-06-10
				2645263	2645356	2645360
Benzene	µg/g	0.21	0.02	<0.02	<0.02	<0.02
Toluene	µg/g	2.3	0.05	<0.05	<0.05	<0.05
Ethylbenzene	µg/g	2	0.05	<0.05	<0.05	<0.05
m & p-Xylene	µg/g		0.05	<0.05	<0.05	<0.05
o-Xylene	µg/g		0.05	<0.05	<0.05	<0.05
Xylenes (Total)	µg/g	3.1	0.05	<0.05	<0.05	<0.05
F1 (C6 - C10)	µg/g	55	5	<5	<5	<5
F1 (C6 to C10) minus BTEX	µg/g	55	5	<5	<5	<5
F2 (C10 to C16)	µg/g	98	10	<10	<10	<10
F2 (C10 to C16) minus Naphthalene	µg/g		10	<10	<10	<10
F3 (C16 to C34)	µg/g	300	50	<50	<50	<50
F3 (C16 to C34) minus PAHs	µg/g		50	<50	<50	<50
F4 (C34 to C50)	µg/g	2800	50	<50	<50	<50
Gravimetric Heavy Hydrocarbons	µg/g	2800	50	NA	NA	NA
Moisture Content	%		0.1	13.6	10.6	14.1
Surrogate	Unit	Acceptable Limits				
Toluene-d8	% Recovery	60-140	101	83	112	
Terphenyl	%	60-140	74	83	81	

Certified By:



## Certificate of Analysis

AGAT WORK ORDER: 21Z765000

PROJECT: 21451149

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

ATTENTION TO: Laura Jones

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2021-06-22

DATE REPORTED: 2021-06-29

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

2645263-2645360 Results are based on sample dry weight.  
The C6-C10 fraction is calculated using toluene response factor.  
Xylenes total is a calculated parameter. The calculated value is the sum of m&p-Xylene and o-Xylene.  
C6-C10 (F1 minus BTEX) is a calculated parameter. The calculated value is F1 minus BTEX.  
The calculated parameters are non-accredited. The parameters that are components of the calculation are accredited.  
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and 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:

## Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD  
 PROJECT: 21451149  
 SAMPLING SITE:

AGAT WORK ORDER: 21Z765000  
 ATTENTION TO: Laura Jones  
 SAMPLED BY:

Soil Analysis															
RPT Date: Jun 29, 2021			DUPLICATE				Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE		MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Measured Value		Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

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

Antimony	2661594		<0.8	<0.8	NA	< 0.8	120%	70%	130%	99%	80%	120%	77%	70%	130%
Arsenic	2661594		2	2	NA	< 1	116%	70%	130%	103%	80%	120%	97%	70%	130%
Barium	2661594		65.0	59.5	8.8%	< 2.0	107%	70%	130%	95%	80%	120%	81%	70%	130%
Beryllium	2661594		0.5	0.5	NA	< 0.4	110%	70%	130%	95%	80%	120%	97%	70%	130%
Boron	2661594		9	9	NA	< 5	92%	70%	130%	99%	80%	120%	83%	70%	130%
Boron (Hot Water Soluble)	2660343		0.37	0.38	NA	< 0.10	87%	60%	140%	93%	70%	130%	91%	60%	140%
Cadmium	2661594		<0.5	<0.5	NA	< 0.5	112%	70%	130%	101%	80%	120%	94%	70%	130%
Chromium	2661594		20	19	NA	< 5	108%	70%	130%	100%	80%	120%	85%	70%	130%
Cobalt	2661594		6.0	5.5	8.7%	< 0.5	104%	70%	130%	98%	80%	120%	90%	70%	130%
Copper	2661594		11.2	10.4	7.4%	< 1.0	91%	70%	130%	102%	80%	120%	85%	70%	130%
Lead	2661594		10	9	10.5%	< 1	106%	70%	130%	92%	80%	120%	82%	70%	130%
Molybdenum	2661594		<0.5	<0.5	NA	< 0.5	117%	70%	130%	100%	80%	120%	98%	70%	130%
Nickel	2661594		11	10	9.5%	< 1	100%	70%	130%	99%	80%	120%	86%	70%	130%
Selenium	2661594		<0.8	<0.8	NA	< 0.8	125%	70%	130%	99%	80%	120%	93%	70%	130%
Silver	2661594		<0.5	<0.5	NA	< 0.5	112%	70%	130%	100%	80%	120%	91%	70%	130%
Thallium	2661594		<0.5	<0.5	NA	< 0.5	114%	70%	130%	100%	80%	120%	92%	70%	130%
Uranium	2661594		0.73	0.67	NA	< 0.50	111%	70%	130%	99%	80%	120%	96%	70%	130%
Vanadium	2661594		31.6	30.0	5.2%	< 0.4	115%	70%	130%	98%	80%	120%	87%	70%	130%
Zinc	2661594		57	53	7.3%	< 5	102%	70%	130%	108%	80%	120%	103%	70%	130%
Chromium, Hexavalent	2637215		<0.2	<0.2	NA	< 0.2	108%	70%	130%	90%	80%	120%	110%	70%	130%
Mercury	2661594		<0.10	<0.10	NA	< 0.10	100%	70%	130%	98%	80%	120%	88%	70%	130%

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

Certified By:



*Nivine Basily*

## Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD  
 PROJECT: 21451149  
 SAMPLING SITE:

AGAT WORK ORDER: 21Z765000  
 ATTENTION TO: Laura Jones  
 SAMPLED BY:

### Trace Organics Analysis

RPT Date: Jun 29, 2021			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		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) (Soil)

Benzene	2624456		<0.02	<0.02	NA	< 0.02	108%	60%	140%	116%	60%	140%	110%	60%	140%
Toluene	2624456		<0.05	<0.05	NA	< 0.05	107%	60%	140%	81%	60%	140%	86%	60%	140%
Ethylbenzene	2624456		<0.05	<0.05	NA	< 0.05	102%	60%	140%	82%	60%	140%	116%	60%	140%
m & p-Xylene	2624456		<0.05	<0.05	NA	< 0.05	97%	60%	140%	119%	60%	140%	96%	60%	140%
o-Xylene	2624456		<0.05	<0.05	NA	< 0.05	120%	60%	140%	88%	60%	140%	94%	60%	140%
F1 (C6 - C10)	2624456		<5	<5	NA	< 5	109%	60%	140%	111%	60%	140%	100%	60%	140%
F2 (C10 to C16)	2629280		< 10	< 10	NA	< 10	112%	60%	140%	89%	60%	140%	68%	60%	140%
F3 (C16 to C34)	2629280		< 50	< 50	NA	< 50	110%	60%	140%	87%	60%	140%	70%	60%	140%
F4 (C34 to C50)	2629280		< 50	< 50	NA	< 50	103%	60%	140%	91%	60%	140%	109%	60%	140%

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

Naphthalene	2629425		<0.05	<0.05	NA	< 0.05	102%	50%	140%	79%	50%	140%	112%	50%	140%
Acenaphthylene	2629425		<0.05	<0.05	NA	< 0.05	113%	50%	140%	100%	50%	140%	77%	50%	140%
Acenaphthene	2629425		<0.05	<0.05	NA	< 0.05	113%	50%	140%	91%	50%	140%	73%	50%	140%
Fluorene	2629425		<0.05	<0.05	NA	< 0.05	118%	50%	140%	94%	50%	140%	100%	50%	140%
Phenanthrene	2629425		<0.05	<0.05	NA	< 0.05	98%	50%	140%	70%	50%	140%	79%	50%	140%
Anthracene	2629425		<0.05	<0.05	NA	< 0.05	117%	50%	140%	105%	50%	140%	106%	50%	140%
Fluoranthene	2629425		<0.05	<0.05	NA	< 0.05	78%	50%	140%	65%	50%	140%	90%	50%	140%
Pyrene	2629425		<0.05	<0.05	NA	< 0.05	70%	50%	140%	63%	50%	140%	89%	50%	140%
Benz(a)anthracene	2629425		<0.05	<0.05	NA	< 0.05	84%	50%	140%	83%	50%	140%	76%	50%	140%
Chrysene	2629425		<0.05	<0.05	NA	< 0.05	86%	50%	140%	76%	50%	140%	87%	50%	140%
Benzo(b)fluoranthene	2629425		<0.05	<0.05	NA	< 0.05	106%	50%	140%	89%	50%	140%	98%	50%	140%
Benzo(k)fluoranthene	2629425		<0.05	<0.05	NA	< 0.05	95%	50%	140%	81%	50%	140%	91%	50%	140%
Benzo(a)pyrene	2629425		<0.05	<0.05	NA	< 0.05	111%	50%	140%	70%	50%	140%	76%	50%	140%
Indeno(1,2,3-cd)pyrene	2629425		<0.05	<0.05	NA	< 0.05	74%	50%	140%	84%	50%	140%	69%	50%	140%
Dibenz(a,h)anthracene	2629425		<0.05	<0.05	NA	< 0.05	76%	50%	140%	92%	50%	140%	76%	50%	140%
Benzo(g,h,i)perylene	2629425		<0.05	<0.05	NA	< 0.05	92%	50%	140%	76%	50%	140%	58%	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).

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

Toluene	2641408		<0.05	<0.05	NA	< 0.05	107%	60%	140%	81%	60%	140%	103%	60%	140%
Ethylbenzene	2641408		<0.05	<0.05	NA	< 0.05	102%	60%	140%	82%	60%	140%	83%	60%	140%
m & p-Xylene	2641408		<0.05	<0.05	NA	< 0.05	97%	60%	140%	119%	60%	140%	111%	60%	140%
o-Xylene	2641408		<0.05	<0.05	NA	< 0.05	120%	60%	140%	88%	60%	140%	112%	60%	140%
F1 (C6 - C10)	2641408		<5	<5	NA	< 5	109%	60%	140%	111%	60%	140%	103%	60%	140%

Certified By: \_\_\_\_\_







## Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD  
 PROJECT: 21451149  
 SAMPLING SITE:

AGAT WORK ORDER: 21Z765000  
 ATTENTION TO: Laura Jones  
 SAMPLED BY:

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
Mercury	MET-93-6103	modified from EPA 7471B and SM 3112 B	ICP-MS

## Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 21Z765000

PROJECT: 21451149

ATTENTION TO: Laura Jones

SAMPLING SITE:

SAMPLED BY:

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 Methylnaphthalene	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	ORG-91-5009	CCME Tier 1 Method	BALANCE
Benzene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
Toluene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
Ethylbenzene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
m & p-Xylene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
o-Xylene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
Xylenes (Total)	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
F1 (C6 - C10)	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/FID
F1 (C6 to C10) minus BTEX	VOL-91-5009	modified from CCME Tier 1 Method	P&T GC/FID
Toluene-d8	VOL-91-5009	modified from EPA SW-846 5030C & 8260D	(P&T)GC/MS
F2 (C10 to C16)	VOL-91-5009	modified from CCME Tier 1 Method	GC/FID
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



## Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 21Z765000

PROJECT: 21451149

ATTENTION TO: Laura Jones

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
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



# AGAT Laboratories

ILG + ILG

8335 Coopers Avenue  
Mississauga, Ontario L4Z 1Y2  
Ph: 905.712.5100 Fax: 905.712.5122  
web@earth.agatlabs.com

LT (ice) - 3-2 / 3-0 / 3-9

**Laboratory Use Only**

Work Order #: 212765000

Cooler Quantity: 1

Arrival Temperatures: 8-118.3 | 8.3

Custody Seal Intact:  Yes  No  N/A

Notes: Ice packs

## Chain of Custody Record

**Report Information:**

Company: Golder Associates Ltd.

Contact: Laura Jones / RMathew / EQUIS

Address: 1931 Robertson Road

Phone: GOL@equis@golder.com Fax: \_\_\_\_\_

Reports to be sent to: RMathew@Golder.com

1. Email: \_\_\_\_\_

2. Email: Laura.Jones@Golder.com

**Regulatory Requirements:**  
(Please check all applicable boxes)

Regulation 153/04  
Table 3 Indicate One  
 Ind/Com  
 Res/Park  
 Agriculture

Excess Soils R406  
Table \_\_\_\_\_ Indicate One  
Region \_\_\_\_\_

Sewer Use  
 Sanitary  Storm

Regulation 558  
 CCME

Prov. Water Quality Objectives (PWQO)  
 Other

Soil Texture (Check One)  
 Coarse  
 Fine

**Project Information:**

Project: 21451149

Site Location: Ottawa Hospital

Sampled By: Rob Ireland

AGAT Quote #: 30 PO: \_\_\_\_\_

Please note: If quotation number is not provided, client will be billed full price for analysis.

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

Report Guideline on Certificate of Analysis  
 Yes  No

**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 ID	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/Special Instructions	Y/N	0. Reg 153				0. Reg 406				P-potentially Hazardous or High Concentration (Y/N)		
							Metals & Inorganics	Metals: <input checked="" type="checkbox"/> CrVI, <input checked="" type="checkbox"/> Hg, <input checked="" type="checkbox"/> HWSB	BTEX, FLF4, PCBs	Analyze F&G if required <input type="checkbox"/> Yes <input type="checkbox"/> No	PAHs	PCBs	VOC	Landfill Disposal Characterization T&P: <input type="checkbox"/> M&I, <input type="checkbox"/> VOCs, <input type="checkbox"/> A&Bs, <input type="checkbox"/> E(a)P, <input type="checkbox"/> PCBs		Excess Soils SPLP Rainwater Leach	SPLP: <input type="checkbox"/> Metals, <input type="checkbox"/> VOCs, <input type="checkbox"/> SVOCs
21-204 SA1	June 9, 2021	AM PM	3	Soil													
21-204 SA4	June 9, 2021	AM PM	3	S	Please Hold/extract												
21-204 SA44	June 9, 2021	AM PM	2	S	Please Hold/extract												
21-209 SA1	June 10, 2021	AM PM	3	S													
21-209 SA9	June 10, 2021	AM PM	3	S	Hold/extract												
21-209 SA99	June 10, 2021	AM PM	2	S	Hold/extract												
21-212 SA1	June 10, 2021	AM PM	3	S													
21-212 SA4	June 10, 2021	AM PM	3	S	Hold & extract												
21-212 SA44	June 10, 2021	AM PM	2	S	Hold & extract												
21-101 SA1	June 11, 2021	AM PM	3	S	Hold BTEX												
21-102 SA1	June 11, 2021	AM PM	3	S	Hold BTEX												

Samples Relinquished By (Print Name and Sign): <u>Rochelle Mathew Mathew</u>	Date: <u>June 22, 2021</u>	Time: <u>12:00</u>	Samples Received By (Print Name and Sign): <u>Suzanne Jones</u>	Date: <u>June 21, 2021</u>	Time: <u>12:30</u>
Samples Relinquished By (Print Name and Sign):	Date:	Time:	Samples Received By (Print Name and Sign): <u>Simon</u>	Date: <u>23/6/21</u>	Time: <u>9:17</u>
Samples Relinquished By (Print Name and Sign):	Date:	Time:	Samples Received By (Print Name and Sign):	Date:	Time:

Page 1 of 2

Nº: T113585





CLIENT NAME: GOLDER ASSOCIATES LTD  
1931 ROBERTSON ROAD  
OTTAWA, ON K2H5B7  
(613) 592-9600  
ATTENTION TO: Laura Jones  
PROJECT: Ottawa Hospital  
AGAT WORK ORDER: 21Z766181  
SOIL ANALYSIS REVIEWED BY: Nivine Basily, Inorganics Report Writer  
DATE REPORTED: Jul 07, 2021  
PAGES (INCLUDING COVER): 7  
VERSION\*: 1

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

\*Notes

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.
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- The test results reported herewith relate only to the samples as received by the laboratory.
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- All reportable information as specified by ISO/IEC 17025:2017 is available from AGAT Laboratories upon request.



## Certificate of Analysis

AGAT WORK ORDER: 21Z766181

PROJECT: Ottawa Hospital

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

ATTENTION TO: Laura Jones

SAMPLING SITE:

SAMPLED BY: Robert Ireland

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

DATE RECEIVED: 2021-06-24

DATE REPORTED: 2021-07-07

SAMPLE DESCRIPTION: 21-201SA6

SAMPLE TYPE: Soil

DATE SAMPLED: 2021-06-08

2657535

Parameter	Unit	G / S	RDL	2657535
Antimony	µg/g	7.5	0.8	<0.8
Arsenic	µg/g	18	1	7
Barium	µg/g	390	2.0	315
Beryllium	µg/g	4	0.4	0.9
Boron	µg/g	120	5	14
Cadmium	µg/g	1.2	0.5	<0.5
Chromium	µg/g	160	5	25
Cobalt	µg/g	22	0.5	8.3
Copper	µg/g	140	1.0	15.7
Lead	µg/g	120	1	24
Molybdenum	µg/g	6.9	0.5	0.8
Nickel	µg/g	100	1	21
Selenium	µg/g	2.4	0.8	<0.8
Silver	µg/g	20	0.5	<0.5
Thallium	µg/g	1	0.5	1.6
Uranium	µg/g	23	0.50	<0.50
Vanadium	µg/g	86	0.4	34.9
Zinc	µg/g	340	5	256

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

2657535 Thallium was confirmed by re-analysis.

Analysis performed at AGAT Toronto (unless marked by \*)

Certified By:



*Nvine Basly*



## Certificate of Analysis

AGAT WORK ORDER: 21Z766181

PROJECT: Ottawa Hospital

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 MISSISSAUGA, ONTARIO  
 CANADA L4Z 1Y2  
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 FAX (905)712-5122  
<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Laura Jones

SAMPLING SITE:

SAMPLED BY: Robert Ireland

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

DATE RECEIVED: 2021-06-24

DATE REPORTED: 2021-07-07

SAMPLE DESCRIPTION: 21-201SA6

SAMPLE TYPE: Soil

DATE SAMPLED: 2021-06-08

Parameter	Unit	G / S	RDL	2657535
Mercury	µg/g	0.27	0.10	<0.10

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

Analysis performed at AGAT Toronto (unless marked by \*)

Certified By:



*Robert Ireland*





## Exceedance Summary

AGAT WORK ORDER: 21Z766181

PROJECT: Ottawa Hospital

5835 COOPERS AVENUE  
MISSISSAUGA, ONTARIO  
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<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Laura Jones

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
2657535	21-201SA6	ON T3 S RPI CT	O. Reg. 153(511) - Metals (Including Hydrides) (Soil)	Thallium	µg/g	1	1.6

## Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD  
 PROJECT: Ottawa Hospital  
 SAMPLING SITE:

AGAT WORK ORDER: 21Z766181  
 ATTENTION TO: Laura Jones  
 SAMPLED BY: Robert Ireland

Soil Analysis														
RPT Date: Jul 07, 2021			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE		MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits
						Lower		Upper	Lower		Upper	Lower		Upper

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

Antimony	2669883		<0.8	<0.8	NA	< 0.8	124%	70%	130%	98%	80%	120%	77%	70%	130%
Arsenic	2669883		4	4	NA	< 1	118%	70%	130%	101%	80%	120%	109%	70%	130%
Barium	2669883		105	103	1.9%	< 2.0	110%	70%	130%	100%	80%	120%	101%	70%	130%
Beryllium	2669883		0.7	0.6	NA	< 0.4	101%	70%	130%	90%	80%	120%	99%	70%	130%
Boron	2669883		11	11	NA	< 5	85%	70%	130%	94%	80%	120%	89%	70%	130%
Cadmium	2669883		<0.5	<0.5	NA	< 0.5	116%	70%	130%	99%	80%	120%	104%	70%	130%
Chromium	2669883		30	30	0.0%	< 5	105%	70%	130%	102%	80%	120%	104%	70%	130%
Cobalt	2669883		10.7	11.0	2.8%	< 0.5	107%	70%	130%	102%	80%	120%	103%	70%	130%
Copper	2669883		22.7	22.1	2.7%	< 1.0	96%	70%	130%	107%	80%	120%	98%	70%	130%
Lead	2669883		12	11	8.7%	< 1	107%	70%	130%	95%	80%	120%	90%	70%	130%
Molybdenum	2669883		<0.5	<0.5	NA	< 0.5	119%	70%	130%	106%	80%	120%	111%	70%	130%
Nickel	2669883		22	22	0.0%	< 1	101%	70%	130%	102%	80%	120%	98%	70%	130%
Selenium	2669883		<0.8	<0.8	NA	< 0.8	113%	70%	130%	96%	80%	120%	106%	70%	130%
Silver	2669883		<0.5	<0.5	NA	< 0.5	102%	70%	130%	108%	80%	120%	100%	70%	130%
Thallium	2669883		<0.5	<0.5	NA	< 0.5	110%	70%	130%	100%	80%	120%	101%	70%	130%
Uranium	2669883		0.68	0.68	NA	< 0.50	112%	70%	130%	101%	80%	120%	105%	70%	130%
Vanadium	2669883		39.4	39.6	0.5%	< 0.4	114%	70%	130%	104%	80%	120%	109%	70%	130%
Zinc	2669883		73	72	1.4%	< 5	109%	70%	130%	104%	80%	120%	117%	70%	130%

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

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

Mercury	2669883		<0.10	<0.10	NA	< 0.10	94%	70%	130%	90%	80%	120%	86%	70%	130%
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Comments: NA signifies Not Applicable.  
 Duplicate NA: results are under 5X the RDL and will not be calculated.

Certified By: \_\_\_\_\_



*Nivine Basily*

## Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 21Z766181

PROJECT: Ottawa Hospital

ATTENTION TO: Laura Jones

SAMPLING SITE:

SAMPLED BY: Robert Ireland

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Antimony	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Arsenic	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Barium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Beryllium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Boron	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Cadmium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Chromium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Cobalt	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Copper	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Lead	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Molybdenum	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Nickel	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Selenium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Silver	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Thallium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Uranium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Vanadium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Zinc	MET 93 -6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Mercury	MET-93-6103	modified from EPA 7471B and SM 3112 B	ICP-MS



# AGAT Laboratories

*166 BIK*  
*(Free-packs/Bagged etc) - 4-8/5-1/6-4*

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

## Chain of Custody Record

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

### Report Information:

Company: Golder Associates Ltd.  
 Contact: Laura Jones / Rochelle Mathew  
 Address: 193 Robertson Road, Nepean, ON  
 Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
 Reports to be sent to: Laura Jones@Golder.com  
 1. Email: RMathew@Golder.com  
 2. Email: \_\_\_\_\_

### Regulatory Requirements:

No Regulatory Requirement  
 (Please check all applicable boxes)

Regulation 153/04  
 Table 3 Indicate One  
 Ind./Com.  
 Res./Park  
 Agriculture

Soil Texture (Check One)  
 Coarse  
 Fine

Region \_\_\_\_\_ Indicate One  
 Sewer Use  
 Sanitary  
 Storm  
 MISA

Regulation 558  
 CCME  
 Prov. Water Quality Objectives (PWQO)  
 Other

Indicate One

### Project Information:

Project: Oranva Hospital  
 Site Location: \_\_\_\_\_  
 Sampled By: Robert Ireland  
 AGAT Quote #: 50 PO: 21451149  
 Please note: If quotation number is not provided, client will be billed full price for analysis.

### Is this submission for a Record of Site Condition?

Yes  No

### Report Guideline on Certificate of Analysis

Yes  No

### Sample Matrix Legend

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

### Invoice Information:

Bill To Same:  Yes  No  
 Company: \_\_\_\_\_  
 Contact: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 Email: \_\_\_\_\_

### Laboratory Use Only

Work Order #: 217 766181  
 Cooler Quantity: one ice  
 Arrival Temperatures: 17.3 | 16.0 | 17.1  
 Custody Seal Intact:  Yes  No  N/A  
 Notes: \_\_\_\_\_

### Turnaround Time (TAT) Required:

**Regular TAT**  5 to 7 Business Days  
**Rush TAT** (Rush Surcharges Apply)  
 3 Business Days  2 Business Days  Next Business Day  
**OR** Date Required (Rush Surcharges May Apply): \_\_\_\_\_

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

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

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Y / N	Field Filtered - Metals, Hg, CrVI	Metals and Inorganics	Full Metals Scan	Regulation/Custom Metals	Nutrients:	Volatiles:	PHCs F1 - F4	ABNS	PAHs	PCBs:	Organochlorine Pesticides	TCLP:	Sewer Use
21-2015A6	June 8, 2015		1	Soil				<input checked="" type="checkbox"/> All Metals <input type="checkbox"/> 153 Metals (excl. Hydrides) <input type="checkbox"/> Hydride Metals <input checked="" type="checkbox"/> 153 Metals (Incl. Hydrides)			<input type="checkbox"/> TP <input type="checkbox"/> NH <sub>3</sub> <input type="checkbox"/> TN <input type="checkbox"/> NO <sub>3</sub> <input type="checkbox"/> NO <sub>2</sub> <input type="checkbox"/> NO <sub>x</sub> + NO <sub>2</sub>	<input type="checkbox"/> VOC <input type="checkbox"/> BTEX <input type="checkbox"/> THM				<input type="checkbox"/> Total <input type="checkbox"/> Aroclors		<input type="checkbox"/> M&I <input type="checkbox"/> VOCs <input type="checkbox"/> ABNS <input type="checkbox"/> B(a)P <input type="checkbox"/> PCBs	<input checked="" type="checkbox"/> Metals, As, Se, Sb

Samples Relinquished By (Print Name and Sign): <u>Rochelle Mathew</u> <i>Mathew</i>	Date: <u>June 24</u>	Time: <u>12:00</u>	Samples Received By (Print Name and Sign): <u>Ben thelet</u>	Date: <u>21/6/24</u>	Time: <u>14:00</u>
Samples Relinquished By (Print Name and Sign): <u>Up to Pms</u>	Date: <u>21/6/24</u>	Time: <u>16:00</u>	Samples Received By (Print Name and Sign): <u>Smran</u>	Date: <u>June 28/24</u>	Time: _____
Samples Relinquished By (Print Name and Sign): _____	Date: _____	Time: _____	Samples Received By (Print Name and Sign): _____	Date: <u>9:15 am</u>	Time: _____

Page 1 of 1  
 No: **T 063225**



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

ATTENTION TO: Laura Jones

PROJECT: 229413340

AGAT WORK ORDER: 21Z753435

SOIL ANALYSIS REVIEWED BY: Jacky Zhu, Spectroscopy Technician

TRACE ORGANICS REVIEWED BY: Neli Popnikolova, Senior Chemist

DATE REPORTED: Aug 24, 2021

PAGES (INCLUDING COVER): 14

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: 21Z753435

PROJECT: 229413340

5835 COOPERS AVENUE  
MISSISSAUGA, ONTARIO  
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TEL (905)712-5100  
FAX (905)712-5122  
<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Laura Jones

SAMPLING SITE:

SAMPLED BY:

### O. Reg. 153(511) - All Metals (Soil)

DATE RECEIVED: 2021-05-28

DATE REPORTED: 2021-08-24

Parameter	Unit	SAMPLE DESCRIPTION:		21-202 SA1	21-203 SA1
		SAMPLE TYPE:		Soil	Soil
		DATE SAMPLED:		2021-05-25	2021-05-19
		G / S	RDL	2530268	2530343
Antimony	µg/g	7.5	0.8	<0.8	<0.8
Arsenic	µg/g	18	1	5	2
Barium	µg/g	390	2.0	66.6	74.6
Beryllium	µg/g	4	0.4	<0.4	<0.4
Boron	µg/g	120	5	<5	<5
Boron (Hot Water Soluble)	µg/g	1.5	0.10	0.23	0.44
Cadmium	µg/g	1.2	0.5	<0.5	<0.5
Chromium	µg/g	160	5	26	18
Cobalt	µg/g	22	0.5	5.1	6.1
Copper	µg/g	140	1.0	14.0	15.8
Lead	µg/g	120	1	19	9
Molybdenum	µg/g	6.9	0.5	<0.5	0.9
Nickel	µg/g	100	1	12	10
Selenium	µg/g	2.4	0.8	<0.8	<0.8
Silver	µg/g	20	0.5	<0.5	<0.5
Thallium	µg/g	1	0.5	<0.5	<0.5
Uranium	µg/g	23	0.50	0.67	0.79
Vanadium	µg/g	86	0.4	28.7	25.8
Zinc	µg/g	340	5	56	49
Chromium, Hexavalent	µg/g	8	0.2	<0.2	<0.2
Mercury	µg/g	0.27	0.10	0.48	<0.10

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

Analysis performed at AGAT Toronto (unless marked by \*)

Certified By:





## Certificate of Analysis

AGAT WORK ORDER: 21Z753435

PROJECT: 229413340

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

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Laura Jones

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2021-05-28

DATE REPORTED: 2021-08-24

SAMPLE DESCRIPTION: 21-202 SA9

SAMPLE TYPE: Soil

DATE SAMPLED: 2021-05-25

Parameter	Unit	G / S	RDL	2530341
Mercury	µg/g	0.27	0.10	<0.10

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Coarse Textured Soils  
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## Certificate of Analysis

AGAT WORK ORDER: 21Z753435

PROJECT: 229413340

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MISSISSAUGA, ONTARIO  
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<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Laura Jones

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2021-05-28

DATE REPORTED: 2021-08-24

Parameter	Unit	SAMPLE DESCRIPTION:					
		G / S		21-202 SA1	21-202 SA4	21-203 SA1	21-203 SA5
		RDL		Soil	Soil	Soil	Soil
		DATE SAMPLED:		2021-05-25	2021-05-25	2021-05-19	2021-05-19
				2530268	2530340	2530343	2530345
Naphthalene	µg/g	0.6	0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthylene	µg/g	0.15	0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthene	µg/g	7.9	0.05	<0.05	<0.05	<0.05	<0.05
Fluorene	µg/g	62	0.05	<0.05	<0.05	<0.05	<0.05
Phenanthrene	µg/g	6.2	0.05	<0.05	<0.05	<0.05	<0.05
Anthracene	µg/g	0.67	0.05	<0.05	<0.05	<0.05	<0.05
Fluoranthene	µg/g	0.69	0.05	<0.05	<0.05	<0.05	<0.05
Pyrene	µg/g	78	0.05	<0.05	<0.05	<0.05	<0.05
Benz(a)anthracene	µg/g	0.5	0.05	<0.05	<0.05	<0.05	<0.05
Chrysene	µg/g	7	0.05	<0.05	<0.05	<0.05	<0.05
Benzo(b)fluoranthene	µg/g	0.78	0.05	<0.05	<0.05	0.07	<0.05
Benzo(k)fluoranthene	µg/g	0.78	0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene	µg/g	0.3	0.05	<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	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	0.05	<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	<0.05
1 and 2 Methylnaphthalene	µg/g	0.99	0.05	<0.05	<0.05	<0.05	<0.05
Moisture Content	%		0.1	12.0	7.7	9.2	9.2
Surrogate	Unit	Acceptable Limits					
Naphthalene-d8	%	50-140		68	84	63	61
Acenaphthene-d10	%	50-140		85	75	67	66
Chrysene-d12	%	50-140		84	75	62	64

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

2530268-2530345 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:





## Certificate of Analysis

AGAT WORK ORDER: 21Z753435

PROJECT: 229413340

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

ATTENTION TO: Laura Jones

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2021-05-28

DATE REPORTED: 2021-08-24

Parameter	Unit	SAMPLE DESCRIPTION:					
		G / S		21-202 SA1	21-202 SA4	21-203 SA1	21-203 SA5
		RDL		Soil	Soil	Soil	Soil
		DATE SAMPLED:		2021-05-25	2021-05-25	2021-05-19	2021-05-19
				2530268	2530340	2530343	2530345
Benzene	µg/g	0.21	0.02	<0.02	<0.02	<0.02	<0.02
Toluene	µg/g	2.3	0.05	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	µg/g	2	0.05	<0.05	<0.05	<0.05	<0.05
m & p-Xylene	µg/g		0.05	<0.05	<0.05	<0.05	<0.05
o-Xylene	µg/g		0.05	<0.05	<0.05	<0.05	<0.05
Xylenes (Total)	µg/g	3.1	0.05	<0.05	<0.05	<0.05	<0.05
F1 (C6 - C10)	µg/g	55	5	<5	<5	<5	<5
F1 (C6 to C10) minus BTEX	µg/g	55	5	<5	<5	<5	<5
F2 (C10 to C16)	µg/g	98	10	<10	<10	<10	<10
F2 (C10 to C16) minus Naphthalene	µg/g		10	<10	<10	<10	<10
F3 (C16 to C34)	µg/g	300	50	<50	<50	<50	<50
F3 (C16 to C34) minus PAHs	µg/g		50	<50	<50	<50	<50
F4 (C34 to C50)	µg/g	2800	50	<50	<50	<50	<50
Gravimetric Heavy Hydrocarbons	µg/g	2800	50	NA	NA	NA	NA
Moisture Content	%		0.1	12.0	7.7	9.2	9.2
Surrogate	Unit	Acceptable Limits					
Toluene-d8	% Recovery	60-140	88	80	87	85	
Terphenyl	%	60-140	90	95	103	114	

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

DATE RECEIVED: 2021-05-28

DATE REPORTED: 2021-08-24

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

2530268-2530345 Results are based on sample dry weight.  
The C6-C10 fraction is calculated using toluene response factor.  
Xylenes total is a calculated parameter. The calculated value is the sum of m&p-Xylene and o-Xylene.  
C6-C10 (F1 minus BTEX) is a calculated parameter. The calculated value is F1 minus BTEX.  
The calculated parameters are non-accredited. The parameters that are components of the calculation are accredited.  
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and 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:



**Exceedance Summary**

AGAT WORK ORDER: 21Z753435

PROJECT: 229413340

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CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Laura Jones

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
2530268	21-202 SA1	ON T3 S RPI CT	O. Reg. 153(511) - All Metals (Soil)	Mercury	µg/g	0.27	0.48

## Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD  
 PROJECT: 229413340  
 SAMPLING SITE:

AGAT WORK ORDER: 21Z753435  
 ATTENTION TO: Laura Jones  
 SAMPLED BY:

Soil Analysis															
RPT Date: Aug 24, 2021			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

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

Antimony	2542585	<0.8	<0.8	NA	< 0.8	136%	70%	130%	100%	80%	120%	98%	70%	130%
Arsenic	2542585	<1	<1	NA	< 1	115%	70%	130%	102%	80%	120%	109%	70%	130%
Barium	2542585	26.0	27.7	6.3%	< 2.0	109%	70%	130%	99%	80%	120%	107%	70%	130%
Beryllium	2542585	<0.4	<0.4	NA	< 0.4	74%	70%	130%	93%	80%	120%	96%	70%	130%
Boron	2542585	<5	<5	NA	< 5	77%	70%	130%	112%	80%	120%	107%	70%	130%
Boron (Hot Water Soluble)	2539835	1.73	1.68	2.9%	< 0.10	94%	60%	140%	99%	70%	130%	108%	60%	140%
Cadmium	2542585	<0.5	<0.5	NA	< 0.5	91%	70%	130%	103%	80%	120%	105%	70%	130%
Chromium	2542585	11	16	NA	< 5	106%	70%	130%	108%	80%	120%	113%	70%	130%
Cobalt	2542585	3.0	3.0	0.0%	< 0.5	107%	70%	130%	105%	80%	120%	112%	70%	130%
Copper	2542585	8.4	10.1	18.4%	< 1.0	95%	70%	130%	110%	80%	120%	111%	70%	130%
Lead	2542585	1	1	NA	< 1	101%	70%	130%	96%	80%	120%	98%	70%	130%
Molybdenum	2542585	<0.5	0.9	NA	< 0.5	113%	70%	130%	107%	80%	120%	109%	70%	130%
Nickel	2542585	5	5	0.0%	< 1	103%	70%	130%	101%	80%	120%	107%	70%	130%
Selenium	2542585	<0.8	<0.8	NA	< 0.8	129%	70%	130%	97%	80%	120%	108%	70%	130%
Silver	2542585	<0.5	<0.5	NA	< 0.5	102%	70%	130%	111%	80%	120%	103%	70%	130%
Thallium	2542585	<0.5	<0.5	NA	< 0.5	106%	70%	130%	105%	80%	120%	107%	70%	130%
Uranium	2542585	<0.50	<0.50	NA	< 0.50	107%	70%	130%	102%	80%	120%	109%	70%	130%
Vanadium	2542585	29.7	26.4	11.8%	< 0.4	112%	70%	130%	104%	80%	120%	107%	70%	130%
Zinc	2542585	18	31	NA	< 5	101%	70%	130%	109%	80%	120%	124%	70%	130%
Chromium, Hexavalent	2547408	<0.2	<0.2	NA	< 0.2	94%	70%	130%	99%	80%	120%	82%	70%	130%
Mercury	2542585	<0.10	<0.10	NA	< 0.10	101%	70%	130%	98%	80%	120%	101%	70%	130%

Comments: For a multi-element scan for lab control standards and matrix spikes, up to 10% of analytes may exceed the quoted limits by up to 10% absolute and it is considered acceptable.

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

Electrical Conductivity (2:1)	2543791	0.743	0.788	5.9%	< 0.005	108%	80%	120%						
Sodium Adsorption Ratio (2:1) (Calc.)	2530200	0.213	0.222	4.1%	NA									

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

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

Mercury	2581686	<0.10	<0.10	NA	< 0.10	114%	70%	130%	99%	80%	120%	96%	70%	130%
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Comments: NA Signifies Not Applicable.  
 Duplicate NA: results are under 5X the RDL and will not be calculated.

Certified By: \_\_\_\_\_



## Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD  
 PROJECT: 229413340  
 SAMPLING SITE:

AGAT WORK ORDER: 21Z753435  
 ATTENTION TO: Laura Jones  
 SAMPLED BY:

### Trace Organics Analysis

RPT Date: Aug 24, 2021			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
						Lower		Upper	Lower		Upper	Lower		Upper	

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

Naphthalene	2530200		<0.05	<0.05	NA	< 0.05	85%	50%	140%	63%	50%	140%	87%	50%	140%
Acenaphthylene	2530200		<0.05	<0.05	NA	< 0.05	116%	50%	140%	70%	50%	140%	87%	50%	140%
Acenaphthene	2530200		<0.05	<0.05	NA	< 0.05	111%	50%	140%	67%	50%	140%	84%	50%	140%
Fluorene	2530200		<0.05	<0.05	NA	< 0.05	116%	50%	140%	71%	50%	140%	75%	50%	140%
Phenanthrene	2530200		0.05	0.06	NA	< 0.05	116%	50%	140%	71%	50%	140%	95%	50%	140%
Anthracene	2530200		<0.05	<0.05	NA	< 0.05	126%	50%	140%	77%	50%	140%	85%	50%	140%
Fluoranthene	2530200		0.11	0.12	NA	< 0.05	109%	50%	140%	68%	50%	140%	72%	50%	140%
Pyrene	2530200		0.09	0.10	NA	< 0.05	100%	50%	140%	65%	50%	140%	96%	50%	140%
Benz(a)anthracene	2530200		<0.05	<0.05	NA	< 0.05	67%	50%	140%	77%	50%	140%	75%	50%	140%
Chrysene	2530200		<0.05	<0.05	NA	< 0.05	75%	50%	140%	84%	50%	140%	81%	50%	140%
Benzo(b)fluoranthene	2530200		0.10	0.18	NA	< 0.05	94%	50%	140%	97%	50%	140%	95%	50%	140%
Benzo(k)fluoranthene	2530200		<0.05	0.09	NA	< 0.05	110%	50%	140%	101%	50%	140%	75%	50%	140%
Benzo(a)pyrene	2530200		0.08	0.08	NA	< 0.05	95%	50%	140%	99%	50%	140%	81%	50%	140%
Indeno(1,2,3-cd)pyrene	2530200		<0.05	<0.05	NA	< 0.05	71%	50%	140%	69%	50%	140%	96%	50%	140%
Dibenz(a,h)anthracene	2530200		<0.05	<0.05	NA	< 0.05	74%	50%	140%	72%	50%	140%	75%	50%	140%
Benzo(g,h,i)perylene	2530200		<0.05	<0.05	NA	< 0.05	68%	50%	140%	71%	50%	140%	82%	50%	140%

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

Benzene	2530345	2530345	<0.02	<0.02	NA	< 0.02	83%	60%	140%	84%	60%	140%	80%	60%	140%
Toluene	2530345	2530345	<0.05	<0.05	NA	< 0.05	107%	60%	140%	111%	60%	140%	98%	60%	140%
Ethylbenzene	2530345	2530345	<0.05	<0.05	NA	< 0.05	100%	60%	140%	102%	60%	140%	90%	60%	140%
m & p-Xylene	2530345	2530345	<0.05	<0.05	NA	< 0.05	97%	60%	140%	100%	60%	140%	105%	60%	140%
o-Xylene	2530345	2530345	<0.05	<0.05	NA	< 0.05	102%	60%	140%	118%	60%	140%	104%	60%	140%
F1 (C6 - C10)	2530345	2530345	<5	<5	NA	< 5	74%	60%	140%	92%	60%	140%	90%	60%	140%
F2 (C10 to C16)	2536939		< 10	< 10	NA	< 10	109%	60%	140%	65%	60%	140%	68%	60%	140%
F3 (C16 to C34)	2536939		< 10	< 10	NA	< 50	101%	60%	140%	75%	60%	140%	81%	60%	140%
F4 (C34 to C50)	2536939		< 50	< 50	NA	< 50	92%	60%	140%	110%	60%	140%	88%	60%	140%

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

Certified By: \_\_\_\_\_



## QA Violation

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 21Z753435

PROJECT: 229413340

ATTENTION TO: Laura Jones

RPT Date: Aug 24, 2021			REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Sample Id	Sample Description	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
				Lower	Upper		Lower	Upper		Lower	Upper

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

Antimony	21-202 SA1	136%	70%	130%	100%	80%	120%	98%	70%	130%
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Comments: For a multi-element scan for lab control standards and matrix spikes, up to 10% of analytes may exceed the quoted limits by up to 10% absolute and it is considered acceptable.



## Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD  
PROJECT: 229413340  
SAMPLING SITE:

AGAT WORK ORDER: 21Z753435  
ATTENTION TO: Laura Jones  
SAMPLED BY:

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
Mercury	MET-93-6103	modified from EPA 7471B and SM 3112 B	ICP-MS
Electrical Conductivity (2:1)	INOR-93-6036	modified from MSA PART 3, CH 14 and SM 2510 B	EC METER
Sodium Adsorption Ratio (2:1) (Calc.)	INOR-93-6007	modified from EPA 6010D & Analytical Protocol	ICP/OES

## Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 21Z753435

PROJECT: 229413340

ATTENTION TO: Laura Jones

SAMPLING SITE:

SAMPLED BY:

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 Methylnaphthalene	ORG-91-5106	modified from EPA 3570 and EPA 8270E	GC/MS
Naphthalene-d8	ORG-91-5106	modified from EPA 3541 and EPA 8270E	GC/MS
Acenaphthene-d10	ORG-91-5106	modified from EPA 3541 and EPA 8270E	GC/MS
Chrysene-d12	ORG-91-5106	modified from EPA 3541 and EPA 8270E	GC/MS
Moisture Content	ORG-91-5009	CCME Tier 1 Method	BALANCE
Benzene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
Toluene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
Ethylbenzene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
m & p-Xylene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
o-Xylene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
Xylenes (Total)	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
F1 (C6 - C10)	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/FID
F1 (C6 to C10) minus BTEX	VOL-91-5009	modified from CCME Tier 1 Method	P&T GC/FID
Toluene-d8	VOL-91-5009	modified from EPA SW-846 5030C & 8260D	(P&T)GC/MS
F2 (C10 to C16)	VOL-91-5009	modified from CCME Tier 1 Method	GC/FID
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





## Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 21Z753435

PROJECT: 229413340

ATTENTION TO: Laura Jones

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
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



# AGAT

## Laboratories

LT 8-1/8-2/7.4  
Tree Dec

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

### Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water intended for human consumption)

#### Report Information:

Company: Golder Associates  
 Contact: Laura Jones  
 Address: 1931 Robertson Road, Nepean Ontario  
 Phone: (226) 378-2489 Fax: \_\_\_\_\_  
 Reports to be sent to:  
 1. Email: Laura\_Jones@golder.com; GAL\_EQUIS@golder.com  
 2. Email: Rochelle\_Mathew@Golder.com

#### Project Information:

Project: 21451149  
 Site Location: Ottawa Hospital  
 Sampled By: Robert Ireland  
 AGAT Quote #: SO

*Please note: If quotation number is not provided, client will be billed full price for analysis.*

#### Invoice Information:

Bill To Same: Yes  No

Company: \_\_\_\_\_  
 Contact: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 Email: \_\_\_\_\_

#### Regulatory Requirements: No Regulatory Requirement

(Please check all applicable boxes)

- Regulation 153/04  
 Table 3  
Indicate One
- Sewer Use  
 Regulation 558
- Sanitary  
 CCME
- Storm  
 Prov. Water Quality Objectives (PWQO)
- Other
- Ind/Com  
 Res/Park  
 Agriculture
- Soil Texture (Check One)  
 Coarse  
 Fine
- Region \_\_\_\_\_  
Indicate One

#### Is this submission for a Record of Site Condition?

Yes  No

#### Report Guideline on Certificate of Analysis

Yes  No

#### Sample Matrix Legend

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

#### Laboratory Use Only

Work Order #: 212753435

Cooler Quantity: 1

Arrival Temperatures: 8.2, 8.4, 8.4

Custody Seal Intact:  Yes  No  N/A

Notes: Id

#### Turnaround Time (TAT) Required:

Regular TAT  5 to 7 Business Days

#### Rush TAT (Rush Surcharges Apply)

3 Business Days  2 Business Days  1 Business Day

OR Date Required (Rush Surcharges May Apply):

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

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Metals and Inorganics	Metal Scan	Hydride Forming Metals	Client Custom Metals	ORPs: <input type="checkbox"/> BHWS <input type="checkbox"/> Cl <input type="checkbox"/> CN- <input type="checkbox"/> Cr6+ <input type="checkbox"/> EC <input type="checkbox"/> FOC <input type="checkbox"/> NO3/NO2 <input type="checkbox"/> Total N <input checked="" type="checkbox"/> Hg <input type="checkbox"/> pH <input type="checkbox"/> SAR	Nutrients: <input type="checkbox"/> TP <input type="checkbox"/> NH4 <input type="checkbox"/> TKN <input type="checkbox"/> NO3 <input type="checkbox"/> NO2 <input type="checkbox"/> NO3/NO2	Volatiles: <input type="checkbox"/> VOC <input checked="" type="checkbox"/> BTEX <input type="checkbox"/> THM	CCME Fractions 1 to 4	ABNS	PAHs	Chlorophenols	PCBs	Organochlorine Pesticides	TCLP Metals/Inorganics	Sewer Use	As, Sb, Se	PHC F1-F4	VOCs	pH	Xtr/Hd PHC/VOC/PAH/PCB/mg/l
<del>BH</del> 21-202 SA1	05/25/21		3	Soil			<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
<del>BH</del> 21-202 SA4	05/25/21		3	Soil								<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>							<input checked="" type="checkbox"/>			
<del>BH</del> 21-202 SA9	05/25/21		3	Soil	Hold																				
<del>BH</del> 21-202 SA99	05/25/21		2	Soil	Hold / limited sample																				
<del>BH</del> 21-203 SA1	05/19/21		3	Soil	limited sample 250g		<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
<del>BH</del> 21-203 SA5	05/19/21		3	Soil								<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>							<input checked="" type="checkbox"/>			
<del>BH</del> 21-203 SA10	05/19/21		2	Soil	Extract Hold for PHC, BTEX, limited sample							<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>							<input checked="" type="checkbox"/>			

Samples Relinquished By (Print Name and Sign): <u>Rochelle Mathew</u> <u>Mathew</u>	Date: <u>05/28/2021</u>	Time: <u>15:00</u>	Samples Received By (Print Name and Sign): <u>Jeff Sorensen</u> <u>MSJ</u>	Date: <u>28 May 21</u>	Time: <u>1510</u>	Page <u>1</u> of <u>1</u>
Samples Relinquished By (Print Name and Sign):	Date:	Time:	Samples Received By (Print Name and Sign): <u>NEAL G...</u>	Date: <u>29 May 21</u>	Time: <u>11:30am</u>	N#:



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

ATTENTION TO: Rochelle Mathews

PROJECT: 21451149

AGAT WORK ORDER: 21T762306

SOIL ANALYSIS REVIEWED BY: Amanjot Bhela, Inorganic Lab Manager

TRACE ORGANICS REVIEWED BY: Pinkal Patel, Report Reviewer

DATE REPORTED: Jul 19, 2021

PAGES (INCLUDING COVER): 9

VERSION\*: 2

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

\*Notes

VERSION 2: Version 2 supersedes work order 21T762306, Version 1, issued June 22, 2021. 679 Methyl Hg.

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.
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- 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

# Certificate of Analysis

AGAT WORK ORDER: 21T762306

PROJECT: 21451149

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

ATTENTION TO: Rochelle Mathews

SAMPLING SITE:

SAMPLED BY:

## Methylmercury in Soil

DATE RECEIVED: 2021-06-16

DATE REPORTED: 2021-07-19

SAMPLE DESCRIPTION: 21-202 SA1

SAMPLE TYPE: Soil

DATE SAMPLED: 2021-06-16  
10:50

Parameter	Unit	G / S	RDL	2620679
Methyl Mercury	ng/g		0.4	1.3

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

Analysis performed at AGAT Halifax (unless marked by \*)

Certified By:

*Anamjot Bhela*



## Certificate of Analysis

AGAT WORK ORDER: 21T762306

PROJECT: 21451149

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MISSISSAUGA, ONTARIO  
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FAX (905)712-5122  
<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Rochelle Mathews

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2021-06-16

DATE REPORTED: 2021-07-19

Parameter	Unit	G / S	RDL	SAMPLE DESCRIPTION:		
				SSA1	SSA2	SSA3
				Soil	Soil	Soil
				2021-06-16 10:30	2021-06-16 10:15	2021-06-16 10:00
				2620721	2620795	2620797
Benzene	µg/g		0.02	<0.02	<0.02	<0.02
Toluene	µg/g		0.05	<0.05	<0.05	<0.05
Ethylbenzene	µg/g		0.05	<0.05	<0.05	<0.05
m & p-Xylene	µg/g		0.05	<0.05	<0.05	<0.05
o-Xylene	µg/g		0.05	<0.05	<0.05	<0.05
Xylenes (Total)	µg/g		0.05	<0.05	<0.05	<0.05
F1 (C6 - C10)	µg/g		5	<5	<5	<5
F1 (C6 to C10) minus BTEX	µg/g		5	<5	<5	<5
F2 (C10 to C16)	µg/g		10	<10	<10	<10
F3 (C16 to C34)	µg/g		50	<50	<50	<50
F4 (C34 to C50)	µg/g		50	<50	<50	<50
Gravimetric Heavy Hydrocarbons	µg/g		50	NA	NA	NA
Moisture Content	%		0.1	13.7	8.6	12.4
Surrogate	Unit	Acceptable Limits				
Toluene-d8	% Recovery	60-140	89	81	90	
Terphenyl	%	60-140	74	84	68	

Certified By:



# Certificate of Analysis

AGAT WORK ORDER: 21T762306

PROJECT: 21451149

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

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Rochelle Mathews

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2021-06-16

DATE REPORTED: 2021-07-19

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

2620721-2620797 Results are based on sample dry weight.  
 The C6-C10 fraction is calculated using Toluene response factor.  
 Xylenes is a calculated parameter. The calculated value is the sum of m&p-Xylene and o-Xylene.  
 C6-C10 (F1 minus BTEX) is a calculated parameter. The calculated value is F1 minus BTEX.  
 The calculated parameters are non-accredited. The parameters that are components of the calculation are accredited.  
 The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and n-C34.  
 Gravimetric Heavy Hydrocarbons are not included in the Total C16-C50 and are only determined if the chromatogram of the C34 - C50 hydrocarbons indicates that hydrocarbons >C50 are present.  
 The chromatogram has returned to baseline by the retention time of nC50.  
 Total C6 - C50 results are corrected for BTEX contribution.  
 This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.  
 nC6 and nC10 response factors are within 30% of Toluene response factor.  
 nC10, nC16 and nC34 response factors are within 10% of their average.  
 C50 response factor is within 70% of nC10 + nC16 + nC34 average.  
 Linearity is within 15%.  
 Extraction and holding times were met for this sample.  
 Fractions 1-4 are quantified with the contribution of PAHs. Under Ontario Regulation 153, results are considered valid without determining the PAH contribution if not requested by the client.  
 Quality Control Data is available upon request.

Analysis performed at AGAT Toronto (unless marked by \*)

Certified By:



## Certificate of Analysis

AGAT WORK ORDER: 21T762306

PROJECT: 21451149

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<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Rochelle Mathews

SAMPLING SITE:

SAMPLED BY:

### Total PCBs (soil)

DATE RECEIVED: 2021-06-16

DATE REPORTED: 2021-07-19

Parameter	Unit	G / S	RDL	SAMPLE DESCRIPTION:		
				SSA1	SSA2	SSA3
				Soil	Soil	Soil
				2021-06-16 10:30	2021-06-16 10:15	2021-06-16 10:00
				2620721	2620795	2620797
Polychlorinated Biphenyls	µg/g		0.1	<0.1	<0.1	<0.1
Moisture Content	%		0.1	13.7	8.6	12.4
Surrogate	Unit	Acceptable Limits				
Decachlorobiphenyl	%	60-130	108	104	100	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard  
 2620721-2620797 Results are based on the dry weight of soil extracted.  
 Analysis performed at AGAT Toronto (unless marked by \*)

Certified By:

## Quality Assurance

 CLIENT NAME: GOLDER ASSOCIATES LTD  
 PROJECT: 21451149  
 SAMPLING SITE:

 AGAT WORK ORDER: 21T762306  
 ATTENTION TO: Rochelle Mathews  
 SAMPLED BY:

Soil Analysis																
RPT Date: Jul 19, 2021			DUPLICATE				Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Measured Value		Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits		
								Lower	Upper		Lower	Upper		Lower	Upper	
Methylmercury in Soil																
Methyl Mercury	1		1.3	1.7	NA	< 0.4	91%	65%	135%	73%	65%	135%	111%	65%	135%	

Certified By:





## Quality Assurance

 CLIENT NAME: GOLDER ASSOCIATES LTD  
 PROJECT: 21451149  
 SAMPLING SITE:

 AGAT WORK ORDER: 21T762306  
 ATTENTION TO: Rochelle Mathews  
 SAMPLED BY:

### Trace Organics Analysis

RPT Date: Jul 19, 2021			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - PHCs F1 - F4 (Soil)															
Benzene	2619714		<0.02	<0.02	NA	< 0.02	85%	60%	140%	100%	60%	140%	83%	60%	140%
Toluene	2619714		<0.05	<0.05	NA	< 0.05	113%	60%	140%	119%	60%	140%	116%	60%	140%
Ethylbenzene	2619714		<0.05	<0.05	NA	< 0.05	115%	60%	140%	97%	60%	140%	91%	60%	140%
m & p-Xylene	2619714		<0.05	<0.05	NA	< 0.05	129%	60%	140%	106%	60%	140%	116%	60%	140%
o-Xylene	2619714		<0.05	<0.05	NA	< 0.05	107%	60%	140%	108%	60%	140%	113%	60%	140%
F1 (C6 - C10)	2619714		<5	<5	NA	< 5	104%	60%	140%	100%	60%	140%	91%	60%	140%
F2 (C10 to C16)	2625127		49	39	NA	< 10	108%	60%	140%	86%	60%	140%	82%	60%	140%
F3 (C16 to C34)	2625127		< 50	< 50	NA	< 50	116%	60%	140%	102%	60%	140%	85%	60%	140%
F4 (C34 to C50)	2625127		< 50	< 50	NA	< 50	100%	60%	140%	90%	60%	140%	88%	60%	140%
Total PCBs (soil)															
Polychlorinated Biphenyls	2621688		< 0.1	< 0.1	NA	< 0.1	103%	60%	140%	104%	60%	140%	102%	60%	140%

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

Certified By: \_\_\_\_\_





## Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD  
 PROJECT: 21451149  
 SAMPLING SITE:

AGAT WORK ORDER: 21T762306  
 ATTENTION TO: Rochelle Mathews  
 SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Methyl Mercury	MET-121-6116 & MET-121-6117	EPA 1630	CV/AFS
Trace Organics Analysis			
Benzene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
Toluene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
Ethylbenzene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
m & p-Xylene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
o-Xylene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
Xylenes (Total)	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
F1 (C6 - C10)	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/FID
F1 (C6 to C10) minus BTEX	VOL-91-5009	modified from CCME Tier 1 Method	P&T GC/FID
Toluene-d8	VOL-91-5009	modified from EPA SW-846 5030C & 8260D	(P&T)GC/MS
F2 (C10 to C16)	VOL-91-5009	modified from CCME Tier 1 Method	GC/FID
F3 (C16 to C34)	VOL-91-5009	modified from CCME Tier 1 Method	GC/FID
F4 (C34 to C50)	VOL-91-5009	modified from CCME Tier 1 Method	GC/FID
Gravimetric Heavy Hydrocarbons	VOL-91-5009	modified from CCME Tier 1 Method	BALANCE
Moisture Content	ORG-91-5009	CCME Tier 1 Method	BALANCE
Terphenyl	VOL-91-5009	modified from CCME Tier 1 Method	GC/FID
Polychlorinated Biphenyls	ORG-91-5113	modified from EPA SW-846 3541 & 8082	GC/ECD
Decachlorobiphenyl	ORG-91-5113	modified from EPA SW-846 3541 & 8082	GC/ECD



# AGAT Laboratories

LT Uce - packs - 40/4.4/4.5  
 5835 Coopers Avenue  
 Mississauga, Ontario L4Z 1Y2  
 Ph: 905.712.5100 Fax: 905.712.5122  
 web@earth.agatlabs.com  
 16/13/16

## Chain of Custody Record

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

### Report Information:

Company: Golder  
 Contact: Rochelle Mathew  
 Address: 1931 Robertson Rd  
Ottawa, ON  
 Phone: 613 592 9600 Fax: \_\_\_\_\_  
 Reports to be sent to:  
 1. Email: rochelle-mathew@golder.com  
 2. Email: \_\_\_\_\_

### Project Information:

Project: 21451149  
 Site Location: TOH  
 Sampled By: Aaron Bradshaw  
 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: \_\_\_\_\_

### Regulatory Requirements:

(Please check all applicable boxes)

Regulation 153/04  
 Table 3 Indicate One  
 Ind/Com  
 Res/Park  
 Agriculture

Excess Soils R406  
 Table \_\_\_\_\_ Indicate One

Regulation 558  
 CCME

Sewer Use  
 Sanitary  Storm  
 Region \_\_\_\_\_

Soil Texture (Check One)  
 Coarse  
 Fine

Prov. Water Quality Objectives (PWQO)  
 Other  
 Indicate One \_\_\_\_\_

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

Report Guideline on Certificate of Analysis  
 Yes  No

### Sample Matrix Legend

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

### Laboratory Use Only

Work Order #: 21T762306  
 Cooler Quantity: 1  
 Arrival Temperatures: 22.4, 22.6, 22.7  
 Custody Seal Intact:  Yes  No  N/A  
 Notes: Ice

### 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

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Y/N	Field Filtered - Metals, Hg, CrVI, DO5	O. Reg 153	O. Reg 406	Potentially Hazardous or High Concentration (Y/N)
								Metals & Inorganics Metals - <input type="checkbox"/> CrVI, <input type="checkbox"/> Hg, <input type="checkbox"/> HWSB BTEX, F1-F4 PHCs Analyze F4G if required <input type="checkbox"/> Yes <input type="checkbox"/> No PAHs Total PCBs <input type="checkbox"/> Aroclor VOC	Landfill Disposal Characterization TCLP: <input type="checkbox"/> M&I, <input type="checkbox"/> VOCs, <input type="checkbox"/> ABAs, <input type="checkbox"/> B(a)P, <input type="checkbox"/> PCBs Excess Soils SPLP Rainwater Leach SPLP: <input type="checkbox"/> Metals, <input type="checkbox"/> VOCs, <input type="checkbox"/> SVOCs Excess Soils Characterization Package pH, ICPMMS Metals, BTEX, F1-F4 Salt - EC/SAR	
<u>21-202 SA1</u>	<u>Jun 18/21</u>	<u>1050 AM</u>	<u>1</u>	<u>Soil</u>						
<u>SSA1</u>	<u>↓</u>	<u>1030 AM</u>	<u>3</u>	<u>↓</u>						
<u>SSA2</u>	<u>↓</u>	<u>1015 AM</u>	<u>3</u>	<u>↓</u>						
<u>SSA3</u>	<u>↓</u>	<u>1000 AM</u>	<u>3</u>	<u>↓</u>						

Samples Relinquished By (Print Name and Sign): Aaron Bradshaw Date: Jun 18/21 Time: 11:30  
 Samples Received By (Print Name and Sign): Jeta Jones Date: 16 Jun 21 Time: 11:35  
 Samples Relinquished By (Print Name and Sign): \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 Samples Received By (Print Name and Sign): SMRAN Date: 17/21 Time: 9:15 am  
 Samples Relinquished By (Print Name and Sign): \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 Samples Received By (Print Name and Sign): \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_



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

ATTENTION TO: Laura Jones

PROJECT: 21451149

AGAT WORK ORDER: 21Z766486

SOIL ANALYSIS REVIEWED BY: Amanjot Bhela, Inorganic Lab Manager

DATE REPORTED: Jul 09, 2021

PAGES (INCLUDING COVER): 8

VERSION\*: 1

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

**\*Notes**

VERSION 1:V1 issued 2021-07-07. Partial report excluding MeHg.

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- 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.



## Certificate of Analysis

AGAT WORK ORDER: 21Z766486

PROJECT: 21451149

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

ATTENTION TO: Laura Jones

SAMPLING SITE:

SAMPLED BY: J. Sullivan

### Methylmercury in Soil

DATE RECEIVED: 2021-06-25

DATE REPORTED: 2021-07-09

		SAMPLE DESCRIPTION:		SSA5	SSA7
		SAMPLE TYPE:		Soil	Soil
		DATE SAMPLED:		2021-06-25 10:55	2021-06-25 11:15
Parameter	Unit	G / S	RDL	2662482	2662484
Methyl Mercury	ng/g		0.4	0.8	<0.4

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

Analysis performed at AGAT Halifax (unless marked by \*)

Certified By:

*Anamjot Bhela*  




## Certificate of Analysis

AGAT WORK ORDER: 21Z766486

PROJECT: 21451149

5835 COOPERS AVENUE  
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CANADA L4Z 1Y2  
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<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Laura Jones

SAMPLING SITE:

SAMPLED BY: J. Sullivan

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

DATE RECEIVED: 2021-06-25

DATE REPORTED: 2021-07-09

Parameter	Unit	SAMPLE DESCRIPTION:		SSA4	SSA6
		G / S	RDL	2662481	2662483
Antimony	µg/g	7.5	0.8	<0.8	<0.8
Arsenic	µg/g	18	1	65	5
Barium	µg/g	390	2.0	84.0	91.0
Beryllium	µg/g	4	0.4	0.4	0.5
Boron	µg/g	120	5	6	7
Cadmium	µg/g	1.2	0.5	<0.5	<0.5
Chromium	µg/g	160	5	26	22
Cobalt	µg/g	22	0.5	6.7	6.4
Copper	µg/g	140	1.0	12.8	10.3
Lead	µg/g	120	1	143	23
Molybdenum	µg/g	6.9	0.5	<0.5	<0.5
Nickel	µg/g	100	1	14	13
Selenium	µg/g	2.4	0.8	<0.8	<0.8
Silver	µg/g	20	0.5	<0.5	<0.5
Thallium	µg/g	1	0.5	<0.5	<0.5
Uranium	µg/g	23	0.50	0.71	0.79
Vanadium	µg/g	86	0.4	29.7	30.3
Zinc	µg/g	340	5	52	51

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

Analysis performed at AGAT Toronto (unless marked by \*)

Certified By:





## Certificate of Analysis

AGAT WORK ORDER: 21Z766486

PROJECT: 21451149

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

ATTENTION TO: Laura Jones

SAMPLING SITE:

SAMPLED BY: J. Sullivan

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

DATE RECEIVED: 2021-06-25

DATE REPORTED: 2021-07-09

		SAMPLE DESCRIPTION:		SSA4	SSA6
		SAMPLE TYPE:		Soil	Soil
		DATE SAMPLED:		2021-06-25 10:40	2021-06-25 10:50
Parameter	Unit	G / S	RDL	2662481	2662483
Mercury	µg/g	0.27	0.10	8.44	1.41

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

Analysis performed at AGAT Toronto (unless marked by \*)

Certified By:

*Amrajot Bhela*



**Exceedance Summary**

AGAT WORK ORDER: 21Z766486

PROJECT: 21451149

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

ATTENTION TO: Laura Jones

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
2662481	SSA4	ON T3 S RPI CT	O. Reg. 153(511) - Metals (Including Hydrides) (Soil)	Arsenic	µg/g	18	65
2662481	SSA4	ON T3 S RPI CT	O. Reg. 153(511) - Metals (Including Hydrides) (Soil)	Lead	µg/g	120	143
2662481	SSA4	ON T3 S RPI CT	O. Reg. 153(511) - ORPs (Soil)	Mercury	µg/g	0.27	8.44
2662483	SSA6	ON T3 S RPI CT	O. Reg. 153(511) - ORPs (Soil)	Mercury	µg/g	0.27	1.41



## Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD  
 PROJECT: 21451149  
 SAMPLING SITE:

AGAT WORK ORDER: 21Z766486  
 ATTENTION TO: Laura Jones  
 SAMPLED BY: J. Sullivan

Soil Analysis															
RPT Date: Jul 09, 2021			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

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

Antimony	2681802		<0.8	<0.8	NA	< 0.8	127%	70%	130%	107%	80%	120%	82%	70%	130%
Arsenic	2681802		4	5	NA	< 1	126%	70%	130%	103%	80%	120%	108%	70%	130%
Barium	2681802		150	150	0.0%	< 2.0	103%	70%	130%	107%	80%	120%	102%	70%	130%
Beryllium	2681802		0.6	0.5	NA	< 0.4	107%	70%	130%	109%	80%	120%	110%	70%	130%
Boron	2681802		19	17	NA	< 5	108%	70%	130%	113%	80%	120%	105%	70%	130%
Cadmium	2681802		<0.5	<0.5	NA	< 0.5	115%	70%	130%	108%	80%	120%	106%	70%	130%
Chromium	2681802		17	17	NA	< 5	128%	70%	130%	112%	80%	120%	114%	70%	130%
Cobalt	2681802		8.6	8.3	3.6%	< 0.5	120%	70%	130%	107%	80%	120%	109%	70%	130%
Copper	2681802		20.8	21.1	1.4%	< 1.0	102%	70%	130%	108%	80%	120%	102%	70%	130%
Lead	2681802		8	8	0.0%	< 1	115%	70%	130%	109%	80%	120%	102%	70%	130%
Molybdenum	2681802		1.1	1.0	NA	< 0.5	123%	70%	130%	108%	80%	120%	114%	70%	130%
Nickel	2681802		18	18	0.0%	< 1	119%	70%	130%	110%	80%	120%	107%	70%	130%
Selenium	2681802		<0.8	<0.8	NA	< 0.8	128%	70%	130%	106%	80%	120%	111%	70%	130%
Silver	2681802		<0.5	<0.5	NA	< 0.5	115%	70%	130%	111%	80%	120%	103%	70%	130%
Thallium	2681802		<0.5	<0.5	NA	< 0.5	122%	70%	130%	107%	80%	120%	104%	70%	130%
Uranium	2681802		1.17	1.12	NA	< 0.50	128%	70%	130%	110%	80%	120%	111%	70%	130%
Vanadium	2681802		24.8	23.9	3.7%	< 0.4	94%	70%	130%	107%	80%	120%	113%	70%	130%
Zinc	2681802		43	41	4.8%	< 5	105%	70%	130%	105%	80%	120%	100%	70%	130%

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

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

Mercury	2681802		<0.10	<0.10	NA	< 0.10	116%	70%	130%	103%	80%	120%	101%	70%	130%
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Comments: NA signifies Not Applicable.  
 Duplicate NA: results are under 5X the RDL and will not be calculated.

Methylmercury in Soil

Methyl Mercury	1		1.3	1.7	NA	< 0.4	91%	65%	135%	73%	65%	135%	111%	65%	135%
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Certified By:

*Amanjot Bhella*  




## Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD  
 PROJECT: 21451149  
 SAMPLING SITE:

AGAT WORK ORDER: 21Z766486  
 ATTENTION TO: Laura Jones  
 SAMPLED BY: J. Sullivan

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Methyl Mercury	MET-121-6116 & MET-121-6117	EPA 1630	CV/AFS
Antimony	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Arsenic	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Barium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Beryllium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Boron	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Cadmium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Chromium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Cobalt	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Copper	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Lead	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Molybdenum	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Nickel	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Selenium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Silver	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Thallium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Uranium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Vanadium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Zinc	MET 93 -6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Mercury	MET-93-6103	modified from EPA 7471B and SM 3112 B	ICP-MS



1 med red

### Laboratory Use Only

Work Order #: 212706486

Cooler Quantity: one - ice

Arrival Temperatures: 9.4 | 9.7 | 9.5  
LT: 6.9 | 7.0 | 7.1

Custody Seal Intact:  Yes  No  N/A

Notes: ON ICE

## Chain of Custody Record

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

**Report Information:**

Company: GOLDER ASSOCIATES

Contact: LAURA JONES

Address: 1931 ROBERTSON RD.

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

Reports to be sent to: laura-jones@golder.com

1. Email: rochelle-matthew@golder.com

2. Email: \_\_\_\_\_

**Regulatory Requirements:**  No Regulatory Requirement

(Please check all applicable boxes)

Regulation 153/04  
Table 3  
Indicate One

Sewer Use

Regulation 558

Ind/Com

Sanitary

CCME

Res/Park

Storm

Prov. Water Quality Objectives (PWQO)

Agriculture

Soil Texture (Check One) Region \_\_\_\_\_  
 Coarse Indicate One  
 Fine

MISA \_\_\_\_\_  
Indicate One

**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: 21451149

Site Location: J. Sullivan

Sampled By: \_\_\_\_\_

AGAT Quote #: \_\_\_\_\_ PO: \_\_\_\_\_

Please note: If quotation number is not provided, client will be billed full price for analysis.

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

Report Guideline on Certificate of Analysis  Yes  No

**Invoice Information:**

Bill To Same: Yes  No

Company: \_\_\_\_\_

Contact: \_\_\_\_\_

Address: \_\_\_\_\_

Email: \_\_\_\_\_

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Y / N	0. Reg 153		Field Filtered - Metals, Hg, CrVI	Metals and Inorganics	Full Metals Scan	Regulation/Custom Metals	Nutrients: TP NH <sub>3</sub> TKN NO <sub>3</sub> NO <sub>2</sub> NO <sub>3</sub> +NO <sub>2</sub>	Volatiles: VOC BTEX THM	PHCs F1 - F4	ABNS	PAHs	PCBs: Total Aroclors	Organochlorine Pesticides	TCLP: M&I VOCs ABNS B(a)P PCBs	Sewer Use	
							All Metals 153 Metals (excl. Hydrides)	Hydride Metals 153 Metals (incl. Hydrides)														
SSA4	2-06-25	10:40	1	S			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>														
CSA5	"	10:55	1	S			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>														
SSA6	"	10:50	1	S			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>														
SSA7	"	11:15	1	S																		

Samples Relinquished By (Print Name and Sign): <u>James Sullivan</u>	Date: <u>21-06-25</u>	Time: <u>11:45</u>	Samples Received By (Print Name and Sign): <u>L. Banthel...</u>	Date: <u>21/06/25</u>	Time: <u>14h06</u>
Samples Relinquished By (Print Name and Sign): <u>[Signature]</u>	Date: <u>21/06/25</u>	Time: <u>16h00</u>	Samples Received By (Print Name and Sign): <u>Avneet Minhas AH</u>	Date: <u>June 26/21</u>	Time: <u>10:50 am</u>
Samples Relinquished By (Print Name and Sign): _____	Date: _____	Time: _____	Samples Received By (Print Name and Sign): _____	Date: _____	Time: _____

Nº: **T 077222**



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

ATTENTION TO: Laura Jones

PROJECT: 21451149

AGAT WORK ORDER: 21Z752741

TRACE ORGANICS REVIEWED BY: Neli Popnikolova, Senior Chemist

WATER ANALYSIS REVIEWED BY: Nivine Basily, Inorganics Report Writer

DATE REPORTED: Jun 03, 2021

PAGES (INCLUDING COVER): 23

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.



## Certificate of Analysis

AGAT WORK ORDER: 21Z752741

PROJECT: 21451149

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

SAMPLING SITE: Ottawa Hospital

ATTENTION TO: Laura Jones

SAMPLED BY: S.O., R.M.

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

DATE RECEIVED: 2021-05-26

DATE REPORTED: 2021-06-03

Parameter	Unit	SAMPLE DESCRIPTION:		MW16-1A	MW21-219	DUP-1	BH21-222D	BH21-222S	DUP-2	21-226	21-224
		G / S	RDL	Water	Water	Water	Water	Water	Water	Water	Water
		DATE SAMPLED:		2021-05-25 11:30	2021-05-25 09:00	2021-05-25 09:00	2021-05-25 14:45	2021-05-25 12:45	2021-05-25 12:45	2021-05-25 11:45	2021-05-25 08:00
Naphthalene	µg/L	1400	0.20	<0.20	<0.20	<0.20	<0.20	0.22	<0.20	<0.20	<0.20
Acenaphthylene	µg/L	1.8	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Acenaphthene	µg/L	600	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Fluorene	µg/L	400	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Phenanthrene	µg/L	580	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Anthracene	µg/L	2.4	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Fluoranthene	µg/L	130	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Pyrene	µg/L	68	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Benzo(a)anthracene	µg/L	4.7	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Chrysene	µg/L	1	0.10	<0.10	<0.10	<0.10	<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	<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	<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	<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	<0.20	<0.20	<0.20	<0.20
Dibenz(a,h)anthracene	µg/L	0.52	0.20	<0.20	<0.20	<0.20	<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	<0.20	<0.20	<0.20	<0.20
2-and 1-methyl Naphthalene	µg/L	1800	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Sediment				NO	TRACE	TRACE	TRACE	TRACE	TRACE	TRACE	TRACE
Surrogate	Unit	Acceptable Limits									
Naphthalene-d8	%	50-140		115	122	111	107	109	109	119	118
Acridine-d9	%	50-140		105	78	98	104	107	77	104	111
Terphenyl-d14	%	50-140		98	84	90	81	80	93	85	70

Certified By:



## Certificate of Analysis

AGAT WORK ORDER: 21Z752741

PROJECT: 21451149

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

SAMPLING SITE: Ottawa Hospital

ATTENTION TO: Laura Jones

SAMPLED BY: S.O., R.M.

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

DATE RECEIVED: 2021-05-26

DATE REPORTED: 2021-06-03

Parameter	Unit	G / S	RDL	SAMPLE DESCRIPTION:	21-218	16-11	21-225
				SAMPLE TYPE:	Water	Water	Water
				DATE SAMPLED:	2021-05-25 10:05	2021-05-25 14:50	2021-05-24 13:05
					2522700	2522706	2522707
Naphthalene	µg/L	1400	0.20	<0.20	<0.20	<0.20	<0.20
Acenaphthylene	µg/L	1.8	0.20	<0.20	<0.20	<0.20	<0.20
Acenaphthene	µg/L	600	0.20	<0.20	<0.20	<0.20	<0.20
Fluorene	µg/L	400	0.20	<0.20	<0.20	<0.20	<0.20
Phenanthrene	µg/L	580	0.10	<0.10	<0.10	<0.10	<0.10
Anthracene	µg/L	2.4	0.10	<0.10	<0.10	<0.10	<0.10
Fluoranthene	µg/L	130	0.20	<0.20	<0.20	<0.20	<0.20
Pyrene	µg/L	68	0.20	<0.20	<0.20	<0.20	<0.20
Benzo(a)anthracene	µg/L	4.7	0.20	<0.20	<0.20	<0.20	<0.20
Chrysene	µg/L	1	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	0.52	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	1800	0.20	<0.20	<0.20	<0.20	<0.20
Sediment				TRACE	NO	TRACE	
Surrogate	Unit	Acceptable Limits					
Naphthalene-d8	%	50-140		101	120	97	
Acridine-d9	%	50-140		106	109	112	
Terphenyl-d14	%	50-140		94	114	92	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

2522686-2522707 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.  
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:



## Certificate of Analysis

AGAT WORK ORDER: 21Z752741

PROJECT: 21451149

5835 COOPERS AVENUE  
MISSISSAUGA, ONTARIO  
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TEL (905)712-5100  
FAX (905)712-5122  
<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD

SAMPLING SITE: Ottawa Hospital

ATTENTION TO: Laura Jones

SAMPLED BY: S.O., R.M.

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

DATE RECEIVED: 2021-05-26

DATE REPORTED: 2021-06-03

Parameter	Unit	SAMPLE DESCRIPTION:											
		G / S	RDL	MW16-1A	MW21-219	DUP-1	BH21-222D	BH21-222S	DUP-2	21-226	21-224		
SAMPLE TYPE:				Water	Water	Water	Water	Water	Water	Water	Water	Water	Water
DATE SAMPLED:				2021-05-25 11:30	2021-05-25 09:00	2021-05-25 09:00	2021-05-25 14:45	2021-05-25 12:45	2021-05-25 12:45	2021-05-25 11:45	2021-05-25 11:45	2021-05-25 08:00	
				2522686	2522688	2522689	2522690	2522691	2522692	2522693	2522698		
F1 (C6-C10)	µg/L	750	25	<25	<25	<25	<25	<25	<25	<25	<25	<25	
F1 (C6 to C10) minus BTEX	µg/L	750	25	<25	<25	<25	<25	<25	<25	<25	<25	<25	
F2 (C10 to C16)	µg/L	150	100	<100	<100	<100	<100	<100	<100	<100	<100	<100	
F2 (C10 to C16) minus Naphthalene	µg/L		100	<100	<100	<100	<100	<100	<100	<100	<100	<100	
F3 (C16 to C34)	µg/L	500	100	<100	<100	<100	<100	<100	<100	<100	<100	<100	
F3 (C16 to C34) minus PAHs	µg/L		100	<100	<100	<100	<100	<100	<100	<100	<100	<100	
F4 (C34 to C50)	µg/L	500	100	<100	<100	<100	<100	<100	<100	<100	<100	<100	
Gravimetric Heavy Hydrocarbons	µg/L		500	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Sediment				No	No	No	No	No	No	No	No	No	
Surrogate	Unit	Acceptable Limits											
Toluene-d8	% Recovery	50-140	117	73.5	109	89.2	73.2	96.5	116	114			
Terphenyl	% Recovery	60-140	109	86	70	73	98	77	92	90			

Certified By:





## Certificate of Analysis

AGAT WORK ORDER: 21Z752741

PROJECT: 21451149

5835 COOPERS AVENUE  
MISSISSAUGA, ONTARIO  
CANADA L4Z 1Y2  
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<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD

SAMPLING SITE: Ottawa Hospital

ATTENTION TO: Laura Jones

SAMPLED BY: S.O., R.M.

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

DATE RECEIVED: 2021-05-26

DATE REPORTED: 2021-06-03

Parameter	Unit	G / S	RDL	SAMPLE DESCRIPTION:		
				21-218	16-11	21-225
				SAMPLE TYPE: Water		
				DATE SAMPLED: 2021-05-25 10:05		
				2021-05-25 14:50		
				2021-05-24 13:05		
Parameter	Unit	G / S	RDL	2522700	2522706	2522707
F1 (C6-C10)	µg/L	750	25	<25	<25	<25
F1 (C6 to C10) minus BTEX	µg/L	750	25	<25	<25	<25
F2 (C10 to C16)	µg/L	150	100	<100	<100	<100
F2 (C10 to C16) minus Naphthalene	µg/L		100	<100	<100	<100
F3 (C16 to C34)	µg/L	500	100	<100	<100	<100
F3 (C16 to C34) minus PAHs	µg/L		100	<100	<100	<100
F4 (C34 to C50)	µg/L	500	100	<100	<100	<100
Gravimetric Heavy Hydrocarbons	µg/L		500	NA	NA	NA
Sediment				No	No	No
Surrogate	Unit	Acceptable Limits				
Toluene-d8	% Recovery	50-140				
		106	97.5	104		
Terphenyl	% Recovery	60-140				
		100	98	88		

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

2522686-2522707 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.

Analysis performed at AGAT Toronto (unless marked by \*)

Certified By:





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AGAT WORK ORDER: 21Z752741

PROJECT: 21451149

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CLIENT NAME: GOLDER ASSOCIATES LTD

SAMPLING SITE: Ottawa Hospital

ATTENTION TO: Laura Jones

SAMPLED BY: S.O., R.M.

### O. Reg. 153(511) - PHCs F1/BTEX (Water)

DATE RECEIVED: 2021-05-26

DATE REPORTED: 2021-06-03

		SAMPLE DESCRIPTION: Trip Blank		
		SAMPLE TYPE: Water		
		DATE SAMPLED: 2021-05-25		
Parameter	Unit	G / S	RDL	2522709
Benzene	µg/L	44	0.20	<0.20
Toluene	µg/L	18000	0.20	<0.20
Ethylbenzene	µg/L	2300	0.10	<0.10
m & p-Xylene	µg/L		0.20	<0.20
o-Xylene	µg/L		0.10	<0.10
Xylenes (Total)	µg/L	4200	0.20	<0.20
F1 (C6-C10)	µg/L	750	25	<25
F1 (C6 to C10) minus BTEX	µg/L	750	25	<25
Surrogate	Unit	Acceptable Limits		
Toluene-d8	% Recovery	60-140		103

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

2522709

The C6-C10 fraction is calculated using Toluene response factor.

Total C6-C10 results are corrected for BTEX contributions.

Xylenes total is a calculated parameter. The calculated value is the sum of m&p-Xylene and o-Xylene.

C6-C10 (F1 minus BTEX) is a calculated parameter. The calculated value is F1 minus BTEX.

The calculated parameters are non-accredited. The parameters that are components of the calculation are accredited.

This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.

nC6 and nC10 response factors are within 30% of Toluene response factor.

Extraction and holding times were met for this sample.

NA = Not Applicable

Analysis performed at AGAT Toronto (unless marked by \*)

Certified By:



## Certificate of Analysis

AGAT WORK ORDER: 21Z752741

PROJECT: 21451149

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CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Laura Jones

SAMPLING SITE: Ottawa Hospital

SAMPLED BY: S.O., R.M.

### O. Reg. 153(511) - VOCs (Water)

DATE RECEIVED: 2021-05-26

DATE REPORTED: 2021-06-03

Parameter	Unit	SAMPLE DESCRIPTION:		MW16-1A	MW21-219	DUP-1	BH21-222D	RDL	BH21-222S	DUP-2
		G / S	RDL	Water	Water	Water	Water		Water	Water
		DATE SAMPLED:	2021-05-25 11:30	2021-05-25 09:00	2021-05-25 09:00	2021-05-25 14:45	2021-05-25 12:45		2021-05-25 12:45	
Dichlorodifluoromethane	µg/L	4400	0.20	<0.20	<0.20	<0.20	<0.20	0.40	<0.40	<0.40
Vinyl Chloride	µg/L	0.5	0.17	<0.17	<0.17	<0.17	<0.17	0.34	<0.34	<0.34
Bromomethane	µg/L	5.6	0.20	<0.20	<0.20	<0.20	<0.20	0.40	<0.40	<0.40
Trichlorofluoromethane	µg/L	2500	0.40	<0.40	<0.40	<0.40	<0.40	0.80	4.26	4.68
Acetone	µg/L	130000	1.0	<1.0	<1.0	<1.0	<1.0	2.0	<2.0	<2.0
1,1-Dichloroethylene	µg/L	1.6	0.30	<0.30	<0.30	<0.30	<0.30	0.60	<0.60	<0.60
Methylene Chloride	µg/L	610	0.30	<0.30	<0.30	<0.30	<0.30	0.60	<0.60	<0.60
trans- 1,2-Dichloroethylene	µg/L	1.6	0.20	<0.20	<0.20	<0.20	<0.20	0.40	<0.40	<0.40
Methyl tert-butyl ether	µg/L	190	0.20	<0.20	<0.20	<0.20	<0.20	0.40	<0.40	<0.40
1,1-Dichloroethane	µg/L	320	0.30	<0.30	<0.30	<0.30	<0.30	0.60	<0.60	<0.60
Methyl Ethyl Ketone	µg/L	470000	1.0	<1.0	<1.0	<1.0	<1.0	2.0	<2.0	<2.0
cis- 1,2-Dichloroethylene	µg/L	1.6	0.20	<0.20	<0.20	<0.20	<0.20	0.40	<0.40	<0.40
Chloroform	µg/L	2.4	0.20	<0.20	1.96	1.89	<0.20	0.40	<0.40	<0.40
1,2-Dichloroethane	µg/L	1.6	0.20	<0.20	<0.20	<0.20	<0.20	0.40	<0.40	<0.40
1,1,1-Trichloroethane	µg/L	640	0.30	<0.30	<0.30	<0.30	<0.30	0.60	<0.60	<0.60
Carbon Tetrachloride	µg/L	0.79	0.20	<0.20	<0.20	<0.20	<0.20	0.40	<0.40	<0.40
Benzene	µg/L	44	0.20	<0.20	<0.20	<0.20	<0.20	0.40	<0.40	<0.40
1,2-Dichloropropane	µg/L	16	0.20	<0.20	<0.20	<0.20	<0.20	0.40	<0.40	<0.40
Trichloroethylene	µg/L	1.6	0.20	<0.20	<0.20	<0.20	<0.20	0.40	<0.40	<0.40
Bromodichloromethane	µg/L	85000	0.20	<0.20	<0.20	<0.20	<0.20	0.40	<0.40	<0.40
Methyl Isobutyl Ketone	µg/L	140000	1.0	<1.0	<1.0	<1.0	<1.0	2.0	<2.0	<2.0
1,1,2-Trichloroethane	µg/L	4.7	0.20	<0.20	<0.20	<0.20	<0.20	0.40	<0.40	<0.40
Toluene	µg/L	18000	0.20	<0.20	<0.20	<0.20	<0.20	0.40	0.93	<0.40
Dibromochloromethane	µg/L	82000	0.10	<0.10	<0.10	<0.10	<0.10	0.20	<0.20	<0.20
Ethylene Dibromide	µg/L	0.25	0.10	<0.10	<0.10	<0.10	<0.10	0.20	<0.20	<0.20
Tetrachloroethylene	µg/L	1.6	0.20	<0.20	<0.20	<0.20	<0.20	0.40	<0.40	<0.40
1,1,1,2-Tetrachloroethane	µg/L	3.3	0.10	<0.10	<0.10	<0.10	<0.10	0.20	<0.20	<0.20
Chlorobenzene	µg/L	630	0.10	<0.10	<0.10	<0.10	<0.10	0.20	<0.20	<0.20
Ethylbenzene	µg/L	2300	0.10	<0.10	<0.10	<0.10	<0.10	0.20	<0.20	<0.20

Certified By:



## Certificate of Analysis

AGAT WORK ORDER: 21Z752741

PROJECT: 21451149

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CLIENT NAME: GOLDER ASSOCIATES LTD

SAMPLING SITE: Ottawa Hospital

ATTENTION TO: Laura Jones

SAMPLED BY: S.O., R.M.

### O. Reg. 153(511) - VOCs (Water)

DATE RECEIVED: 2021-05-26

DATE REPORTED: 2021-06-03

Parameter	Unit	SAMPLE DESCRIPTION:		MW16-1A	MW21-219	DUP-1	BH21-222D	RDL	BH21-222S	DUP-2
		G / S	RDL	Water	Water	Water	Water		Water	Water
DATE SAMPLED:		2021-05-25	2021-05-25	2021-05-25	2021-05-25	2021-05-25	2021-05-25		2021-05-25	2021-05-25
		11:30	09:00	09:00	14:45				12:45	12:45
		2522686	2522688	2522689	2522690				2522691	2522692
m & p-Xylene	µg/L		0.20	<0.20	<0.20	<0.20	<0.20	0.40	<0.40	<0.40
Bromoform	µg/L	380	0.10	<0.10	<0.10	<0.10	<0.10	0.20	<0.20	<0.20
Styrene	µg/L	1300	0.10	<0.10	<0.10	<0.10	<0.10	0.20	<0.20	<0.20
1,1,2,2-Tetrachloroethane	µg/L	3.2	0.10	<0.10	<0.10	<0.10	<0.10	0.20	<0.20	<0.20
o-Xylene	µg/L		0.10	<0.10	<0.10	<0.10	<0.10	0.20	<0.20	<0.20
1,3-Dichlorobenzene	µg/L	9600	0.10	<0.10	<0.10	<0.10	<0.10	0.20	<0.20	<0.20
1,4-Dichlorobenzene	µg/L	8	0.10	<0.10	<0.10	<0.10	<0.10	0.20	<0.20	<0.20
1,2-Dichlorobenzene	µg/L	4600	0.10	<0.10	<0.10	<0.10	<0.10	0.20	<0.20	<0.20
1,3-Dichloropropene	µg/L	5.2	0.30	<0.30	<0.30	<0.30	<0.30	0.60	<0.60	<0.60
Xylenes (Total)	µg/L	4200	0.20	<0.20	<0.20	<0.20	<0.20	0.40	<0.40	<0.40
n-Hexane	µg/L	51	0.20	<0.20	<0.20	<0.20	<0.20	0.40	<0.40	<0.40
Surrogate	Unit	Acceptable Limits								
Toluene-d8	% Recovery	50-140	97	100	95	96	2	99	101	
4-Bromofluorobenzene	% Recovery	50-140	94	90	91	90	2	92	96	

Certified By:



## Certificate of Analysis

AGAT WORK ORDER: 21Z752741

PROJECT: 21451149

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CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Laura Jones

SAMPLING SITE: Ottawa Hospital

SAMPLED BY: S.O., R.M.

### O. Reg. 153(511) - VOCs (Water)

DATE RECEIVED: 2021-05-26

DATE REPORTED: 2021-06-03

Parameter	Unit	SAMPLE DESCRIPTION:		21-226	21-224	21-218	16-11	21-225
		G / S	RDL	Water	Water	Water	Water	Water
DATE SAMPLED:				2021-05-25 11:45	2021-05-25 08:00	2021-05-25 10:05	2021-05-25 14:50	2021-05-24 13:05
				2522693	2522698	2522700	2522706	2522707
Dichlorodifluoromethane	µg/L	4400	0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Vinyl Chloride	µg/L	0.5	0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Bromomethane	µg/L	5.6	0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Trichlorofluoromethane	µg/L	2500	0.40	<0.40	3.88	9.60	<0.40	<0.40
Acetone	µg/L	130000	1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethylene	µg/L	1.6	0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Methylene Chloride	µg/L	610	0.30	<0.30	<0.30	<0.30	<0.30	<0.30
trans- 1,2-Dichloroethylene	µg/L	1.6	0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Methyl tert-butyl ether	µg/L	190	0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,1-Dichloroethane	µg/L	320	0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Methyl Ethyl Ketone	µg/L	470000	1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis- 1,2-Dichloroethylene	µg/L	1.6	0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Chloroform	µg/L	2.4	0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,2-Dichloroethane	µg/L	1.6	0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,1,1-Trichloroethane	µg/L	640	0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Carbon Tetrachloride	µg/L	0.79	0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Benzene	µg/L	44	0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,2-Dichloropropane	µg/L	16	0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Trichloroethylene	µg/L	1.6	0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Bromodichloromethane	µg/L	85000	0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Methyl Isobutyl Ketone	µg/L	140000	1.0	<1.0	<1.0	<1.0	<1.0	7.0
1,1,2-Trichloroethane	µg/L	4.7	0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Toluene	µg/L	18000	0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Dibromochloromethane	µg/L	82000	0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Ethylene Dibromide	µg/L	0.25	0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Tetrachloroethylene	µg/L	1.6	0.20	<0.20	<0.20	0.90	<0.20	<0.20
1,1,1,2-Tetrachloroethane	µg/L	3.3	0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Chlorobenzene	µg/L	630	0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Ethylbenzene	µg/L	2300	0.10	<0.10	<0.10	<0.10	<0.10	<0.10

Certified By:



## Certificate of Analysis

AGAT WORK ORDER: 21Z752741

PROJECT: 21451149

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CLIENT NAME: GOLDER ASSOCIATES LTD

SAMPLING SITE: Ottawa Hospital

ATTENTION TO: Laura Jones

SAMPLED BY: S.O., R.M.

### O. Reg. 153(511) - VOCs (Water)

DATE RECEIVED: 2021-05-26

DATE REPORTED: 2021-06-03

Parameter	Unit	G / S	RDL	SAMPLE DESCRIPTION:				
				21-226	21-224	21-218	16-11	21-225
				SAMPLE TYPE:				
				DATE SAMPLED:				
				2021-05-25 11:45	2021-05-25 08:00	2021-05-25 10:05	2021-05-25 14:50	2021-05-24 13:05
				2522693	2522698	2522700	2522706	2522707
m & p-Xylene	µg/L		0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Bromoform	µg/L	380	0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Styrene	µg/L	1300	0.10	<0.10	<0.10	<0.10	<0.10	<0.10
1,1,2,2-Tetrachloroethane	µg/L	3.2	0.10	<0.10	<0.10	<0.10	<0.10	<0.10
o-Xylene	µg/L		0.10	<0.10	<0.10	<0.10	<0.10	<0.10
1,3-Dichlorobenzene	µg/L	9600	0.10	<0.10	<0.10	<0.10	<0.10	<0.10
1,4-Dichlorobenzene	µg/L	8	0.10	<0.10	<0.10	<0.10	<0.10	<0.10
1,2-Dichlorobenzene	µg/L	4600	0.10	<0.10	<0.10	<0.10	<0.10	<0.10
1,3-Dichloropropene	µg/L	5.2	0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Xylenes (Total)	µg/L	4200	0.20	<0.20	<0.20	<0.20	<0.20	<0.20
n-Hexane	µg/L	51	0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Surrogate	Unit	Acceptable Limits						
Toluene-d8	% Recovery	50-140	99	96	97	97	101	
4-Bromofluorobenzene	% Recovery	50-140	92	91	86	86	86	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

2522686-2522690 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.

2522691-2522692 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.

2522693-2522707 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:



## Certificate of Analysis

AGAT WORK ORDER: 21Z752741

PROJECT: 21451149

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

SAMPLING SITE: Ottawa Hospital

ATTENTION TO: Laura Jones

SAMPLED BY: S.O., R.M.

### Total PCBs (water)

DATE RECEIVED: 2021-05-26

DATE REPORTED: 2021-06-03

		SAMPLE DESCRIPTION:		MW21-219	DUP-1
		SAMPLE TYPE:		Water	Water
		DATE SAMPLED:		2021-05-25 09:00	2021-05-25 09:00
Parameter	Unit	G / S	RDL	2522688	2522689
PCBs	µg/L	7.8	0.1	<0.1	<0.1
Surrogate	Unit	Acceptable Limits			
Decachlorobiphenyl	%	60-130	75	116	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

Analysis performed at AGAT Toronto (unless marked by \*)

Certified By:



## Certificate of Analysis

AGAT WORK ORDER: 21Z752741

PROJECT: 21451149

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CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Laura Jones

SAMPLING SITE: Ottawa Hospital

SAMPLED BY: S.O., R.M.

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

DATE RECEIVED: 2021-05-26

DATE REPORTED: 2021-06-03

Parameter	Unit	SAMPLE DESCRIPTION:		MW16-1A	MW21-219	DUP-1	BH21-222D	BH21-222S	DUP-2	21-226	21-224
		G / S	RDL	Water	Water	Water	Water	Water	Water	Water	Water
		DATE SAMPLED:		2021-05-25 11:30	2021-05-25 09:00	2021-05-25 09:00	2021-05-25 14:45	2021-05-25 12:45	2021-05-25 12:45	2021-05-25 11:45	2021-05-25 08:00
Dissolved Antimony	µg/L	20000	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Arsenic	µg/L	1900	1.0	1.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.3
Dissolved Barium	µg/L	29000	2.0	154	86.5	94.1	96.8	275	288	168	128
Dissolved Beryllium	µg/L	67	0.5	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dissolved Boron	µg/L	45000	10.0	184	46.6	47.2	39.2	<10.0	<10.0	87.8	116
Dissolved Cadmium	µg/L	2.7	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Dissolved Chromium	µg/L	810	2.0	<2.0	<2.0	<2.0	<2.0	2.0	<2.0	<2.0	<2.0
Dissolved Cobalt	µg/L	66	0.50	0.69	0.91	1.31	<0.50	1.67	2.30	1.09	<0.50
Dissolved Copper	µg/L	87	1.0	6.6	2.0	1.2	<1.0	34.8	30.5	1.1	2.2
Dissolved Lead	µg/L	25	0.50	<0.50	<0.50	<0.50	<0.50	1.15	1.05	0.76	<0.50
Dissolved Molybdenum	µg/L	9200	0.50	4.51	14.8	17.4	1.77	15.3	12.5	5.84	7.10
Dissolved Nickel	µg/L	490	3.0	4.0	3.1	4.3	<3.0	11.8	9.5	5.1	<3.0
Dissolved Selenium	µg/L	63	1.0	<1.0	<1.0	1.7	1.1	<1.0	1.4	2.0	<1.0
Dissolved Silver	µg/L	1.5	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Dissolved Thallium	µg/L	510	0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Dissolved Uranium	µg/L	420	0.50	1.48	1.73	1.97	<0.50	<0.50	<0.50	3.12	2.20
Dissolved Vanadium	µg/L	250	0.40	<0.40	0.62	1.00	0.77	0.41	0.50	1.85	<0.40
Dissolved Zinc	µg/L	1100	5.0	<5.0	<5.0	7.1	<5.0	6.3	5.9	13.7	<5.0
Mercury	µg/L	0.29	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Chromium VI	µg/L	140	2	<2	<2	<2	<2	<2	<2	<2	<2

Certified By:



*Allyson B...*



## Certificate of Analysis

AGAT WORK ORDER: 21Z752741

PROJECT: 21451149

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

CLIENT NAME: GOLDER ASSOCIATES LTD

SAMPLING SITE: Ottawa Hospital

ATTENTION TO: Laura Jones

SAMPLED BY: S.O., R.M.

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

DATE RECEIVED: 2021-05-26

DATE REPORTED: 2021-06-03

Parameter	Unit	G / S	RDL	SAMPLE DESCRIPTION:		
				21-218	16-11	21-225
				SAMPLE TYPE: Water		
				DATE SAMPLED: 2021-05-25		
				10:05	14:50	13:05
				2522700	2522706	2522707
Dissolved Antimony	µg/L	20000	1.0	<1.0	<1.0	<1.0
Dissolved Arsenic	µg/L	1900	1.0	<1.0	<1.0	<1.0
Dissolved Barium	µg/L	29000	2.0	79.6	38.9	123
Dissolved Beryllium	µg/L	67	0.5	<0.5	<0.5	<0.5
Dissolved Boron	µg/L	45000	10.0	96.0	55.7	61.3
Dissolved Cadmium	µg/L	2.7	0.20	0.25	<0.20	<0.20
Dissolved Chromium	µg/L	810	2.0	25.8	<2.0	<2.0
Dissolved Cobalt	µg/L	66	0.50	1.99	1.05	3.00
Dissolved Copper	µg/L	87	1.0	8.6	1.4	1.1
Dissolved Lead	µg/L	25	0.50	49.8	<0.50	<0.50
Dissolved Molybdenum	µg/L	9200	0.50	3.01	0.62	7.75
Dissolved Nickel	µg/L	490	3.0	<3.0	3.9	8.8
Dissolved Selenium	µg/L	63	1.0	1.9	2.6	3.1
Dissolved Silver	µg/L	1.5	0.20	<0.20	<0.20	<0.20
Dissolved Thallium	µg/L	510	0.30	<0.30	<0.30	<0.30
Dissolved Uranium	µg/L	420	0.50	1.65	<0.50	2.20
Dissolved Vanadium	µg/L	250	0.40	1.28	0.82	0.74
Dissolved Zinc	µg/L	1100	5.0	18.2	<5.0	<5.0
Mercury	µg/L	0.29	0.02	<0.02	<0.02	<0.02
Chromium VI	µg/L	140	2	<2	<2	<2

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

2522686-2522707 Metals analysis completed on a filtered sample.

Analysis performed at AGAT Toronto (unless marked by \*)

Certified By:



*Allyson Basch*





**Exceedance Summary**

AGAT WORK ORDER: 21Z752741

PROJECT: 21451149

5835 COOPERS AVENUE  
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CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Laura Jones

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
2522700	21-218	ON T3 NPGW CT	O. Reg. 153(511) - All Metals (Water)	Dissolved Lead	µg/L	25	49.8

## Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 21Z752741

PROJECT: 21451149

ATTENTION TO: Laura Jones

SAMPLING SITE: Ottawa Hospital

SAMPLED BY: S.O., R.M.

### Trace Organics Analysis

RPT Date: Jun 03, 2021			DUPLICATE				Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE		MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Measured Value		Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - PHCs F1/BTEX (Water)															
Benzene	2517770		0.40	0.35	NA	< 0.20	119%	60%	140%	108%	60%	140%	86%	60%	140%
Toluene	2517770		0.37	0.30	NA	< 0.20	111%	60%	140%	103%	60%	140%	80%	60%	140%
Ethylbenzene	2517770		<0.10	<0.10	NA	< 0.10	100%	60%	140%	99%	60%	140%	80%	60%	140%
m & p-Xylene	2517770		<0.20	<0.20	NA	< 0.20	99%	60%	140%	92%	60%	140%	103%	60%	140%
o-Xylene	2517770		<0.10	<0.10	NA	< 0.10	88%	60%	140%	104%	60%	140%	90%	60%	140%
F1 (C6-C10)	2517770		<25	<25	NA	< 25	93%	60%	140%	107%	60%	140%	107%	60%	140%
O. Reg. 153(511) - PHCs F1 - F4 (with PAHs and VOC) (Water)															
F1 (C6-C10)	2517770		<25	<25	NA	< 25	93%	60%	140%	107%	60%	140%	107%	60%	140%
F2 (C10 to C16)	2522692	2522692	< 100	< 100	NA	< 100	102%	60%	140%	77%	60%	140%	90%	60%	140%
F3 (C16 to C34)	2522692	2522692	< 100	< 100	NA	< 100	96%	60%	140%	68%	60%	140%	76%	60%	140%
F4 (C34 to C50)	2522692	2522692	< 100	< 100	NA	< 100	89%	60%	140%	109%	60%	140%	81%	60%	140%
O. Reg. 153(511) - PAHs (Water)															
Naphthalene	2522706	2522706	<0.20	<0.20	NA	< 0.20	83%	50%	140%	89%	50%	140%	107%	50%	140%
Acenaphthylene	2522706	2522706	<0.20	<0.20	NA	< 0.20	113%	50%	140%	75%	50%	140%	97%	50%	140%
Acenaphthene	2522706	2522706	<0.20	<0.20	NA	< 0.20	120%	50%	140%	84%	50%	140%	94%	50%	140%
Fluorene	2522706	2522706	<0.20	<0.20	NA	< 0.20	119%	50%	140%	75%	50%	140%	91%	50%	140%
Phenanthrene	2522706	2522706	<0.10	<0.10	NA	< 0.10	117%	50%	140%	102%	50%	140%	103%	50%	140%
Anthracene	2522706	2522706	<0.10	<0.10	NA	< 0.10	103%	50%	140%	85%	50%	140%	108%	50%	140%
Fluoranthene	2522706	2522706	<0.20	<0.20	NA	< 0.20	119%	50%	140%	87%	50%	140%	115%	50%	140%
Pyrene	2522706	2522706	<0.20	<0.20	NA	< 0.20	114%	50%	140%	89%	50%	140%	108%	50%	140%
Benzo(a)anthracene	2522706	2522706	<0.20	<0.20	NA	< 0.20	86%	50%	140%	86%	50%	140%	87%	50%	140%
Chrysene	2522706	2522706	<0.10	<0.10	NA	< 0.10	108%	50%	140%	85%	50%	140%	120%	50%	140%
Benzo(b)fluoranthene	2522706	2522706	<0.10	<0.10	NA	< 0.10	105%	50%	140%	84%	50%	140%	94%	50%	140%
Benzo(k)fluoranthene	2522706	2522706	<0.10	<0.10	NA	< 0.10	106%	50%	140%	75%	50%	140%	89%	50%	140%
Benzo(a)pyrene	2522706	2522706	<0.01	<0.01	NA	< 0.01	111%	50%	140%	89%	50%	140%	108%	50%	140%
Indeno(1,2,3-cd)pyrene	2522706	2522706	<0.20	<0.20	NA	< 0.20	87%	50%	140%	85%	50%	140%	107%	50%	140%
Dibenz(a,h)anthracene	2522706	2522706	<0.20	<0.20	NA	< 0.20	85%	50%	140%	81%	50%	140%	103%	50%	140%
Benzo(g,h,i)perylene	2522706	2522706	<0.20	<0.20	NA	< 0.20	115%	50%	140%	78%	50%	140%	100%	50%	140%
O. Reg. 153(511) - VOCs (Water)															
Dichlorodifluoromethane	2522707	2522707	<0.20	<0.20	NA	< 0.20	82%	50%	140%	97%	50%	140%	100%	50%	140%
Vinyl Chloride	2522707	2522707	<0.17	<0.17	NA	< 0.17	107%	50%	140%	101%	50%	140%	95%	50%	140%
Bromomethane	2522707	2522707	<0.20	<0.20	NA	< 0.20	89%	50%	140%	86%	50%	140%	88%	50%	140%
Trichlorofluoromethane	2522707	2522707	<0.40	<0.40	NA	< 0.40	93%	50%	140%	97%	50%	140%	100%	50%	140%
Acetone	2522707	2522707	<1.0	<1.0	NA	< 1.0	113%	50%	140%	98%	50%	140%	90%	50%	140%
1,1-Dichloroethylene	2522707	2522707	<0.30	<0.30	NA	< 0.30	97%	50%	140%	89%	60%	130%	101%	50%	140%
Methylene Chloride	2522707	2522707	<0.30	<0.30	NA	< 0.30	101%	50%	140%	93%	60%	130%	104%	50%	140%
trans- 1,2-Dichloroethylene	2522707	2522707	<0.20	<0.20	NA	< 0.20	95%	50%	140%	87%	60%	130%	92%	50%	140%
Methyl tert-butyl ether	2522707	2522707	<0.20	<0.20	NA	< 0.20	82%	50%	140%	74%	60%	130%	105%	50%	140%

## Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD  
 PROJECT: 21451149  
 SAMPLING SITE: Ottawa Hospital

AGAT WORK ORDER: 21Z752741  
 ATTENTION TO: Laura Jones  
 SAMPLED BY: S.O., R.M.

### Trace Organics Analysis (Continued)

RPT Date: Jun 03, 2021			DUPLICATE				Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Measured Value		Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits		
								Lower	Upper		Lower	Upper		Lower	Upper	
1,1-Dichloroethane	2522707	2522707	<0.30	<0.30	NA	< 0.30	112%	50%	140%	87%	60%	130%	109%	50%	140%	
Methyl Ethyl Ketone	2522707	2522707	<1.0	<1.0	NA	< 1.0	104%	50%	140%	83%	50%	140%	102%	50%	140%	
cis- 1,2-Dichloroethylene	2522707	2522707	<0.20	<0.20	NA	< 0.20	102%	50%	140%	98%	60%	130%	106%	50%	140%	
Chloroform	2522707	2522707	<0.20	<0.20	NA	< 0.20	106%	50%	140%	88%	60%	130%	100%	50%	140%	
1,2-Dichloroethane	2522707	2522707	<0.20	<0.20	NA	< 0.20	114%	50%	140%	93%	60%	130%	104%	50%	140%	
1,1,1-Trichloroethane	2522707	2522707	<0.30	<0.30	NA	< 0.30	117%	50%	140%	104%	60%	130%	99%	50%	140%	
Carbon Tetrachloride	2522707	2522707	<0.20	<0.20	NA	< 0.20	96%	50%	140%	106%	60%	130%	88%	50%	140%	
Benzene	2522707	2522707	<0.20	<0.20	NA	< 0.20	80%	50%	140%	83%	60%	130%	97%	50%	140%	
1,2-Dichloropropane	2522707	2522707	<0.20	<0.20	NA	< 0.20	102%	50%	140%	86%	60%	130%	95%	50%	140%	
Trichloroethylene	2522707	2522707	<0.20	<0.20	NA	< 0.20	81%	50%	140%	94%	60%	130%	83%	50%	140%	
Bromodichloromethane	2522707	2522707	<0.20	<0.20	NA	< 0.20	99%	50%	140%	100%	60%	130%	103%	50%	140%	
Methyl Isobutyl Ketone	2522707	2522707	7.0	6.4	9.1%	< 1.0	92%	50%	140%	93%	50%	140%	87%	50%	140%	
1,1,2-Trichloroethane	2522707	2522707	<0.20	<0.20	NA	< 0.20	98%	50%	140%	94%	60%	130%	92%	50%	140%	
Toluene	2522707	2522707	<0.20	<0.20	NA	< 0.20	89%	50%	140%	84%	60%	130%	88%	50%	140%	
Dibromochloromethane	2522707	2522707	<0.10	<0.10	NA	< 0.10	108%	50%	140%	106%	60%	130%	96%	50%	140%	
Ethylene Dibromide	2522707	2522707	<0.10	<0.10	NA	< 0.10	104%	50%	140%	109%	60%	130%	98%	50%	140%	
Tetrachloroethylene	2522707	2522707	<0.20	<0.20	NA	< 0.20	101%	50%	140%	85%	60%	130%	93%	50%	140%	
1,1,1,2-Tetrachloroethane	2522707	2522707	<0.10	<0.10	NA	< 0.10	100%	50%	140%	106%	60%	130%	106%	50%	140%	
Chlorobenzene	2522707	2522707	<0.10	<0.10	NA	< 0.10	103%	50%	140%	76%	60%	130%	102%	50%	140%	
Ethylbenzene	2522707	2522707	<0.10	<0.10	NA	< 0.10	104%	50%	140%	81%	60%	130%	99%	50%	140%	
m & p-Xylene	2522707	2522707	<0.20	<0.20	NA	< 0.20	119%	50%	140%	98%	60%	130%	97%	50%	140%	
Bromoform	2522707	2522707	<0.10	<0.10	NA	< 0.10	113%	50%	140%	98%	60%	130%	87%	50%	140%	
Styrene	2522707	2522707	<0.10	<0.10	NA	< 0.10	94%	50%	140%	83%	60%	130%	89%	50%	140%	
1,1,1,2,2-Tetrachloroethane	2522707	2522707	<0.10	<0.10	NA	< 0.10	105%	50%	140%	79%	60%	130%	103%	50%	140%	
o-Xylene	2522707	2522707	<0.10	<0.10	NA	< 0.10	91%	50%	140%	82%	60%	130%	79%	50%	140%	
1,3-Dichlorobenzene	2522707	2522707	<0.10	<0.10	NA	< 0.10	101%	50%	140%	92%	60%	130%	109%	50%	140%	
1,4-Dichlorobenzene	2522707	2522707	<0.10	<0.10	NA	< 0.10	94%	50%	140%	88%	60%	130%	106%	50%	140%	
1,2-Dichlorobenzene	2522707	2522707	<0.10	<0.10	NA	< 0.10	111%	50%	140%	74%	60%	130%	110%	50%	140%	
n-Hexane	2522707	2522707	<0.20	<0.20	NA	< 0.20	102%	50%	140%	88%	60%	130%	94%	50%	140%	
Total PCBs (water)																
PCBs	2529727		< 0.1	< 0.1	NA	< 0.1	102%	50%	140%	99%	50%	140%	108%	50%	140%	

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

Certified By: 

AGAT Laboratories is accredited to ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA) and/or Standards Council of Canada (SCC) for specific tests listed on the scope of accreditation. AGAT Laboratories (Mississauga) is also accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) for specific drinking water tests. Accreditations are location and parameter specific. A complete listing of parameters for each location is available from www.cala.ca and/or www.scc.ca. The tests in this report may not necessarily be included in the scope of accreditation. RPDs calculated using raw data. The RPD may not be reflective of duplicate values shown, due to rounding of final results.

Results relate only to the items tested. Results apply to samples as received.

## Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD  
PROJECT: 21451149  
SAMPLING SITE: Ottawa Hospital

AGAT WORK ORDER: 21Z752741  
ATTENTION TO: Laura Jones  
SAMPLED BY: S.O., R.M.

Water Analysis															
RPT Date: Jun 03, 2021			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE		MATRIX SPIKE			
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		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	2523597		< 1.0	< 1.0	NA	< 1.0	100%	70%	130%	101%	80%	120%	100%	70%	130%
Dissolved Arsenic	2523597		1.2	2.4	NA	< 1.0	92%	70%	130%	101%	80%	120%	101%	70%	130%
Dissolved Barium	2523597		394	425	7.6%	< 2.0	97%	70%	130%	101%	80%	120%	103%	70%	130%
Dissolved Beryllium	2523597		< 0.5	< 0.5	NA	< 0.5	102%	70%	130%	99%	80%	120%	108%	70%	130%
Dissolved Boron	2523597		1110	1160	4.4%	< 10.0	100%	70%	130%	99%	80%	120%	101%	70%	130%
Dissolved Cadmium	2523597		< 0.20	< 0.20	NA	< 0.20	99%	70%	130%	99%	80%	120%	100%	70%	130%
Dissolved Chromium	2523597		< 2.0	< 2.0	NA	< 2.0	100%	70%	130%	96%	80%	120%	105%	70%	130%
Dissolved Cobalt	2523597		5.06	5.17	2.2%	< 0.50	99%	70%	130%	110%	80%	120%	104%	70%	130%
Dissolved Copper	2523597		< 1.0	1.2	NA	< 1.0	100%	70%	130%	96%	80%	120%	99%	70%	130%
Dissolved Lead	2523597		0.99	0.93	NA	< 0.50	101%	70%	130%	110%	80%	120%	98%	70%	130%
Dissolved Molybdenum	2523597		2.54	2.28	NA	< 0.50	98%	70%	130%	106%	80%	120%	100%	70%	130%
Dissolved Nickel	2523597		8.6	14.1	NA	< 3.0	101%	70%	130%	107%	80%	120%	100%	70%	130%
Dissolved Selenium	2523597		< 1.0	< 1.0	NA	< 1.0	103%	70%	130%	100%	80%	120%	85%	70%	130%
Dissolved Silver	2523597		0.21	0.22	NA	< 0.20	100%	70%	130%	108%	80%	120%	90%	70%	130%
Dissolved Thallium	2523597		< 0.30	< 0.30	NA	< 0.30	98%	70%	130%	110%	80%	120%	97%	70%	130%
Dissolved Uranium	2523597		< 0.50	0.56	NA	< 0.50	106%	70%	130%	116%	80%	120%	99%	70%	130%
Dissolved Vanadium	2523597		0.76	0.41	NA	< 0.40	102%	70%	130%	110%	80%	120%	109%	70%	130%
Dissolved Zinc	2523597		5.3	6.0	NA	< 5.0	101%	70%	130%	102%	80%	120%	91%	70%	130%
Mercury	2523597		< 0.02	< 0.02	NA	< 0.02	99%	70%	130%	97%	80%	120%	83%	70%	130%
Chromium VI	2522667		< 2	< 2	NA	< 2	98%	70%	130%	105%	80%	120%	103%	70%	130%

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

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

Chromium VI	2522698	2522698	< 2	< 2	NA	< 2	103%	70%	130%	106%	80%	120%	105%	70%	130%
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Comments: NA signifies Not Applicable.  
Duplicate NA: results are under 5X the RDL and will not be calculated.

Certified By: \_\_\_\_\_



*Nivine Basily*

## Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 21Z752741

PROJECT: 21451149

ATTENTION TO: Laura Jones

SAMPLING SITE: Ottawa Hospital

SAMPLED BY: S.O., R.M.

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			
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-91-5010	modified from MOE PHC-E3421	(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
Benzene	VOL-91-5010	modified from EPA SW-846 5030C & 8260D	(P&T)GC/MS

## Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 21Z752741

PROJECT: 21451149

ATTENTION TO: Laura Jones

SAMPLING SITE: Ottawa Hospital

SAMPLED BY: S.O., R.M.

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Toluene	VOL-91-5010	modified from EPA SW-846 5030C & 8260D	(P&T)GC/MS
Ethylbenzene	VOL-91-5010	modified from EPA SW-846 5030C & 8260D	(P&T)GC/MS
m & p-Xylene	VOL-91-5010	modified from EPA SW-846 5030C & 8260D	(P&T)GC/MS
o-Xylene	VOL-91-5010	modified from EPA SW-846 5030C & 8260D	(P&T)GC/MS
Xylenes (Total)	VOL-91-5010	modified from EPA SW-846 5030C & 8260D	(P&T)GC/MS
F1 (C6-C10)	VOL-91-5010	modified from MOE E3421	(P&T)GC/FID
F1 (C6 to C10) minus BTEX	VOL-91-5010	modified from MOE E3421	(P&T)GC/FID
Dichlorodifluoromethane	VOL-91-5001	modified from EPA 5030B & EPA 8260D	(P&T)GC/MS
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

## Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 21Z752741

PROJECT: 21451149

ATTENTION TO: Laura Jones

SAMPLING SITE: Ottawa Hospital

SAMPLED BY: S.O., R.M.

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
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
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
PCBs	ORG-91-5112	EPA SW-846 3510 & 8082	GC/ECD
Decachlorobiphenyl	ORG-91-5112	EPA SW-846 3510 & 8082	GC/ECD

## Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 21Z752741

PROJECT: 21451149

ATTENTION TO: Laura Jones

SAMPLING SITE: Ottawa Hospital

SAMPLED BY: S.O., R.M.

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-93-6034	modified from SM 3500-CR B	LACHAT FIA





# AGAT

LT (Ice-packs) - ① 3.8/4.2 | 4.5  
 ② 6.7/8.9 | 5.3  
 ③ 8.4/8.6 | 9.8

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

## Chain of Custody Record

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

### Report Information:

Company: Golden Associates Ltd.  
 Contact: Laura Jones; Rachelle Mathew  
 Address: 1931 Robertson Road, Ottawa, Ont  
 Phone: 226-378-2489 Fax: \_\_\_\_\_  
 Reports to be sent to:  
 1. Email: Laura.Jones@Golden.com  
 2. Email: Rachelle.Mathew@Golden.com

### Regulatory Requirements:

(Please check all applicable boxes)

Regulation 153/04  Excess Soils R406  Sewer Use  
 Ind/Com  Sanitary  Storm  
 Res/Park  Agriculture  Regulation 558  Prov. Water Quality Objectives (PWQO)  
 Agriculture  CCME  Other  
 Soil Texture (Check One)  Coarse  Fine  Indicate One

### Project Information:

Project: 21451149  
 Site Location: Ottawa Hospital  
 Sampled By: Sam O / R Mathew  
 AGAT ID #: 50 PO: \_\_\_\_\_  
 Please note: If quotation number is not provided, client will be billed full price for analysis.

### Is this submission for a Record of Site Condition?

Yes  No

### Report Guideline on Certificate of Analysis

Yes  No

### Sample Matrix Legend

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

### Invoice Information:

Company: \_\_\_\_\_ Bill To Same: Yes  No   
 Contact: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 Email: \_\_\_\_\_

### Laboratory Use Only

Work Order #: 217752741  
 Cooler Quantity: one-onice (melted)  
 Arrival Temperatures: 2.8 3.5 3.0  
5.0 5.4 5.2  
 Custody Seal Intact:  Yes  No  N/A  
 Notes: \_\_\_\_\_

### Turnaround Time (TAT) Required:

Regular TAT (Most Analysts)  5 to 7 Business Days  
 Rush TAT (Rush Surcharges Apply)  
 3 Business Days  2 Business Days  Next Business Day  
 OR Date Required (Rush Surcharges May Apply): \_\_\_\_\_

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

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

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Y / N	0. Reg 153		0. Reg 406		Potentially Hazardous or High Concentration (Y/N)
							Metals & Inorganics	Metals - Cr, V, Hg, HWSB	Metals - Pb, Cu, Ni, Zn, Fe, Mn, Al, Cd, Se, Sb, Cr(VI), Hg	Metals - As, Se, Sb, Cr(VI), Hg	
MN16-1A	25/05/21	1130 AM	14	GW		Y	✓	✓	✓	✓	
NW21-219	25/05/21	0900 AM	10	GW		Y	✓	✓	✓	✓	
DUP-1	25/05/21	0900 AM	15	GW		Y	✓	✓	✓	✓	
BH21-222D	25/05/21	1445 AM	14	GW		Y	✓	✓	✓	✓	
BH21-222S	25/05/21	1245 AM	14	GW		Y	✓	✓	✓	✓	
DUP-2	25/05/21	1245 AM	14	GW		Y	✓	✓	✓	✓	
21-226	25/05/21	1145 AM	14	GW		Y	✓	✓	✓	✓	
21-224	25/05/21	1000 AM	17	GW		Y	✓	✓	✓	✓	
21-218	25/05/21	1005 AM	17	GW		Y	✓	✓	✓	✓	
16-11	25/05/21	1450 AM	14	GW	plc discard 2 containers	Y	✓	✓	✓	✓	
21-225	25/05/21	1130 AM	14	GW	limited sample vol.	Y	✓	✓	✓	✓	

Samples Relinquished By (Print Name and Sign): <u>Rachelle Mathew</u>	Date: <u>25/05/21</u>	Time: <u>18:00</u>	Samples Received By (Print Name and Sign): <u>Under Be the let' (PB)</u>	Date: <u>21-05-20</u>	Time: <u>13:15</u>
Samples Relinquished By (Print Name and Sign): <u>Abdullah</u>	Date: <u>21-05-26</u>	Time: <u>16:00</u>	Samples Received By (Print Name and Sign): <u>SIMPAN</u>	Date: <u>21-05-20</u>	Time: <u>9:45am</u>
Samples Relinquished By (Print Name and Sign):	Date:	Time:	Samples Received By (Print Name and Sign):	Date:	Time:

Page 1 of 2  
No: **T118614**





## Certificate of Analysis

AGAT WORK ORDER: 21Z756400

PROJECT: 229413340

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

ATTENTION TO: Laura Jones

SAMPLING SITE:

SAMPLED BY: J. Rombouts

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

DATE RECEIVED: 2021-06-02

DATE REPORTED: 2021-06-10

SAMPLE DESCRIPTION: 21-221S  
SAMPLE TYPE: Water  
DATE SAMPLED: 2021-06-02  
2560643

Parameter	Unit	G / S	RDL	2560643
Naphthalene	µg/L	1400	0.20	<0.20
Acenaphthylene	µg/L	1.8	0.20	<0.20
Acenaphthene	µg/L	600	0.20	<0.20
Fluorene	µg/L	400	0.20	<0.20
Phenanthrene	µg/L	580	0.10	<0.10
Anthracene	µg/L	2.4	0.10	<0.10
Fluoranthene	µg/L	130	0.20	<0.20
Pyrene	µg/L	68	0.20	<0.20
Benzo(a)anthracene	µg/L	4.7	0.20	<0.20
Chrysene	µg/L	1	0.10	<0.10
Benzo(b)fluoranthene	µg/L	0.75	0.10	<0.10
Benzo(k)fluoranthene	µg/L	0.4	0.10	<0.10
Benzo(a)pyrene	µg/L	0.81	0.01	0.01
Indeno(1,2,3-cd)pyrene	µg/L	0.2	0.20	<0.20
Dibenz(a,h)anthracene	µg/L	0.52	0.20	<0.20
Benzo(g,h,i)perylene	µg/L	0.2	0.20	<0.20
2-and 1-methyl Naphthalene	µg/L	1800	0.20	<0.20

Sediment	Surrogate	Unit	Acceptable Limits
	Naphthalene-d8	%	50-140 79
	Acridine-d9	%	50-140 59
	Terphenyl-d14	%	50-140 78

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

2560643

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.

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:



## Certificate of Analysis

AGAT WORK ORDER: 21Z756400

PROJECT: 229413340

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

ATTENTION TO: Laura Jones

SAMPLING SITE:

SAMPLED BY: J. Rombouts

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

DATE RECEIVED: 2021-06-02

DATE REPORTED: 2021-06-10

Parameter		Unit	G / S	RDL	2560647
SAMPLE DESCRIPTION: Trip Blank SAMPLE TYPE: Water DATE SAMPLED: 2021-06-02					
F1 (C6 - C10)	µg/L	750	25	<25	
F1 (C6 to C10) minus BTEX	µg/L	750	25	<25	
F2 (C10 to C16)	µg/L	150	100	<100	
F3 (C16 to C34)	µg/L	500	100	<100	
F4 (C34 to C50)	µg/L	500	100	<100	
Gravimetric Heavy Hydrocarbons	µg/L		500	NA	
Sediment				No	
Surrogate	Unit	Acceptable Limits			
Toluene-d8	% Recovery	50-140		108	
Terphenyl	%	60-140		102	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

2560647

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 indicated that hydrocarbons >C50 are present.

The chromatogram has returned to baseline by the retention time of nC50.

Total C6-C50 results are corrected for BTEX contribution.

This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.

nC6 and nC10 response factors are within 30% of Toluene response factor.

nC10, nC16 and nC34 response factors are within 10% of their average.

C50 response factor is within 70% of nC10 + nC16 nC34 average.

Linearity is within 15%.

Extraction and holding times were met for this sample.

Fractions 1-4 are quantified with the contribution of PAHs. Under Ontario Regulation 153, results are considered valid without determining the PAH contribution if not requested by the client.

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:



## Certificate of Analysis

AGAT WORK ORDER: 21Z756400

PROJECT: 229413340

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<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Laura Jones

SAMPLING SITE:

SAMPLED BY: J. Rombouts

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

DATE RECEIVED: 2021-06-02

DATE REPORTED: 2021-06-10

SAMPLE DESCRIPTION:		21-221S		
SAMPLE TYPE:		Water		
DATE SAMPLED:		2021-06-02		
Parameter	Unit	G / S	RDL	2560643
F1 (C6-C10)	µg/L	750	25	<25
F1 (C6 to C10) minus BTEX	µg/L	750	25	<25
F2 (C10 to C16)	µg/L	150	100	<100
F2 (C10 to C16) minus Naphthalene	µg/L		100	<100
F3 (C16 to C34)	µg/L	500	100	<100
F3 (C16 to C34) minus PAHs	µg/L		100	<100
F4 (C34 to C50)	µg/L	500	100	<100
Gravimetric Heavy Hydrocarbons	µg/L		500	NA
Sediment				No
Surrogate	Unit	Acceptable Limits		
Toluene-d8	% Recovery	50-140		102
Terphenyl	% Recovery	60-140		101

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Non-Potable Ground Water - All Types of Property Uses - Coarse Textured Soils

2560643

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.

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.

Analysis performed at AGAT Toronto (unless marked by \*)

Certified By:



## Certificate of Analysis

AGAT WORK ORDER: 21Z756400

PROJECT: 229413340

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<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Laura Jones

SAMPLING SITE:

SAMPLED BY: J. Rombouts

### O. Reg. 153(511) - VOCs (Water)

DATE RECEIVED: 2021-06-02

DATE REPORTED: 2021-06-10

Parameter	Unit	SAMPLE DESCRIPTION:		21-221S	Trip Blank
		G / S	RDL	2560643	2560647
Dichlorodifluoromethane	µg/L	4400	0.20	<0.20	<0.20
Vinyl Chloride	µg/L	0.5	0.17	<0.17	<0.17
Bromomethane	µg/L	5.6	0.20	<0.20	<0.20
Trichlorofluoromethane	µg/L	2500	0.40	<0.40	<0.40
Acetone	µg/L	130000	1.0	<1.0	<1.0
1,1-Dichloroethylene	µg/L	1.6	0.30	<0.30	<0.30
Methylene Chloride	µg/L	610	0.30	<0.30	<0.30
trans- 1,2-Dichloroethylene	µg/L	1.6	0.20	<0.20	<0.20
Methyl tert-butyl ether	µg/L	190	0.20	<0.20	<0.20
1,1-Dichloroethane	µg/L	320	0.30	<0.30	<0.30
Methyl Ethyl Ketone	µg/L	470000	1.0	<1.0	<1.0
cis- 1,2-Dichloroethylene	µg/L	1.6	0.20	<0.20	<0.20
Chloroform	µg/L	2.4	0.20	1.39	<0.20
1,2-Dichloroethane	µg/L	1.6	0.20	<0.20	<0.20
1,1,1-Trichloroethane	µg/L	640	0.30	<0.30	<0.30
Carbon Tetrachloride	µg/L	0.79	0.20	<0.20	<0.20
Benzene	µg/L	44	0.20	0.60	<0.20
1,2-Dichloropropane	µg/L	16	0.20	<0.20	<0.20
Trichloroethylene	µg/L	1.6	0.20	<0.20	<0.20
Bromodichloromethane	µg/L	85000	0.20	<0.20	<0.20
Methyl Isobutyl Ketone	µg/L	140000	1.0	<1.0	<1.0
1,1,2-Trichloroethane	µg/L	4.7	0.20	<0.20	<0.20
Toluene	µg/L	18000	0.20	<0.20	<0.20
Dibromochloromethane	µg/L	82000	0.10	<0.10	<0.10
Ethylene Dibromide	µg/L	0.25	0.10	<0.10	<0.10
Tetrachloroethylene	µg/L	1.6	0.20	<0.20	<0.20
1,1,1,2-Tetrachloroethane	µg/L	3.3	0.10	<0.10	<0.10
Chlorobenzene	µg/L	630	0.10	<0.10	<0.10
Ethylbenzene	µg/L	2300	0.10	<0.10	<0.10
m & p-Xylene	µg/L		0.20	<0.20	<0.20

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## Certificate of Analysis

AGAT WORK ORDER: 21Z756400

PROJECT: 229413340

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ATTENTION TO: Laura Jones

SAMPLING SITE:

SAMPLED BY: J. Rombouts

### O. Reg. 153(511) - VOCs (Water)

DATE RECEIVED: 2021-06-02

DATE REPORTED: 2021-06-10

Parameter	Unit	SAMPLE DESCRIPTION:		21-221S	Trip Blank
		G / S	RDL	2560643	2560647
Bromoform	µg/L	380	0.10	<0.10	<0.10
Styrene	µg/L	1300	0.10	<0.10	<0.10
1,1,2,2-Tetrachloroethane	µg/L	3.2	0.10	<0.10	<0.10
o-Xylene	µg/L		0.10	<0.10	<0.10
1,3-Dichlorobenzene	µg/L	9600	0.10	<0.10	<0.10
1,4-Dichlorobenzene	µg/L	8	0.10	<0.10	<0.10
1,2-Dichlorobenzene	µg/L	4600	0.10	<0.10	<0.10
1,3-Dichloropropene	µg/L	5.2	0.30	<0.30	<0.30
Xylenes (Total)	µg/L	4200	0.20	<0.20	<0.20
n-Hexane	µg/L	51	0.20	<0.20	<0.20
Surrogate	Unit	Acceptable Limits			
Toluene-d8	% Recovery	50-140		101	95
4-Bromofluorobenzene	% Recovery	50-140		85	79

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard; Refers to Table 3: Full Depth Generic Site Condition Standards 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.

2560643-2560647 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 \*)

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## Certificate of Analysis

AGAT WORK ORDER: 21Z756400

PROJECT: 229413340

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CLIENT NAME: GOLDER ASSOCIATES LTD

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SAMPLING SITE:

SAMPLED BY: J. Rombouts

### Total PCBs (water)

DATE RECEIVED: 2021-06-02

DATE REPORTED: 2021-06-10

SAMPLE DESCRIPTION: 21-221S

SAMPLE TYPE: Water

DATE SAMPLED: 2021-06-02

Parameter	Unit	G / S	RDL	2560643
PCBs	µg/L	7.8	0.1	<0.1
Surrogate	Unit	Acceptable Limits		
Decachlorobiphenyl	%	60-130		83

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

Analysis performed at AGAT Toronto (unless marked by \*)

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## Certificate of Analysis

AGAT WORK ORDER: 21Z756400

PROJECT: 229413340

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SAMPLING SITE:

SAMPLED BY: J. Rombouts

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

DATE RECEIVED: 2021-06-02

DATE REPORTED: 2021-06-10

		SAMPLE DESCRIPTION: 21-221S		
		SAMPLE TYPE: Water		
		DATE SAMPLED: 2021-06-02		
Parameter	Unit	G / S	RDL	2560643
Dissolved Antimony	µg/L	20000	1.0	<1.0
Dissolved Arsenic	µg/L	1900	1.0	<1.0
Dissolved Barium	µg/L	29000	2.0	116
Dissolved Beryllium	µg/L	67	0.5	<0.5
Dissolved Boron	µg/L	45000	10.0	48.7
Dissolved Cadmium	µg/L	2.7	0.20	<0.20
Dissolved Chromium	µg/L	810	2.0	<2.0
Dissolved Cobalt	µg/L	66	0.50	<0.50
Dissolved Copper	µg/L	87	1.0	1.8
Dissolved Lead	µg/L	25	0.50	<0.50
Dissolved Molybdenum	µg/L	9200	0.50	2.89
Dissolved Nickel	µg/L	490	3.0	<3.0
Dissolved Selenium	µg/L	63	1.0	<1.0
Dissolved Silver	µg/L	1.5	0.20	<0.20
Dissolved Thallium	µg/L	510	0.30	<0.30
Dissolved Uranium	µg/L	420	0.50	<0.50
Dissolved Vanadium	µg/L	250	0.40	<0.40
Dissolved Zinc	µg/L	1100	5.0	<5.0
Mercury	µg/L	0.29	0.02	<0.02
Chromium VI	µg/L	140	2.000	<2.000

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

2560643 Metals analysis completed on a filtered sample.

Analysis performed at AGAT Toronto (unless marked by \*)

Certified By:





# AGAT

(LTUice-packs) - 5-8/4-3/14-2  
 5835 Coopers Avenue  
 Mississauga, Ontario L4Z 1Y2  
 Ph: 905.712.5100 Fax: 905.712.5122  
 webearth.agatlabs.com

**Laboratory Use Only**  
 Work Order #: 212756400  
 Cooler Quantity: 1  
 Arrival Temperatures: 8.1 | 8.2 | 7.7  
 Custody Seal Intact:  Yes  No  N/A  
 Notes: Ice Ice Pack

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

**Report Information:**  
 Company: Golder Associates Ltd  
 Contact: Rochelle Mathew & Laura Jones  
 Address: 1931 Robertson Rd  
Ottawa On  
 Phone: 613-592-9600 Fax: \_\_\_\_\_  
 Reports to be sent to:  
 1. Email: laura-jones@golder.com  
 2. Email: rochelle-mathew@golder.com

**Regulatory Requirements:**  
 (Please check all applicable boxes)  
 Regulation 153/04  Excess Soils R406  Sewer Use  
 Ind/Com  Sanitary  Storm  
 Res/Park  Agriculture  Prov. Water Quality Objectives (PWQO)  
 Agriculture  Regulation 558  Other  
 CCME  Soil Texture (Check One)  
 Coarse  Fine  
 Fine

**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

**Project Information:**  
 Project: 21451149-2000  
 Site Location: T. Rombouts  
 Sampled By: \_\_\_\_\_  
 AGAT ID #: \_\_\_\_\_ PO: \_\_\_\_\_  
 Please note: if quotation number is not provided, client will be billed full price for analysis.

Is this submission for a Record of Site Condition?  Yes  No  
 Report Guideline on Certificate of Analysis  Yes  No

**Invoice Information:**  
 Bill To Same: Yes  No   
 Company: \_\_\_\_\_  
 Contact: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 Email: \_\_\_\_\_

Sample Matrix Legend	Field Filtered - Metals, hg, CrV, DOC	O. Reg 153		Total PCBs	VOC	O. Reg 558		O. Reg 406		Salt - EC/SAR	Potentially Hazardous or High Concentration (Y/N)
		Metals & Inorganics	Metals - CrVI, Hg, Pb, Cu, Ni, As, Se, Sb			Landfill Disposal Characterization (DCLP):	Excess Soils SPLP	Excess Soils Characterization Packages	Excess Soils Characterization Packages		
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	Y/N	Metals & Inorganics	Metals - CrVI, Hg, Pb, Cu, Ni, As, Se, Sb	Landfill Disposal Characterization (DCLP):	Excess Soils SPLP	Excess Soils Characterization Packages	Excess Soils Characterization Packages	Salt - EC/SAR	Potentially Hazardous or High Concentration (Y/N)
21-2215	06/02/21	10:30 AM	16	GW		Y								
Trip Blank	05/23/21	9:00 AM	5	W										

Samples Relinquished By (Print Name and Sign): <u>Tyga Rombouts</u>	Date: <u>06/02/21</u>	Time: <u>4:52</u>	Samples Received By (Print Name and Sign): <u>Jess Jones</u>	Date: <u>2 Jun 21</u>	Time: <u>1700</u>
Samples Relinquished By (Print Name and Sign): <u>T Rombouts</u>	Date: _____	Time: _____	Samples Received By (Print Name and Sign): <u>JMKAN</u>	Date: <u>June 4/21</u>	Time: _____
Samples Relinquished By (Print Name and Sign): _____	Date: _____	Time: _____	Samples Received By (Print Name and Sign): _____	Date: <u>9:55 am</u>	Time: _____

Page 1 of 1  
 No: **T 119633**



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

ATTENTION TO: Laura Jones

PROJECT: 21451149

AGAT WORK ORDER: 21Z757398

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

WATER ANALYSIS REVIEWED BY: Nivine Basily, Inorganics Report Writer

DATE REPORTED: Jun 14, 2021

PAGES (INCLUDING COVER): 14

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.



## Certificate of Analysis

AGAT WORK ORDER: 21Z757398

PROJECT: 21451149

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CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Laura Jones

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2021-06-07

DATE REPORTED: 2021-06-14

Parameter	Unit	SAMPLE DESCRIPTION:		21-213	16-13
		G / S	RDL	2574136	2574255
Naphthalene	µg/L	1400	0.20	<0.20	<0.20
Acenaphthylene	µg/L	1.8	0.20	<0.20	<0.20
Acenaphthene	µg/L	600	0.20	<0.20	<0.20
Fluorene	µg/L	400	0.20	<0.20	<0.20
Phenanthrene	µg/L	580	0.10	<0.10	<0.10
Anthracene	µg/L	2.4	0.10	<0.10	<0.10
Fluoranthene	µg/L	130	0.20	<0.20	<0.20
Pyrene	µg/L	68	0.20	<0.20	<0.20
Benzo(a)anthracene	µg/L	4.7	0.20	<0.20	<0.20
Chrysene	µg/L	1	0.10	<0.10	<0.10
Benzo(b)fluoranthene	µg/L	0.75	0.10	<0.10	<0.10
Benzo(k)fluoranthene	µg/L	0.4	0.10	<0.10	<0.10
Benzo(a)pyrene	µg/L	0.81	0.01	<0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L	0.2	0.20	<0.20	<0.20
Dibenz(a,h)anthracene	µg/L	0.52	0.20	<0.20	<0.20
Benzo(g,h,i)perylene	µg/L	0.2	0.20	<0.20	<0.20
2-and 1-methyl Naphthalene	µg/L	1800	0.20	<0.20	<0.20
Sediment				No	No
Surrogate	Unit	Acceptable Limits			
Naphthalene-d8	%	50-140		80	80
Acridine-d9	%	50-140		80	80
Terphenyl-d14	%	50-140		80	80

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

2574136-2574255 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.  
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:



## Certificate of Analysis

AGAT WORK ORDER: 21Z757398

PROJECT: 21451149

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CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Laura Jones

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2021-06-07

DATE REPORTED: 2021-06-14

Parameter	Unit	SAMPLE DESCRIPTION:		21-213	16-13
		G / S	RDL	2574136	2574255
F1 (C6-C10)	µg/L	750	25	<25	<25
F1 (C6 to C10) minus BTEX	µg/L	750	25	<25	<25
F2 (C10 to C16)	µg/L	150	100	<100	<100
F2 (C10 to C16) minus Naphthalene	µg/L		100	<100	<100
F3 (C16 to C34)	µg/L	500	100	<100	<100
F3 (C16 to C34) minus PAHs	µg/L		100	<100	<100
F4 (C34 to C50)	µg/L	500	100	<100	<100
Gravimetric Heavy Hydrocarbons	µg/L		500	NA	NA
Sediment				No	No
Surrogate	Unit	Acceptable Limits			
Toluene-d8	% Recovery	50-140		93.0	83.2
Terphenyl	% Recovery	60-140		81	92

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

2574136-2574255 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.

Analysis performed at AGAT Toronto (unless marked by \*)

Certified By:



## Certificate of Analysis

AGAT WORK ORDER: 21Z757398

PROJECT: 21451149

5835 COOPERS AVENUE  
MISSISSAUGA, ONTARIO  
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CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Laura Jones

SAMPLING SITE:

SAMPLED BY:

### O. Reg. 153(511) - VOCs (Water)

DATE RECEIVED: 2021-06-07

DATE REPORTED: 2021-06-14

Parameter	Unit	SAMPLE DESCRIPTION:		21-213	16-13
		G / S	RDL	2574136	2574255
Dichlorodifluoromethane	µg/L	4400	0.20	<0.20	<0.20
Vinyl Chloride	µg/L	0.5	0.17	<0.17	<0.17
Bromomethane	µg/L	5.6	0.20	<0.20	<0.20
Trichlorofluoromethane	µg/L	2500	0.40	<0.40	<0.40
Acetone	µg/L	130000	1.0	<1.0	<1.0
1,1-Dichloroethylene	µg/L	1.6	0.30	<0.30	<0.30
Methylene Chloride	µg/L	610	0.30	<0.30	<0.30
trans- 1,2-Dichloroethylene	µg/L	1.6	0.20	<0.20	<0.20
Methyl tert-butyl ether	µg/L	190	0.20	<0.20	<0.20
1,1-Dichloroethane	µg/L	320	0.30	<0.30	<0.30
Methyl Ethyl Ketone	µg/L	470000	1.0	<1.0	<1.0
cis- 1,2-Dichloroethylene	µg/L	1.6	0.20	<0.20	<0.20
Chloroform	µg/L	2.4	0.20	<0.20	<0.20
1,2-Dichloroethane	µg/L	1.6	0.20	<0.20	<0.20
1,1,1-Trichloroethane	µg/L	640	0.30	<0.30	<0.30
Carbon Tetrachloride	µg/L	0.79	0.20	<0.20	<0.20
Benzene	µg/L	44	0.20	<0.20	<0.20
1,2-Dichloropropane	µg/L	16	0.20	<0.20	<0.20
Trichloroethylene	µg/L	1.6	0.20	<0.20	<0.20
Bromodichloromethane	µg/L	85000	0.20	<0.20	<0.20
Methyl Isobutyl Ketone	µg/L	140000	1.0	<1.0	<1.0
1,1,2-Trichloroethane	µg/L	4.7	0.20	<0.20	<0.20
Toluene	µg/L	18000	0.20	<0.20	<0.20
Dibromochloromethane	µg/L	82000	0.10	<0.10	<0.10
Ethylene Dibromide	µg/L	0.25	0.10	<0.10	<0.10
Tetrachloroethylene	µg/L	1.6	0.20	<0.20	<0.20
1,1,1,2-Tetrachloroethane	µg/L	3.3	0.10	<0.10	<0.10
Chlorobenzene	µg/L	630	0.10	<0.10	<0.10
Ethylbenzene	µg/L	2300	0.10	<0.10	<0.10

Certified By:



## Certificate of Analysis

AGAT WORK ORDER: 21Z757398

PROJECT: 21451149

5835 COOPERS AVENUE  
MISSISSAUGA, ONTARIO  
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CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Laura Jones

SAMPLING SITE:

SAMPLED BY:

### O. Reg. 153(511) - VOCs (Water)

DATE RECEIVED: 2021-06-07

DATE REPORTED: 2021-06-14

Parameter	Unit	G / S	RDL	SAMPLE DESCRIPTION:	
				21-213	16-13
				SAMPLE TYPE:	
				Water	
				DATE SAMPLED:	
				2021-06-07	2021-06-07
				10:09	11:35
				2574136	2574255
m & p-Xylene	µg/L		0.20	<0.20	<0.20
Bromoform	µg/L	380	0.10	<0.10	<0.10
Styrene	µg/L	1300	0.10	<0.10	<0.10
1,1,2,2-Tetrachloroethane	µg/L	3.2	0.10	<0.10	<0.10
o-Xylene	µg/L		0.10	<0.10	<0.10
1,3-Dichlorobenzene	µg/L	9600	0.10	<0.10	<0.10
1,4-Dichlorobenzene	µg/L	8	0.10	<0.10	<0.10
1,2-Dichlorobenzene	µg/L	4600	0.10	<0.10	<0.10
1,3-Dichloropropene	µg/L	5.2	0.30	<0.30	<0.30
Xylenes (Total)	µg/L	4200	0.20	<0.20	<0.20
n-Hexane	µg/L	51	0.20	<0.20	<0.20
Surrogate	Unit	Acceptable Limits			
Toluene-d8	% Recovery	50-140	92	91	
4-Bromofluorobenzene	% Recovery	50-140	79	88	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

2574136-2574255 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:



## Certificate of Analysis

AGAT WORK ORDER: 21Z757398

PROJECT: 21451149

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CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Laura Jones

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2021-06-07

DATE REPORTED: 2021-06-14

Parameter	Unit	SAMPLE DESCRIPTION:		21-213	16-13
		G / S	RDL	2574136	2574255
Dissolved Antimony	µg/L	20000	1.0	<1.0	<1.0
Dissolved Arsenic	µg/L	1900	1.0	<1.0	<1.0
Dissolved Barium	µg/L	29000	2.0	54.7	71.9
Dissolved Beryllium	µg/L	67	0.5	<0.5	<0.5
Dissolved Boron	µg/L	45000	10.0	20.4	14.8
Dissolved Cadmium	µg/L	2.7	0.20	<0.20	<0.20
Dissolved Chromium	µg/L	810	2.0	<2.0	<2.0
Dissolved Cobalt	µg/L	66	0.50	<0.50	<0.50
Dissolved Copper	µg/L	87	1.0	<1.0	1.0
Dissolved Lead	µg/L	25	0.50	<0.50	<0.50
Dissolved Molybdenum	µg/L	9200	0.50	<0.50	2.57
Dissolved Nickel	µg/L	490	3.0	<3.0	<3.0
Dissolved Selenium	µg/L	63	1.0	1.8	2.1
Dissolved Silver	µg/L	1.5	0.20	<0.20	<0.20
Dissolved Thallium	µg/L	510	0.30	<0.30	<0.30
Dissolved Uranium	µg/L	420	0.50	<0.50	1.01
Dissolved Vanadium	µg/L	250	0.40	<0.40	<0.40
Dissolved Zinc	µg/L	1100	5.0	<5.0	<5.0
Mercury	µg/L	0.29	0.02	<0.02	<0.02
Chromium VI	µg/L	140	2	<2	<2

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard; Refers to Table 3: Full Depth Generic Site Condition Standards 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.

2574136-2574255 Metals analysis completed on a filtered sample.

Analysis performed at AGAT Toronto (unless marked by \*)

Certified By:



*Mvine Basily*



## Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 21Z757398

PROJECT: 21451149

ATTENTION TO: Laura Jones

SAMPLING SITE:

SAMPLED BY:

### Trace Organics Analysis

RPT Date: Jun 14, 2021			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		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)	2566429	<25	<25	NA	< 25	102%	60%	140%	100%	60%	140%	97%	60%	140%
F2 (C10 to C16)	2562872	< 100	< 100	NA	< 100	114%	60%	140%	90%	60%	140%	77%	60%	140%
F3 (C16 to C34)	2562872	< 100	< 100	NA	< 100	103%	60%	140%	86%	60%	140%	73%	60%	140%
F4 (C34 to C50)	2562872	< 100	< 100	NA	< 100	92%	60%	140%	112%	60%	140%	78%	60%	140%

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

Naphthalene	2557156	<0.20	<0.20	NA	< 0.20	109%	50%	140%	94%	50%	140%	98%	50%	140%
Acenaphthylene	2557156	<0.20	<0.20	NA	< 0.20	112%	50%	140%	102%	50%	140%	99%	50%	140%
Acenaphthene	2557156	<0.20	<0.20	NA	< 0.20	104%	50%	140%	100%	50%	140%	98%	50%	140%
Fluorene	2557156	<0.20	<0.20	NA	< 0.20	111%	50%	140%	114%	50%	140%	107%	50%	140%
Phenanthrene	2557156	<0.10	<0.10	NA	< 0.10	102%	50%	140%	111%	50%	140%	97%	50%	140%
Anthracene	2557156	<0.10	<0.10	NA	< 0.10	114%	50%	140%	118%	50%	140%	107%	50%	140%
Fluoranthene	2557156	<0.20	<0.20	NA	< 0.20	109%	50%	140%	124%	50%	140%	105%	50%	140%
Pyrene	2557156	<0.20	<0.20	NA	< 0.20	108%	50%	140%	106%	50%	140%	107%	50%	140%
Benzo(a)anthracene	2557156	<0.20	<0.20	NA	< 0.20	95%	50%	140%	106%	50%	140%	85%	50%	140%
Chrysene	2557156	<0.10	<0.10	NA	< 0.10	115%	50%	140%	108%	50%	140%	108%	50%	140%
Benzo(b)fluoranthene	2557156	<0.10	<0.10	NA	< 0.10	76%	50%	140%	117%	50%	140%	99%	50%	140%
Benzo(k)fluoranthene	2557156	<0.10	<0.10	NA	< 0.10	79%	50%	140%	103%	50%	140%	113%	50%	140%
Benzo(a)pyrene	2557156	<0.01	<0.01	NA	< 0.01	70%	50%	140%	102%	50%	140%	101%	50%	140%
Indeno(1,2,3-cd)pyrene	2557156	<0.20	<0.20	NA	< 0.20	66%	50%	140%	72%	50%	140%	73%	50%	140%
Dibenz(a,h)anthracene	2557156	<0.20	<0.20	NA	< 0.20	70%	50%	140%	81%	50%	140%	71%	50%	140%
Benzo(g,h,i)perylene	2557156	<0.20	<0.20	NA	< 0.20	65%	50%	140%	74%	50%	140%	81%	50%	140%

**O. Reg. 153(511) - VOCs (Water)**

Dichlorodifluoromethane	2572322	<0.20	<0.20	NA	< 0.20	90%	50%	140%	89%	50%	140%	86%	50%	140%
Vinyl Chloride	2572322	<0.17	<0.17	NA	< 0.17	96%	50%	140%	112%	50%	140%	113%	50%	140%
Bromomethane	2572322	<0.20	<0.20	NA	< 0.20	83%	50%	140%	113%	50%	140%	103%	50%	140%
Trichlorofluoromethane	2572322	<0.40	<0.40	NA	< 0.40	108%	50%	140%	112%	50%	140%	105%	50%	140%
Acetone	2572322	<1.0	<1.0	NA	< 1.0	94%	50%	140%	88%	50%	140%	105%	50%	140%
1,1-Dichloroethylene	2572322	<0.30	<0.30	NA	< 0.30	88%	50%	140%	99%	60%	130%	102%	50%	140%
Methylene Chloride	2572322	<0.30	<0.30	NA	< 0.30	116%	50%	140%	105%	60%	130%	92%	50%	140%
trans- 1,2-Dichloroethylene	2572322	<0.20	<0.20	NA	< 0.20	82%	50%	140%	96%	60%	130%	81%	50%	140%
Methyl tert-butyl ether	2572322	<0.20	<0.20	NA	< 0.20	80%	50%	140%	110%	60%	130%	73%	50%	140%
1,1-Dichloroethane	2572322	<0.30	<0.30	NA	< 0.30	88%	50%	140%	95%	60%	130%	77%	50%	140%
Methyl Ethyl Ketone	2572322	<1.0	<1.0	NA	< 1.0	95%	50%	140%	99%	50%	140%	91%	50%	140%
cis- 1,2-Dichloroethylene	2572322	<0.20	<0.20	NA	< 0.20	102%	50%	140%	101%	60%	130%	102%	50%	140%
Chloroform	2572322	<0.20	<0.20	NA	< 0.20	103%	50%	140%	95%	60%	130%	92%	50%	140%
1,2-Dichloroethane	2572322	<0.20	<0.20	NA	< 0.20	98%	50%	140%	89%	60%	130%	104%	50%	140%
1,1,1-Trichloroethane	2572322	<0.30	<0.30	NA	< 0.30	102%	50%	140%	118%	60%	130%	100%	50%	140%
Carbon Tetrachloride	2572322	<0.20	<0.20	NA	< 0.20	117%	50%	140%	87%	60%	130%	101%	50%	140%

## Quality Assurance

 CLIENT NAME: GOLDER ASSOCIATES LTD  
 PROJECT: 21451149  
 SAMPLING SITE:

 AGAT WORK ORDER: 21Z757398  
 ATTENTION TO: Laura Jones  
 SAMPLED BY:

### Trace Organics Analysis (Continued)

RPT Date: Jun 14, 2021			DUPLICATE				Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Measured Value		Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits		
								Lower	Upper		Lower	Upper		Lower	Upper	
Benzene	2572322		15.7	15.7	0.0%	< 0.20	83%	50%	140%	99%	60%	130%	113%	50%	140%	
1,2-Dichloropropane	2572322		<0.20	<0.20	NA	< 0.20	101%	50%	140%	96%	60%	130%	89%	50%	140%	
Trichloroethylene	2572322		<0.20	<0.20	NA	< 0.20	94%	50%	140%	101%	60%	130%	83%	50%	140%	
Bromodichloromethane	2572322		<0.20	<0.20	NA	< 0.20	103%	50%	140%	101%	60%	130%	93%	50%	140%	
Methyl Isobutyl Ketone	2572322		<1.0	<1.0	NA	< 1.0	110%	50%	140%	89%	50%	140%	102%	50%	140%	
1,1,2-Trichloroethane	2572322		<0.20	<0.20	NA	< 0.20	107%	50%	140%	91%	60%	130%	97%	50%	140%	
Toluene	2572322		2.69	2.64	1.9%	< 0.20	102%	50%	140%	82%	60%	130%	100%	50%	140%	
Dibromochloromethane	2572322		<0.10	<0.10	NA	< 0.10	109%	50%	140%	108%	60%	130%	109%	50%	140%	
Ethylene Dibromide	2572322		<0.10	<0.10	NA	< 0.10	92%	50%	140%	86%	60%	130%	96%	50%	140%	
Tetrachloroethylene	2572322		<0.20	<0.20	NA	< 0.20	102%	50%	140%	97%	60%	130%	93%	50%	140%	
1,1,1,2-Tetrachloroethane	2572322		<0.10	<0.10	NA	< 0.10	92%	50%	140%	91%	60%	130%	95%	50%	140%	
Chlorobenzene	2572322		<0.10	<0.10	NA	< 0.10	87%	50%	140%	90%	60%	130%	88%	50%	140%	
Ethylbenzene	2572322		0.26	0.26	NA	< 0.10	97%	50%	140%	97%	60%	130%	112%	50%	140%	
m & p-Xylene	2572322		1.17	1.21	3.4%	< 0.20	103%	50%	140%	104%	60%	130%	117%	50%	140%	
Bromoform	2572322		<0.10	<0.10	NA	< 0.10	96%	50%	140%	91%	60%	130%	103%	50%	140%	
Styrene	2572322		<0.10	<0.10	NA	< 0.10	82%	50%	140%	96%	60%	130%	84%	50%	140%	
1,1,2,2-Tetrachloroethane	2572322		<0.10	<0.10	NA	< 0.10	97%	50%	140%	98%	60%	130%	100%	50%	140%	
o-Xylene	2572322		0.47	0.46	NA	< 0.10	109%	50%	140%	94%	60%	130%	104%	50%	140%	
1,3-Dichlorobenzene	2572322		<0.10	<0.10	NA	< 0.10	106%	50%	140%	93%	60%	130%	91%	50%	140%	
1,4-Dichlorobenzene	2572322		<0.10	<0.10	NA	< 0.10	102%	50%	140%	99%	60%	130%	116%	50%	140%	
1,2-Dichlorobenzene	2572322		<0.10	<0.10	NA	< 0.10	89%	50%	140%	99%	60%	130%	102%	50%	140%	
n-Hexane	2572322		<0.20	<0.20	NA	< 0.20	95%	50%	140%	96%	60%	130%	93%	50%	140%	

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

Certified By: \_\_\_\_\_



## Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD  
 PROJECT: 21451149  
 SAMPLING SITE:

AGAT WORK ORDER: 21Z757398  
 ATTENTION TO: Laura Jones  
 SAMPLED BY:

Water Analysis															
RPT Date: Jun 14, 2021			DUPLICATE				Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE		MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	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	2566141		<1.0	<1.0	NA	< 1.0	96%	70%	130%	91%	80%	120%	92%	70%	130%
Dissolved Arsenic	2566141		<1.0	1.4	NA	< 1.0	90%	70%	130%	81%	80%	120%	86%	70%	130%
Dissolved Barium	2566141		24.6	24.9	1.2%	< 2.0	97%	70%	130%	94%	80%	120%	97%	70%	130%
Dissolved Beryllium	2566141		<0.5	<0.5	NA	< 0.5	104%	70%	130%	91%	80%	120%	85%	70%	130%
Dissolved Boron	2566141		212	208	1.9%	< 10.0	100%	70%	130%	95%	80%	120%	85%	70%	130%
Dissolved Cadmium	2566141		<0.20	<0.20	NA	< 0.20	99%	70%	130%	101%	80%	120%	102%	70%	130%
Dissolved Chromium	2566141		<2.0	<2.0	NA	< 2.0	100%	70%	130%	91%	80%	120%	99%	70%	130%
Dissolved Cobalt	2566141		<0.50	<0.50	NA	< 0.50	101%	70%	130%	86%	80%	120%	96%	70%	130%
Dissolved Copper	2566141		13.1	13.7	4.5%	< 1.0	99%	70%	130%	108%	80%	120%	95%	70%	130%
Dissolved Lead	2566141		<0.50	<0.50	NA	< 0.50	100%	70%	130%	93%	80%	120%	94%	70%	130%
Dissolved Molybdenum	2566141		42.3	45.3	6.8%	< 0.50	100%	70%	130%	105%	80%	120%	94%	70%	130%
Dissolved Nickel	2566141		<3.0	<3.0	NA	< 3.0	97%	70%	130%	82%	80%	120%	92%	70%	130%
Dissolved Selenium	2566141		2.0	2.4	NA	< 1.0	97%	70%	130%	90%	80%	120%	87%	70%	130%
Dissolved Silver	2566141		<0.20	<0.20	NA	< 0.20	94%	70%	130%	87%	80%	120%	93%	70%	130%
Dissolved Thallium	2566141		<0.30	<0.30	NA	< 0.30	91%	70%	130%	86%	80%	120%	100%	70%	130%
Dissolved Uranium	2566141		4.00	4.11	2.7%	< 0.50	103%	70%	130%	88%	80%	120%	100%	70%	130%
Dissolved Vanadium	2566141		2.29	1.06	NA	< 0.40	109%	70%	130%	92%	80%	120%	98%	70%	130%
Dissolved Zinc	2566141		<5.0	<5.0	NA	< 5.0	99%	70%	130%	97%	80%	120%	92%	70%	130%
Mercury	2574136	2574136	<0.02	<0.02	NA	< 0.02	101%	70%	130%	104%	80%	120%	100%	70%	130%
Chromium VI	2563078		<2	<2	NA	< 2	100%	70%	130%	106%	80%	120%	111%	70%	130%

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

Certified By:



*Nivine Basily*

## Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 21Z757398

PROJECT: 21451149

ATTENTION TO: Laura Jones

SAMPLING SITE:

SAMPLED BY:

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			
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-91-5010	modified from MOE PHC-E3421	(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

## Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 21Z757398

PROJECT: 21451149

ATTENTION TO: Laura Jones

SAMPLING SITE:

SAMPLED BY:

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

## Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 21Z757398

PROJECT: 21451149

ATTENTION TO: Laura Jones

SAMPLING SITE:

SAMPLED BY:

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

## Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 21Z757398

PROJECT: 21451149

ATTENTION TO: Laura Jones

SAMPLING SITE:

SAMPLED BY:

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-93-6034	modified from SM 3500-CR B	LACHAT FIA



# AGAT

## Laboratories

LT(Gce) - 7-318-118-3

1CG BTK

5835 Coopers Avenue  
Mississauga, Ontario L4T 1Y2  
Ph: 905.712.5100 Fax: 905.712.5122  
webcarth.agatlabs.com

### Laboratory Use Only

Work Order #: 212757398  
Cooler Quantity: one-ice  
Arrival Temperatures: 3.2 | 3.5 | 3.0  
Custody Seal Intact:  Yes  No  N/A  
Notes:

### Chain of Custody Record

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

#### Report Information:

Company: Goldier Associates Inc  
Contact: Laura Jones & Rochelle Mathew  
Address: 1931 Robertson Rd  
Ottawa On  
613-892-9600 Fax:  
Phone:  
Reports to be sent to:  
1. Email: Laura-jones@golder.com  
2. Email: rochelle-mathew@golder.com

#### Regulatory Requirements:

(Please check all applicable boxes)  
 Regulation 153/04  Excess Soils R406  Sewer Use  
 Ind/Com  Sanitary  Storm  
Table 3  Res/Park  Agriculture  Prov. Water Quality Objectives (PWQO)  
 Indicate One  Indicate One  Region  
 Regulation 558  Other  
Soil Texture (Check One)  CCME  Other  
 Coarse  Fine  Indicate One

#### 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):

#### Project Information:

Project: 21451149  
Site Location: Ottawa Hospital  
Sampled By: J. Rombouts  
AGAT ID #: \_\_\_\_\_ PO: \_\_\_\_\_  
Please note: if quotation number is not provided, client will be billed full price for analysis.

#### Is this submission for a Record of Site Condition?

Yes  No

#### Report Guideline on Certificate of Analysis

Yes  No

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

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

#### Invoice Information:

Bill To Samc: 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

Field Filtered - Metals, Hg, CrVI, DOC	O. Reg 153				Total PCBs	VOC	O. Reg 406				Potentially Hazardous or High Concentration (Y/N)
	Metals & Inorganics	Metals - CrVI, Hg, HWSB	BTEX, F1-F4 PHCs	Analyze F4G if required			PAHs	Landfill Disposal Characterization TOLP	Excess Soils SPLP Rainwater Leach	Excess Soils Characterization Package	
		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>					
		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>					

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Y/N	Metals & Inorganics	Metals - CrVI, Hg, HWSB	BTEX, F1-F4 PHCs	Analyze F4G if required	PAHs	Total PCBs	VOC	Landfill Disposal Characterization TOLP	Excess Soils SPLP Rainwater Leach	Excess Soils Characterization Package	Salt - EC/SAR	Potentially Hazardous or High Concentration (Y/N)
<u>21-213</u>	<u>06/07/21</u>	<u>10:09 AM</u>	<u>13</u>	<u>GW</u>		<u>Y</u>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>					
<u>16-13</u>	<u>06/07/21</u>	<u>11:35 AM</u>	<u>13</u>	<u>GW</u>		<u>Y</u>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>					

Samples Relinquished By (Print Name and Sign): <u>Joyce Rombouts</u>	Date: <u>06/07/21</u>	Time: <u>12:13</u>	Samples Received By (Print Name and Sign): <u>Uber-the-let</u>	Date: <u>21/06/07</u>	Time: <u>14h40</u>
Samples Relinquished By (Print Name and Sign): <u>UBT</u>	Date: <u>21/06/07</u>	Time: <u>12:13</u>	Samples Received By (Print Name and Sign): <u>UBT</u>	Date: <u>21/06/07</u>	Time: <u>12:13</u>
Samples Relinquished By (Print Name and Sign): <u>UBT</u>	Date: <u>21/06/07</u>	Time: <u>12:13</u>	Samples Received By (Print Name and Sign): <u>UBT</u>	Date: <u>21/06/07</u>	Time: <u>12:13</u>

Page 1 of 1

No. 119634





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

ATTENTION TO: Laura Jones

PROJECT: 21451149

AGAT WORK ORDER: 21Z759728

WATER ANALYSIS REVIEWED BY: Nivine Basily, Inorganics Report Writer

DATE REPORTED: Jun 18, 2021

PAGES (INCLUDING COVER): 6

VERSION\*: 1

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

**\*Notes**

VERSION 1: Revised report with full Metals scan. 2021/06/18

**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.



## Certificate of Analysis

AGAT WORK ORDER: 21Z759728

PROJECT: 21451149

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

SAMPLING SITE: Ottawa Hospital

ATTENTION TO: Laura Jones

SAMPLED BY: J. Rambouts

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

DATE RECEIVED: 2021-06-09

DATE REPORTED: 2021-06-18

SAMPLE DESCRIPTION: 21-218  
SAMPLE TYPE: Water  
DATE SAMPLED: 2021-06-09  
11:30  
2593868

Parameter	Unit	G / S	RDL	2593868
Dissolved Antimony	µg/L	20000	1.0	<1.0
Dissolved Arsenic	µg/L	1900	1.0	<1.0
Dissolved Barium	µg/L	29000	2.0	84.8
Dissolved Beryllium	µg/L	67	0.50	<0.50
Dissolved Boron	µg/L	45000	10.0	84.3
Dissolved Cadmium	µg/L	2.7	0.20	<0.20
Dissolved Chromium	µg/L	810	2.0	<2.0
Dissolved Cobalt	µg/L	66	0.50	0.86
Dissolved Copper	µg/L	87	1.0	2.8
Dissolved Lead	µg/L	25	0.50	<0.50
Dissolved Molybdenum	µg/L	9200	0.50	3.20
Dissolved Nickel	µg/L	490	3.0	<3.0
Dissolved Selenium	µg/L	63	1.0	<1.0
Dissolved Silver	µg/L	1.5	0.20	<0.20
Dissolved Thallium	µg/L	510	0.30	<0.30
Dissolved Uranium	µg/L	420	0.50	1.79
Dissolved Vanadium	µg/L	250	0.40	1.33
Dissolved Zinc	µg/L	1100	5.0	<5.0

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

2593868 Metals analysis completed on a filtered sample.

Analysis performed at AGAT Toronto (unless marked by \*)

Certified By:



*Nivine Basly*



## Certificate of Analysis

AGAT WORK ORDER: 21Z759728

PROJECT: 21451149

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

ATTENTION TO: Laura Jones

SAMPLING SITE: Ottawa Hospital

SAMPLED BY: J. Rambouts

### O. Reg. 153(511) - Metals (Pb (Water))

DATE RECEIVED: 2021-06-09

DATE REPORTED: 2021-06-18

SAMPLE DESCRIPTION: 21-218  
SAMPLE TYPE: Water  
DATE SAMPLED: 2021-06-09  
11:30  
2593868

Parameter	Unit	G / S	RDL	2593868
Dissolved Lead	µg/L	25	0.50	<0.50

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

2593868 Metals analysis completed on a filtered sample.

Analysis performed at AGAT Toronto (unless marked by \*)

Certified By:



*John Bouch*

## Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 21Z759728

PROJECT: 21451149

ATTENTION TO: Laura Jones

SAMPLING SITE: Ottawa Hospital

SAMPLED BY: J. Rambouts

### Water Analysis

RPT Date: Jun 18, 2021			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

**O. Reg. 153(511) - Metals (Pb (Water))**

Dissolved Lead	2588376	<0.50	<0.50	NA	< 0.50	96%	70%	130%	101%	80%	120%	101%	70%	130%
----------------	---------	-------	-------	----	--------	-----	-----	------	------	-----	------	------	-----	------

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

Dissolved Antimony	2588376	< 1.0	< 1.0	NA	< 1.0	98%	70%	130%	96%	80%	120%	99%	70%	130%
Dissolved Arsenic	2588376	< 1.0	< 1.0	NA	< 1.0	95%	70%	130%	100%	80%	120%	105%	70%	130%
Dissolved Barium	2588376	156	163	4.4%	< 2.0	98%	70%	130%	98%	80%	120%	102%	70%	130%
Dissolved Beryllium	2588376	< 0.50	< 0.50	NA	< 0.50	102%	70%	130%	101%	80%	120%	109%	70%	130%
Dissolved Boron	2588376	13.6	15.0	NA	< 10.0	102%	70%	130%	99%	80%	120%	109%	70%	130%
Dissolved Cadmium	2588376	< 0.20	< 0.20	NA	< 0.20	101%	70%	130%	100%	80%	120%	109%	70%	130%
Dissolved Chromium	2588376	< 2.0	< 2.0	NA	< 2.0	101%	70%	130%	100%	80%	120%	103%	70%	130%
Dissolved Cobalt	2588376	< 0.50	< 0.50	NA	< 0.50	100%	70%	130%	100%	80%	120%	101%	70%	130%
Dissolved Copper	2588376	< 1.0	< 1.0	NA	< 1.0	100%	70%	130%	100%	80%	120%	103%	70%	130%
Dissolved Lead	2588376	< 0.50	< 0.50	NA	< 0.50	96%	70%	130%	101%	80%	120%	101%	70%	130%
Dissolved Molybdenum	2588376	< 0.50	< 0.50	NA	< 0.50	102%	70%	130%	104%	80%	120%	104%	70%	130%
Dissolved Nickel	2588376	17.0	16.0	6.1%	< 3.0	101%	70%	130%	102%	80%	120%	102%	70%	130%
Dissolved Selenium	2588376	< 1.0	< 1.0	NA	< 1.0	101%	70%	130%	107%	80%	120%	111%	70%	130%
Dissolved Silver	2588376	< 0.20	< 0.20	NA	< 0.20	103%	70%	130%	104%	80%	120%	103%	70%	130%
Dissolved Thallium	2588376	< 0.30	< 0.30	NA	< 0.30	87%	70%	130%	102%	80%	120%	104%	70%	130%
Dissolved Uranium	2588376	< 0.50	< 0.50	NA	< 0.50	102%	70%	130%	103%	80%	120%	105%	70%	130%
Dissolved Vanadium	2588376	< 0.40	< 0.40	NA	< 0.40	101%	70%	130%	106%	80%	120%	102%	70%	130%
Dissolved Zinc	2588376	< 5.0	< 5.0	NA	< 5.0	101%	70%	130%	95%	80%	120%	108%	70%	130%

Comments: NA signifies Not Applicable.

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

Certified By:



## Method Summary

 CLIENT NAME: GOLDER ASSOCIATES LTD  
 PROJECT: 21451149  
 SAMPLING SITE: Ottawa Hospital

 AGAT WORK ORDER: 21Z759728  
 ATTENTION TO: Laura Jones  
 SAMPLED BY: J. Rambouts

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





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

ATTENTION TO: Keith Holmes

PROJECT: 21451149

AGAT WORK ORDER: 22Z868295

SOIL ANALYSIS REVIEWED BY: Nivine Basily, Inorganics Report Writer

TRACE ORGANICS REVIEWED BY: Neli Popnikolova, Senior Chemist

DATE REPORTED: Mar 08, 2022

PAGES (INCLUDING COVER): 17

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.



## Certificate of Analysis

AGAT WORK ORDER: 22Z868295

PROJECT: 21451149

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<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2022-02-28

DATE REPORTED: 2022-03-08

Parameter	Unit	SAMPLE DESCRIPTION:								
		G / S	RDL	BH22-02 SA2 Soil 2022-02-22 12:00 3571035	BH22-04 SA2 Soil 2022-02-22 12:00 3571052	BH22-06 SA2 Soil 2022-02-22 12:00 3571053	BH22-09 SA2 Soil 2022-02-22 12:00 3571054	BH22-01 SA2a Soil 2022-02-23 12:00 3571055	BH22-07 SA3 Soil 2022-02-24 12:00 3571056	BH22-10 SA2 Soil 2022-02-24 12:00 3571057
Antimony	µg/g	7.5	0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Arsenic	µg/g	18	1	1	2	3	3	2	4	2
Barium	µg/g	390	2.0	50.2	80.6	171	169	65.5	281	341
Beryllium	µg/g	4	0.4	<0.4	<0.4	<0.4	0.4	0.4	<0.4	0.7
Boron	µg/g	120	5	<5	<5	<5	<5	8	10	<5
Boron (Hot Water Soluble)	µg/g	1.5	0.10	0.16	0.19	0.24	0.18	0.37	0.31	0.14
Cadmium	µg/g	1.2	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	µg/g	160	5	21	46	33	59	21	20	102
Cobalt	µg/g	22	0.5	5.1	10.8	9.0	13.1	4.5	6.6	22.8
Copper	µg/g	140	1.0	9.8	18.3	19.4	31.5	11.6	12.7	45.8
Lead	µg/g	120	1	15	8	39	23	16	50	13
Molybdenum	µg/g	6.9	0.5	0.9	0.9	0.9	1.2	<0.5	0.7	0.8
Nickel	µg/g	100	1	11	23	17	32	11	10	57
Selenium	µg/g	2.4	0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Silver	µg/g	20	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Thallium	µg/g	1	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Uranium	µg/g	23	0.50	0.76	0.94	0.58	0.93	0.87	0.57	0.99
Vanadium	µg/g	86	0.4	29.1	49.5	38.7	60.9	20.5	25.7	105
Zinc	µg/g	340	5	39	50	73	76	48	132	129
Chromium, Hexavalent	µg/g	8	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cyanide, Free	µg/g	0.051	0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
Mercury	µg/g	0.27	0.10	<0.10	<0.10	0.15	<0.10	<0.10	0.27	<0.10
Electrical Conductivity (2:1)	mS/cm	0.7	0.005	0.169	0.184	0.242	0.170	0.226	3.16	0.308
Sodium Adsorption Ratio (2:1) (Calc.)	N/A	5	N/A	0.120	0.136	0.143	0.174	0.122	0.211	0.191
pH, 2:1 CaCl2 Extraction	pH Units	5.0-9.0	NA	7.22	7.25	7.51	7.37	7.19	10.2	7.71

Certified By:



*Nivine Basly*





## Certificate of Analysis

AGAT WORK ORDER: 22Z868295

PROJECT: 21451149

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<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2022-02-28

DATE REPORTED: 2022-03-08

Parameter	Unit	SAMPLE DESCRIPTION: BH22-03 SA4				BH22-05 SA2	BH22-08 SA3	BH22-405 SA3
		G / S	RDL	RDL	RDL	RDL	RDL	RDL
				3571058		3571059	3571060	3571061
Antimony	µg/g	7.5	0.8	14.6	0.8	<0.8	<0.8	<0.8
Arsenic	µg/g	18	1	452	1	10	12	5
Barium	µg/g	390	2.0	330	2.0	399	111	93.7
Beryllium	µg/g	4	0.4	0.5	0.4	0.6	<0.4	<0.4
Boron	µg/g	120	5	9	5	11	9	6
Boron (Hot Water Soluble)	µg/g	1.5	0.10	0.33	0.10	0.35	1.06	0.18
Cadmium	µg/g	1.2	0.5	15.6	0.5	<0.5	<0.5	<0.5
Chromium	µg/g	160	5	78	5	37	17	22
Cobalt	µg/g	22	0.5	47.2	0.5	9.6	4.3	6.9
Copper	µg/g	140	1.0	1430	1.0	39.8	11.3	21.8
Lead	µg/g	120	1	1140	1	149	52	39
Molybdenum	µg/g	6.9	0.5	53.5	0.5	2.4	2.4	0.6
Nickel	µg/g	100	1	136	1	24	6	14
Selenium	µg/g	2.4	0.8	7.2	0.8	0.9	<0.8	<0.8
Silver	µg/g	20	0.5	8.2	0.5	0.8	<0.5	<0.5
Thallium	µg/g	1	0.5	0.8	0.5	<0.5	<0.5	<0.5
Uranium	µg/g	23	0.50	21.1	0.50	1.57	1.42	0.96
Vanadium	µg/g	86	0.4	46.9	0.4	45.7	20.4	34.6
Zinc	µg/g	340	50	4770	5	217	57	64
Chromium, Hexavalent	µg/g	8	0.2	<0.2	0.2	<0.2	<0.2	<0.2
Cyanide, Free	µg/g	0.051	0.040	<0.040	0.040	<0.040	<0.040	<0.040
Mercury	µg/g	0.27	0.10	2.49	0.10	0.37	0.15	<0.10
Electrical Conductivity (2:1)	mS/cm	0.7	0.005	0.361	0.005	0.240	2.45	0.214
Sodium Adsorption Ratio (2:1) (Calc.)	N/A	5	N/A	1.47	N/A	0.152	0.096	0.130
pH, 2:1 CaCl2 Extraction	pH Units	5.0-9.0	NA	7.56	NA	7.51	7.44	7.52

Certified By:



*Ally Beach*



## Certificate of Analysis

AGAT WORK ORDER: 22Z868295

PROJECT: 21451149

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CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2022-02-28

DATE REPORTED: 2022-03-08

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

3571035-3571057 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 CaCl<sub>2</sub> extract prepared at 2:1 ratio. SAR is a calculated parameter.

3571058 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 CaCl<sub>2</sub> extract prepared at 2:1 ratio. SAR is a calculated parameter.

Dilution required, RDL has been increased accordingly.

3571059-3571061 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 CaCl<sub>2</sub> extract prepared at 2:1 ratio. SAR is a calculated parameter.

Analysis performed at AGAT Toronto (unless marked by \*)

Certified By:



*Keith Holmes*



## Certificate of Analysis

AGAT WORK ORDER: 22Z868295

PROJECT: 21451149

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CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2022-02-28

DATE REPORTED: 2022-03-08

Parameter	Unit	SAMPLE DESCRIPTION:		BH22-02 SA2	BH22-04 SA2	BH22-06 SA2	BH22-09 SA2	BH22-01 SA2a	BH22-07 SA3	BH22-10 SA2	BH22-03 SA4
		G / S	RDL	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
DATE SAMPLED:		2022-02-22	2022-02-22	2022-02-22	2022-02-22	2022-02-23	2022-02-24	2022-02-24	2022-02-24	2022-02-23	2022-02-23
		12:00	12:00	12:00	12:00	12:00	12:00	12:00	12:00	12:00	12:00
		3571035	3571052	3571053	3571054	3571055	3571056	3571057	3571058	3571058	3571058
Naphthalene	µg/g	0.6	0.05	<0.05	<0.05	<0.05	<0.05	0.06	0.22	<0.05	<0.05
Acenaphthylene	µg/g	0.15	0.05	0.18	0.46	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthene	µg/g	7.9	0.05	<0.05	0.19	0.10	<0.05	0.08	0.92	<0.05	<0.05
Fluorene	µg/g	62	0.05	<0.05	0.26	0.07	<0.05	0.12	0.83	<0.05	<0.05
Phenanthrene	µg/g	6.2	0.05	0.14	1.88	0.15	0.07	0.54	2.94	<0.05	0.06
Anthracene	µg/g	0.67	0.05	0.12	0.81	0.07	<0.05	0.28	1.22	<0.05	<0.05
Fluoranthene	µg/g	0.69	0.05	0.88	2.01	0.17	0.16	0.50	2.77	<0.05	0.15
Pyrene	µg/g	78	0.05	0.85	2.01	0.15	0.17	0.42	2.53	<0.05	0.16
Benz(a)anthracene	µg/g	0.5	0.05	0.50	1.41	0.06	0.09	0.19	1.31	<0.05	0.06
Chrysene	µg/g	7	0.05	0.40	0.98	<0.05	0.06	0.12	0.66	<0.05	0.05
Benzo(b)fluoranthene	µg/g	0.78	0.05	0.62	1.38	0.06	0.11	0.14	0.83	<0.05	0.07
Benzo(k)fluoranthene	µg/g	0.78	0.05	0.36	0.48	<0.05	<0.05	0.08	0.23	<0.05	<0.05
Benzo(a)pyrene	µg/g	0.3	0.05	0.42	1.09	<0.05	0.11	0.10	0.54	<0.05	<0.05
Indeno(1,2,3-cd)pyrene	µg/g	0.38	0.05	0.16	0.44	<0.05	<0.05	<0.05	0.17	<0.05	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	0.05	<0.05	0.13	<0.05	<0.05	<0.05	0.06	<0.05	<0.05
Benzo(g,h,i)perylene	µg/g	6.6	0.05	0.15	0.45	<0.05	<0.05	<0.05	0.19	<0.05	<0.05
1 and 2 Methylnaphthalene	µg/g	0.99	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.45	<0.05	<0.05
Moisture Content	%		0.1	15.8	10.6	17.6	25.8	23.5	31.3	21.7	22.0
Surrogate	Unit	Acceptable Limits									
Naphthalene-d8	%	50-140		67	62	64	62	66	78	68	64
Acridine-d9	%	50-140		85	79	85	78	76	76	79	79
Terphenyl-d14	%	50-140		89	85	97	84	84	88	85	85

Certified By:



## Certificate of Analysis

AGAT WORK ORDER: 22Z868295

PROJECT: 21451149

5835 COOPERS AVENUE  
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CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2022-02-28

DATE REPORTED: 2022-03-08

Parameter	Unit	G / S	RDL	SAMPLE DESCRIPTION:		
				BH22-05 SA2	BH22-08 SA3	BH22-405 SA3
				Soil	Soil	Soil
				2022-02-22	2022-02-25	2022-02-25
				12:00	12:00	12:00
				3571059	3571060	3571061
Naphthalene	µg/g	0.6	0.05	<0.05	<0.05	<0.05
Acenaphthylene	µg/g	0.15	0.05	0.18	<0.05	0.11
Acenaphthene	µg/g	7.9	0.05	0.11	<0.05	0.14
Fluorene	µg/g	62	0.05	0.18	<0.05	0.19
Phenanthrene	µg/g	6.2	0.05	1.74	0.14	1.41
Anthracene	µg/g	0.67	0.05	0.76	0.09	0.65
Fluoranthene	µg/g	0.69	0.05	2.24	0.38	1.88
Pyrene	µg/g	78	0.05	2.08	0.39	1.92
Benz(a)anthracene	µg/g	0.5	0.05	1.25	0.18	1.36
Chrysene	µg/g	7	0.05	0.75	0.12	0.92
Benzo(b)fluoranthene	µg/g	0.78	0.05	0.89	0.17	1.12
Benzo(k)fluoranthene	µg/g	0.78	0.05	0.47	0.09	0.47
Benzo(a)pyrene	µg/g	0.3	0.05	0.70	0.14	0.83
Indeno(1,2,3-cd)pyrene	µg/g	0.38	0.05	0.24	<0.05	0.33
Dibenz(a,h)anthracene	µg/g	0.1	0.05	0.06	<0.05	0.10
Benzo(g,h,i)perylene	µg/g	6.6	0.05	0.22	<0.05	0.33
1 and 2 Methyl naphthalene	µg/g	0.99	0.05	<0.05	<0.05	<0.05
Moisture Content	%		0.1	17.5	20.1	8.1
Surrogate	Unit	Acceptable Limits				
Naphthalene-d8	%	50-140		63	75	63
Acridine-d9	%	50-140		84	89	84
Terphenyl-d14	%	50-140		79	85	79

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

3571035-3571061 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:



## Certificate of Analysis

AGAT WORK ORDER: 22Z868295

PROJECT: 21451149

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

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2022-02-28

DATE REPORTED: 2022-03-08

Parameter	Unit	SAMPLE DESCRIPTION: BH22-02 SA2 BH22-04 SA2 BH22-06 SA2 BH22-09 SA2 BH22-01 SA2a BH22-07 SA3 BH22-10 SA2 BH22-03 SA4									
		G / S	RDL	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
DATE SAMPLED:		2022-02-22	2022-02-22	2022-02-22	2022-02-22	2022-02-23	2022-02-24	2022-02-24	2022-02-23	2022-02-24	2022-02-23
Time		12:00	12:00	12:00	12:00	12:00	12:00	12:00	12:00	12:00	12:00
Sample ID		3571035	3571052	3571053	3571054	3571055	3571056	3571057	3571058	3571059	3571060
Benzene	µg/g	0.21	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Toluene	µg/g	2.3	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	µg/g	2	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
m & p-Xylene	µg/g		0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
o-Xylene	µg/g		0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Xylenes (Total)	µg/g	3.1	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
F1 (C6 - C10)	µg/g	55	5	<5	<5	<5	<5	<5	<5	<5	<5
F1 (C6 to C10) minus BTEX	µg/g	55	5	<5	<5	<5	<5	<5	<5	<5	<5
F2 (C10 to C16)	µg/g	98	10	<10	<10	<10	<10	<10	<10	<10	<10
F2 (C10 to C16) minus Naphthalene	µg/g		10	<10	<10	<10	<10	<10	<10	<10	<10
F3 (C16 to C34)	µg/g	300	50	<50	<50	<50	<50	<50	300	<50	<50
F3 (C16 to C34) minus PAHs	µg/g		50	<50	<50	<50	<50	<50	289	<50	<50
F4 (C34 to C50)	µg/g	2800	50	<50	<50	<50	<50	<50	63	200	<50
Gravimetric Heavy Hydrocarbons	µg/g	2800	50	NA	NA	NA	NA	NA	NA	NA	NA
Moisture Content	%		0.1	15.8	10.6	6.23	25.8	23.5	31.3	21.7	22.0
Surrogate	Unit	Acceptable Limits									
Toluene-d8	% Recovery	60-140	78	78	92	79	84	99	74	72	
Terphenyl	%	60-140	73	76	74	91	78	91	87	96	

Certified By:





## Certificate of Analysis

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CLIENT NAME: GOLDER ASSOCIATES LTD

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SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2022-02-28

DATE REPORTED: 2022-03-08

Parameter	Unit	SAMPLE DESCRIPTION:				
		G / S	RDL	BH22-05 SA2	BH22-08 SA3	BH22-405 SA3
				Soil	Soil	Soil
				2022-02-22	2022-02-25	2022-02-25
				12:00	12:00	12:00
				3571059	3571060	3571061
Benzene	µg/g	0.21	0.02	<0.02	<0.02	<0.02
Toluene	µg/g	2.3	0.05	<0.05	<0.05	<0.05
Ethylbenzene	µg/g	2	0.05	<0.05	<0.05	<0.05
m & p-Xylene	µg/g		0.05	<0.05	<0.05	<0.05
o-Xylene	µg/g		0.05	<0.05	<0.05	<0.05
Xylenes (Total)	µg/g	3.1	0.05	<0.05	<0.05	<0.05
F1 (C6 - C10)	µg/g	55	5	<5	<5	<5
F1 (C6 to C10) minus BTEX	µg/g	55	5	<5	<5	<5
F2 (C10 to C16)	µg/g	98	10	<10	<10	<10
F2 (C10 to C16) minus Naphthalene	µg/g		10	<10	<10	<10
F3 (C16 to C34)	µg/g	300	50	<50	<50	<50
F3 (C16 to C34) minus PAHs	µg/g		50	<50	<50	<50
F4 (C34 to C50)	µg/g	2800	50	<50	<50	<50
Gravimetric Heavy Hydrocarbons	µg/g	2800	50	NA	NA	NA
Moisture Content	%		0.1	17.5	20.1	8.1
Surrogate	Unit	Acceptable Limits				
Toluene-d8	% Recovery	60-140	109	102	109	
Terphenyl	%	60-140	87	92	99	

Certified By:





## Certificate of Analysis

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PROJECT: 21451149

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CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE:

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

DATE RECEIVED: 2022-02-28

DATE REPORTED: 2022-03-08

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

3571035-3571061 Results are based on sample dry weight.  
The C6-C10 fraction is calculated using toluene response factor.  
Xylenes total is a calculated parameter. The calculated value is the sum of m&p-Xylene and o-Xylene.  
C6-C10 (F1 minus BTEX) is a calculated parameter. The calculated value is F1 minus BTEX.  
The calculated parameters are non-accredited. The parameters that are components of the calculation are accredited.  
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and 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:



## Exceedance Summary

AGAT WORK ORDER: 22Z868295

PROJECT: 21451149

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ATTENTION TO: Keith Holmes

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
3571035	BH22-02 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Acenaphthylene	µg/g	0.15	0.18
3571035	BH22-02 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Benzo(a)pyrene	µg/g	0.3	0.42
3571035	BH22-02 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Fluoranthene	µg/g	0.69	0.88
3571035	BH22-02 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)	Benzo(a)pyrene	µg/g	0.3	0.42
3571035	BH22-02 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)	Fluoranthene	µg/g	0.69	0.88
3571052	BH22-04 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Acenaphthylene	µg/g	0.15	0.46
3571052	BH22-04 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Anthracene	µg/g	0.67	0.81
3571052	BH22-04 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Benz(a)anthracene	µg/g	0.5	1.41
3571052	BH22-04 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Benzo(a)pyrene	µg/g	0.3	1.09
3571052	BH22-04 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Benzo(b)fluoranthene	µg/g	0.78	1.38
3571052	BH22-04 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Dibenz(a,h)anthracene	µg/g	0.1	0.13
3571052	BH22-04 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Fluoranthene	µg/g	0.69	2.01
3571052	BH22-04 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Indeno(1,2,3-cd)pyrene	µg/g	0.38	0.44
3571052	BH22-04 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)	Benzo(a)anthracene	µg/g	0.5	1.41
3571052	BH22-04 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)	Benzo(a)pyrene	µg/g	0.3	1.09
3571052	BH22-04 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)	Benzo(b)fluoranthene	µg/g	0.78	1.38
3571052	BH22-04 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)	Dibenzo(a,h)anthracene	µg/g	0.1	0.13
3571052	BH22-04 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)	Fluoranthene	µg/g	0.69	2.01
3571052	BH22-04 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)	Indeno(1,2,3-cd)pyrene	µg/g	0.38	0.44
3571056	BH22-07 SA3	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Electrical Conductivity (2:1)	mS/cm	0.7	3.16
3571056	BH22-07 SA3	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	pH, 2:1 CaCl2 Extraction	pH Units	5.0-9.0	10.2
3571056	BH22-07 SA3	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Anthracene	µg/g	0.67	1.22
3571056	BH22-07 SA3	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Benz(a)anthracene	µg/g	0.5	1.31
3571056	BH22-07 SA3	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Benzo(a)pyrene	µg/g	0.3	0.54
3571056	BH22-07 SA3	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Benzo(b)fluoranthene	µg/g	0.78	0.83
3571056	BH22-07 SA3	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Fluoranthene	µg/g	0.69	2.77
3571056	BH22-07 SA3	ON T3 S RPI CT	O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)	Benzo(a)anthracene	µg/g	0.5	1.31
3571056	BH22-07 SA3	ON T3 S RPI CT	O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)	Benzo(a)pyrene	µg/g	0.3	0.54
3571056	BH22-07 SA3	ON T3 S RPI CT	O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)	Benzo(b)fluoranthene	µg/g	0.78	0.83
3571056	BH22-07 SA3	ON T3 S RPI CT	O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)	Fluoranthene	µg/g	0.69	2.77
3571057	BH22-10 SA2	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Cobalt	µg/g	22	22.8
3571057	BH22-10 SA2	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Vanadium	µg/g	86	105
3571058	BH22-03 SA4	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Antimony	µg/g	7.5	14.6
3571058	BH22-03 SA4	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Arsenic	µg/g	18	452
3571058	BH22-03 SA4	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Cadmium	µg/g	1.2	15.6
3571058	BH22-03 SA4	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Cobalt	µg/g	22	47.2
3571058	BH22-03 SA4	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Copper	µg/g	140	1430
3571058	BH22-03 SA4	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Lead	µg/g	120	1140
3571058	BH22-03 SA4	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Mercury	µg/g	0.27	2.49
3571058	BH22-03 SA4	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Molybdenum	µg/g	6.9	53.5
3571058	BH22-03 SA4	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Nickel	µg/g	100	136
3571058	BH22-03 SA4	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Selenium	µg/g	2.4	7.2
3571058	BH22-03 SA4	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Zinc	µg/g	340	4770





## Exceedance Summary

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CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
3571059	BH22-05 SA2	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Barium	µg/g	390	399
3571059	BH22-05 SA2	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Lead	µg/g	120	149
3571059	BH22-05 SA2	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Mercury	µg/g	0.27	0.37
3571059	BH22-05 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Acenaphthylene	µg/g	0.15	0.18
3571059	BH22-05 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Anthracene	µg/g	0.67	0.76
3571059	BH22-05 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Benz(a)anthracene	µg/g	0.5	1.25
3571059	BH22-05 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Benzo(a)pyrene	µg/g	0.3	0.70
3571059	BH22-05 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Benzo(b)fluoranthene	µg/g	0.78	0.89
3571059	BH22-05 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Fluoranthene	µg/g	0.69	2.24
3571059	BH22-05 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)	Benzo(a)anthracene	µg/g	0.5	1.25
3571059	BH22-05 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)	Benzo(a)pyrene	µg/g	0.3	0.70
3571059	BH22-05 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)	Benzo(b)fluoranthene	µg/g	0.78	0.89
3571059	BH22-05 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)	Fluoranthene	µg/g	0.69	2.24
3571060	BH22-08 SA3	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Electrical Conductivity (2:1)	mS/cm	0.7	2.45
3571061	BH22-405 SA3	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Benz(a)anthracene	µg/g	0.5	1.36
3571061	BH22-405 SA3	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Benzo(a)pyrene	µg/g	0.3	0.83
3571061	BH22-405 SA3	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Benzo(b)fluoranthene	µg/g	0.78	1.12
3571061	BH22-405 SA3	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Fluoranthene	µg/g	0.69	1.88
3571061	BH22-405 SA3	ON T3 S RPI CT	O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)	Benzo(a)anthracene	µg/g	0.5	1.36
3571061	BH22-405 SA3	ON T3 S RPI CT	O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)	Benzo(a)pyrene	µg/g	0.3	0.83
3571061	BH22-405 SA3	ON T3 S RPI CT	O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)	Benzo(b)fluoranthene	µg/g	0.78	1.12
3571061	BH22-405 SA3	ON T3 S RPI CT	O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)	Fluoranthene	µg/g	0.69	1.88

## Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 22Z868295

PROJECT: 21451149

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

Soil Analysis															
RPT Date: Mar 08, 2022			DUPLICATE				Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE		MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Measured Value		Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

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

Antimony	3571760		<0.8	<0.8	NA	< 0.8	106%	70%	130%	95%	80%	120%	70%	70%	130%
Arsenic	3571760		7	7	0.0%	< 1	124%	70%	130%	100%	80%	120%	105%	70%	130%
Barium	3571760		85.0	86.9	2.2%	< 2.0	101%	70%	130%	100%	80%	120%	102%	70%	130%
Beryllium	3571760		0.6	0.7	NA	< 0.4	87%	70%	130%	103%	80%	120%	91%	70%	130%
Boron	3571760		11	10	NA	< 5	76%	70%	130%	100%	80%	120%	81%	70%	130%
Boron (Hot Water Soluble)	3571035	3571035	0.16	0.15	NA	< 0.10	84%	60%	140%	101%	70%	130%	106%	60%	140%
Cadmium	3571760		<0.5	<0.5	NA	< 0.5	109%	70%	130%	104%	80%	120%	104%	70%	130%
Chromium	3571760		27	28	3.6%	< 5	113%	70%	130%	107%	80%	120%	119%	70%	130%
Cobalt	3571760		13.2	13.1	0.8%	< 0.5	110%	70%	130%	105%	80%	120%	106%	70%	130%
Copper	3571760		39.7	39.4	0.8%	< 1.0	98%	70%	130%	105%	80%	120%	100%	70%	130%
Lead	3571760		36	36	0.0%	< 1	108%	70%	130%	106%	80%	120%	103%	70%	130%
Molybdenum	3571760		0.6	0.6	NA	< 0.5	118%	70%	130%	110%	80%	120%	116%	70%	130%
Nickel	3571760		33	34	3.0%	< 1	107%	70%	130%	105%	80%	120%	101%	70%	130%
Selenium	3571760		<0.8	0.8	NA	< 0.8	129%	70%	130%	106%	80%	120%	110%	70%	130%
Silver	3571760		<0.5	<0.5	NA	< 0.5	103%	70%	130%	107%	80%	120%	98%	70%	130%
Thallium	3571760		<0.5	<0.5	NA	< 0.5	115%	70%	130%	103%	80%	120%	104%	70%	130%
Uranium	3571760		0.72	0.72	NA	< 0.50	122%	70%	130%	106%	80%	120%	109%	70%	130%
Vanadium	3571760		35.5	35.7	0.6%	< 0.4	118%	70%	130%	104%	80%	120%	111%	70%	130%
Zinc	3571760		153	155	1.3%	< 5	107%	70%	130%	105%	80%	120%	112%	70%	130%
Chromium, Hexavalent	3571056	3571056	<0.2	<0.2	NA	< 0.2	100%	70%	130%	95%	80%	120%	90%	70%	130%
Cyanide, Free	3572457		<0.040	<0.040	NA	< 0.040	90%	70%	130%	95%	80%	120%	108%	70%	130%
Mercury	3571760		<0.10	<0.10	NA	< 0.10	108%	70%	130%	98%	80%	120%	101%	70%	130%
Electrical Conductivity (2:1)	3571035	3571035	0.169	0.168	0.6%	< 0.005	102%	80%	120%						
Sodium Adsorption Ratio (2:1) (Calc.)	3571035	3571035	0.120	0.115	4.3%	NA									
pH, 2:1 CaCl2 Extraction	3572450		6.53	6.83	4.5%	NA	99%	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:



*Nivine Basily*

## Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD  
 PROJECT: 21451149  
 SAMPLING SITE:

AGAT WORK ORDER: 22Z868295  
 ATTENTION TO: Keith Holmes  
 SAMPLED BY:

### Trace Organics Analysis

RPT Date: Mar 08, 2022			DUPLICATE				Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	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) (Soil)															
Benzene	3571053	3571053	<0.02	<0.02	NA	< 0.02	90%	60%	140%	81%	60%	140%	94%	60%	140%
Toluene	3571053	3571053	<0.05	<0.05	NA	< 0.05	87%	60%	140%	106%	60%	140%	100%	60%	140%
Ethylbenzene	3571053	3571053	<0.05	<0.05	NA	< 0.05	106%	60%	140%	91%	60%	140%	99%	60%	140%
m & p-Xylene	3571053	3571053	<0.05	<0.05	NA	< 0.05	107%	60%	140%	105%	60%	140%	91%	60%	140%
o-Xylene	3571053	3571053	<0.05	<0.05	NA	< 0.05	84%	60%	140%	93%	60%	140%	112%	60%	140%
F1 (C6 - C10)	3571053	3571053	<5	<5	NA	< 5	107%	60%	140%	96%	60%	140%	103%	60%	140%
F2 (C10 to C16)	3573721		< 10	< 10	NA	< 10	110%	60%	140%	128%	60%	140%	64%	60%	140%
F3 (C16 to C34)	3573721		710	720	1.4%	< 50	114%	60%	140%	120%	60%	140%	68%	60%	140%
F4 (C34 to C50)	3573721		280	220	NA	< 50	101%	60%	140%	97%	60%	140%	112%	60%	140%
O. Reg. 153(511) - PAHs (Soil)															
Naphthalene	3573135		<0.05	<0.05	NA	< 0.05	89%	50%	140%	89%	50%	140%	110%	50%	140%
Acenaphthylene	3573135		<0.05	<0.05	NA	< 0.05	89%	50%	140%	97%	50%	140%	112%	50%	140%
Acenaphthene	3573135		<0.05	<0.05	NA	< 0.05	85%	50%	140%	103%	50%	140%	105%	50%	140%
Fluorene	3573135		<0.05	<0.05	NA	< 0.05	79%	50%	140%	112%	50%	140%	107%	50%	140%
Phenanthrene	3573135		<0.05	<0.05	NA	< 0.05	97%	50%	140%	89%	50%	140%	102%	50%	140%
Anthracene	3573135		<0.05	<0.05	NA	< 0.05	89%	50%	140%	114%	50%	140%	103%	50%	140%
Fluoranthene	3573135		<0.05	<0.05	NA	< 0.05	89%	50%	140%	97%	50%	140%	111%	50%	140%
Pyrene	3573135		<0.05	<0.05	NA	< 0.05	89%	50%	140%	111%	50%	140%	109%	50%	140%
Benz(a)anthracene	3573135		<0.05	<0.05	NA	< 0.05	67%	50%	140%	73%	50%	140%	84%	50%	140%
Chrysene	3573135		<0.05	<0.05	NA	< 0.05	67%	50%	140%	89%	50%	140%	107%	50%	140%
Benzo(b)fluoranthene	3573135		<0.05	<0.05	NA	< 0.05	89%	50%	140%	84%	50%	140%	97%	50%	140%
Benzo(k)fluoranthene	3573135		<0.05	<0.05	NA	< 0.05	84%	50%	140%	79%	50%	140%	114%	50%	140%
Benzo(a)pyrene	3573135		<0.05	<0.05	NA	< 0.05	115%	50%	140%	89%	50%	140%	96%	50%	140%
Indeno(1,2,3-cd)pyrene	3573135		<0.05	<0.05	NA	< 0.05	82%	50%	140%	85%	50%	140%	74%	50%	140%
Dibenz(a,h)anthracene	3573135		<0.05	<0.05	NA	< 0.05	86%	50%	140%	89%	50%	140%	77%	50%	140%
Benzo(g,h,i)perylene	3573135		<0.05	<0.05	NA	< 0.05	79%	50%	140%	89%	50%	140%	77%	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: \_\_\_\_\_



## Method Summary

 CLIENT NAME: GOLDER ASSOCIATES LTD  
 PROJECT: 21451149  
 SAMPLING SITE:

 AGAT WORK ORDER: 22Z868295  
 ATTENTION TO: Keith Holmes  
 SAMPLED BY:

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, Free	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-93-6036	modified from MSA PART 3, CH 14 and SM 2510 B	EC METER
Sodium Adsorption Ratio (2:1) (Calc.)	INOR-93-6007	modified from EPA 6010D & Analytical Protocol	ICP/OES
pH, 2:1 CaCl <sub>2</sub> Extraction	INOR-93-6075	modified from EPA 9045D, MCKEAGUE 3.11 E3137	PC TITRATE



## Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD  
 PROJECT: 21451149  
 SAMPLING SITE:

AGAT WORK ORDER: 22Z868295  
 ATTENTION TO: Keith Holmes  
 SAMPLED BY:

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 Methylnaphthalene	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	CCME Tier 1 Method	BALANCE
Benzene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
Toluene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
Ethylbenzene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
m & p-Xylene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
o-Xylene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
Xylenes (Total)	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
F1 (C6 - C10)	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/FID
F1 (C6 to C10) minus BTEX	VOL-91-5009	modified from CCME Tier 1 Method	P&T GC/FID
Toluene-d8	VOL-91-5009	modified from EPA SW-846 5030C & 8260D	(P&T)GC/MS
F2 (C10 to C16)	VOL-91-5009	modified from CCME Tier 1 Method	GC/FID
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



## Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 22Z868295

PROJECT: 21451149

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
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



# AGAT Laboratories

5835 Coopers Avenue  
Mississauga, ON  
L4Z 1Y2

www.agatlabs.com · webeearth.agatlabs.com

### Laboratory Use Only

Arrival Temperature: 13.6/13.7/13.6  
AGAT WO #: 272868295  
Lab Temperature: 3.1/3.2/3.4  
Notes: Bagged Ice

## Chain of Custody Record

P: 905.712.5100 · F: 905.712.5122 · TF: 800.856.6261

### Client Information

Company: Golder  
Contact: Keith Holmes  
Address: \_\_\_\_\_  
Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
Project: 21451149 PO: \_\_\_\_\_  
AGAT Quotation #: \_\_\_\_\_

Please note, if quotation number is not provided, client will be billed full price for analysis.

### Regulatory Requirements

- Regulation 153/04 (reg. 511 Amend.)  Sewer Use  Regulation 558
- Table 3 Region \_\_\_\_\_ Indicate one
- Ind/Com  Sanitary  Other (specify) \_\_\_\_\_
- Res/Park  Storm  Prov. Water Quality Objectives (PWQO)
- Agriculture  Storm  None
- Soil Texture (check one)
- Coarse  Fine

### Turnaround Time Required (TAT) Required\*

#### Regular TAT

5 to 7 Working Days

**Rush TAT** (please provide prior notification)

**Rush Surcharges Apply**

3 Working Days

2 Working Days

1 Working Day

**OR**

Date Required (Rush surcharges may apply): \_\_\_\_\_

\*TAT is exclusive of weekends and statutory holidays

### Invoice To

Same: Yes  No

Company: \_\_\_\_\_  
Contact: \_\_\_\_\_  
Address: \_\_\_\_\_

### Is this a drinking water sample?

(potable water intended for human consumption)

Yes  No

If "Yes", please use the Drinking Water Chain of Custody Form

### Is this submission for a Record of Site Condition?

Yes  No

### Legend Matrix

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

### Report Information - reports to be sent to:

1. Name: Keith Holmes  
Email: kholmes@golder.com
2. Name: Laura Jones  
Email: ljones@golder.com

Sample Identification	Date Sampled	Time Sampled	Sample Matrix	# of Containers	Comments Site/Sample Information	Metals and Inorganics	Metal Scan	Hydride Forming Metals	Client Custom Metals	ORPs: <input type="checkbox"/> B-HWS <input type="checkbox"/> Cl- <input type="checkbox"/> CN- <input type="checkbox"/> EC	<input type="checkbox"/> FOC <input type="checkbox"/> Cr+6 <input type="checkbox"/> SAR	<input type="checkbox"/> NO <sub>3</sub> /NO <sub>2</sub> <input type="checkbox"/> N-Total <input type="checkbox"/> Hg <input type="checkbox"/> pH	Nutrients: <input type="checkbox"/> TP <input type="checkbox"/> NH <sub>3</sub> <input type="checkbox"/> TKN <input type="checkbox"/> NO <sub>3</sub> <input type="checkbox"/> NO <sub>2</sub> <input type="checkbox"/> NO <sub>3</sub> /NO <sub>2</sub>	VOC: <input type="checkbox"/> VOC <input type="checkbox"/> THM <input checked="" type="checkbox"/> BTX	CCME Fractions 1 to 4	ABNS	PAHS	Chlorophenols	PCBs	Organochlorine Pesticides	TCLP Metals/Inorganics	Sewer Use	
BH22-02 SA2	24/1/12	12:00	S	3		X								X	X			X					
BH22-04 SA2	22/2/12					X								X	X			X					
BH22-06 SA2	"					X								X	X			X					
BH22-09 SA2	"					X								X	X			X					
BH22-01 SA2a	23/2/12					X								X	X			X					
BH22-07 SA3	24/1/12					X								X	X			X					
BH22-10 SA2	"					X								X	X			X					
BH22-03 SA4	23/1/12					X								X	X			X					
BH22-05 SA2	21/1/12					X								X	X			X					
BH22-08 SA2	25/2/12					X								X	X			X					
BH22-405 SA3	25/2/12					X								X	X			X					

Samples Relinquished By (Print Name and Sign): Keith Holmes

Date/Time: 1:30 23/1/12  
Samples Received By (Print Name and Sign): Anthony Dasilva

Date/Time: 15h35 22/02/12

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

Page 1 of 1  
N#: **197506**



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

ATTENTION TO: Keith Holmes

PROJECT: 21451149

AGAT WORK ORDER: 22Z872125

SOIL ANALYSIS REVIEWED BY: Nivine Basily, Inorganics Report Writer

TRACE ORGANICS REVIEWED BY: Neli Popnikolova, Senior Chemist

DATE REPORTED: Mar 18, 2022

PAGES (INCLUDING COVER): 17

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.





## Certificate of Analysis

AGAT WORK ORDER: 22Z872125

PROJECT: 21451149

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

ATTENTION TO: Keith Holmes

SAMPLING SITE: Hospital

SAMPLED BY: RI

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

DATE RECEIVED: 2022-03-10

DATE REPORTED: 2022-03-18

Parameter	Unit	SAMPLE DESCRIPTION:										
		G / S	RDL	403 SA2	403 SA3	404 SA1	404 SA4	406 SA2	411 SA2	411 SA22	412 SA2	
				Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
				2022-02-28	2022-02-28	2022-03-01	2022-03-01	2022-03-01	2022-03-02	2022-03-02	2022-03-02	2022-03-01
				12:00	12:00	12:00	12:00	12:00	12:00	12:00	12:00	12:00
				3607621	3607718	3607719	3607720	3607721	3607722	3607723	3607724	3607724
Antimony	µg/g	40	0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Arsenic	µg/g	18	1	1	1	4	1	4	1	1	1	10
Barium	µg/g	670	2.0	124	105	152	84.3	82.6	52.2	48.4	122	122
Beryllium	µg/g	8	0.4	0.5	<0.4	0.5	<0.4	<0.4	<0.4	<0.4	0.7	0.7
Boron	µg/g	120	5	5	15	21	8	7	9	8	23	23
Boron (Hot Water Soluble)	µg/g	2	0.10	0.22	0.74	0.15	<0.10	0.25	<0.10	<0.10	0.26	0.26
Cadmium	µg/g	1.9	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	µg/g	160	5	27	17	25	11	17	11	11	20	20
Cobalt	µg/g	80	0.5	8.3	4.1	7.3	5.0	5.3	5.3	6.1	6.6	6.6
Copper	µg/g	230	1.0	17	18.5	24.0	10.2	11.3	8.6	8.4	32.2	32.2
Lead	µg/g	120	1	4	7	190	6	50	4	3	62	62
Molybdenum	µg/g	40	0.5	<0.5	<0.5	1.0	<0.5	0.9	<0.5	<0.5	1.6	1.6
Nickel	µg/g	270	1	16	8	17	7	9	7	7	14	14
Selenium	µg/g	5.5	0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	0.9	0.9
Silver	µg/g	40	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.7	0.7
Thallium	µg/g	3.3	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Uranium	µg/g	33	0.50	0.63	0.68	0.68	0.76	0.51	<0.50	<0.50	0.68	0.68
Vanadium	µg/g	86	0.4	37.3	20.6	42.5	19.5	27.6	21.1	20.4	30.1	30.1
Zinc	µg/g	340	5	45	37	82	20	57	17	17	55	55
Chromium, Hexavalent	µg/g	8	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cyanide, Free	µg/g	0.051	0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
Mercury	µg/g	3.9	0.10	<0.10	<0.10	<0.10	<0.10	0.11	<0.10	<0.10	<0.10	<0.10
Electrical Conductivity (2:1)	mS/cm	1.4	0.005	0.233	0.859	0.163	0.181	0.221	0.187	0.211	0.166	0.166
Sodium Adsorption Ratio (2:1) (Calc.)	N/A	12	N/A	1.78	2.87	0.147	0.248	0.170	0.297	0.292	0.245	0.245
pH, 2:1 CaCl2 Extraction	pH Units	5.0-9.0	NA	7.27	7.46	7.39	7.44	7.38	7.32	7.23	7.26	7.26

Certified By:



*Nivine Basly*



## Certificate of Analysis

AGAT WORK ORDER: 22Z872125

PROJECT: 21451149

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

ATTENTION TO: Keith Holmes

SAMPLING SITE: Hospital

SAMPLED BY: RI

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

DATE RECEIVED: 2022-03-10

DATE REPORTED: 2022-03-18

Parameter	Unit	SAMPLE DESCRIPTION:							
		G / S	RDL	408 SA2	402 SA6	402 SA3	407 Sa3	410 Sa2	410 Sa5
				Soil	Soil	Soil	Soil	Soil	Soil
				2022-03-03	2022-03-07	2022-03-07	2022-03-07	2022-03-07	2022-03-07
				12:00	12:00	12:00	12:00	12:00	12:00
				3607725	3607726	3607727	3607728	3607729	3607886
Antimony	µg/g	40	0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Arsenic	µg/g	18	1	3	1	6	3	4	1
Barium	µg/g	670	2.0	140	74.7	143	156	141	78.2
Beryllium	µg/g	8	0.4	0.5	<0.4	0.7	<0.4	0.5	<0.4
Boron	µg/g	120	5	14	7	8	9	9	8
Boron (Hot Water Soluble)	µg/g	2	0.10	0.28	<0.10	0.16	0.21	0.17	<0.10
Cadmium	µg/g	1.9	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	µg/g	160	5	30	11	21	17	24	12
Cobalt	µg/g	80	0.5	8.5	4.8	10.7	5.5	7.0	4.5
Copper	µg/g	230	1.0	20.9	8.5	33.6	22.3	16.0	9.3
Lead	µg/g	120	1	21	3	65	148	208	4
Molybdenum	µg/g	40	0.5	0.6	0.5	3.7	1.1	0.7	<0.5
Nickel	µg/g	270	1	18	6	40	11	13	7
Selenium	µg/g	5.5	0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Silver	µg/g	40	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Thallium	µg/g	3.3	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Uranium	µg/g	33	0.50	0.69	0.51	1.47	0.53	0.55	0.72
Vanadium	µg/g	86	0.4	45.2	19.8	31.4	23.0	29.9	21.3
Zinc	µg/g	340	5	55	15	82	69	69	17
Chromium, Hexavalent	µg/g	8	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cyanide, Free	µg/g	0.051	0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
Mercury	µg/g	3.9	0.10	<0.10	<0.10	0.18	<0.10	<0.10	<0.10
Electrical Conductivity (2:1)	mS/cm	1.4	0.005	0.229	0.223	0.185	0.295	0.299	0.205
Sodium Adsorption Ratio (2:1) (Calc.)	N/A	12	N/A	1.52	2.51	0.181	0.109	0.359	0.610
pH, 2:1 CaCl2 Extraction	pH Units	5.0-9.0	NA	7.36	7.34	7.37	7.30	9.34	7.77

Certified By:



*Nvine Basly*



**AGAT** Laboratories

# Certificate of Analysis

AGAT WORK ORDER: 22Z872125

PROJECT: 21451149

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CLIENT NAME: GOLDER ASSOCIATES LTD

SAMPLING SITE: Hospital

ATTENTION TO: Keith Holmes

SAMPLED BY: RI

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

DATE RECEIVED: 2022-03-10

DATE REPORTED: 2022-03-18

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Industrial/Commercial/Community 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.

3607621-3607886 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:



*Keith Holmes*



## Certificate of Analysis

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SAMPLED BY: RI

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

DATE RECEIVED: 2022-03-10

DATE REPORTED: 2022-03-18

Parameter	Unit	G / S	RDL	SAMPLE DESCRIPTION:		403 SA2	403 SA3	404 SA1	404 SA4	406 SA2	411 SA2	411 SA22	412 SA2
				Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil		
DATE SAMPLED:		2022-02-28	2022-02-28	2022-03-01	2022-03-01	2022-03-01	2022-03-01	2022-03-01	2022-03-01	2022-03-02	2022-03-02	2022-03-02	2022-03-01
12:00		12:00	12:00	12:00	12:00	12:00	12:00	12:00	12:00	12:00	12:00	12:00	12:00
3607621		3607718	3607719	3607720	3607721	3607722	3607723	3607724					
Naphthalene	µg/g	9.6	0.05	<0.05	<0.05	0.08	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthylene	µg/g	0.15	0.05	<0.05	<0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthene	µg/g	96	0.05	<0.05	<0.05	0.06	<0.05	0.36	<0.05	<0.05	<0.05	<0.05	<0.05
Fluorene	µg/g	62	0.05	<0.05	<0.05	0.12	<0.05	0.44	<0.05	<0.05	<0.05	<0.05	<0.05
Phenanthrene	µg/g	12	0.05	<0.05	<0.05	0.79	<0.05	2.22	<0.05	<0.05	<0.05	0.10	<0.05
Anthracene	µg/g	0.67	0.05	<0.05	<0.05	0.27	<0.05	0.88	<0.05	<0.05	<0.05	<0.05	<0.05
Fluoranthene	µg/g	9.6	0.05	<0.05	<0.05	0.89	<0.05	2.65	<0.05	<0.05	<0.05	0.14	<0.05
Pyrene	µg/g	96	0.05	<0.05	<0.05	0.73	<0.05	2.25	<0.05	<0.05	<0.05	0.13	<0.05
Benz(a)anthracene	µg/g	0.96	0.05	<0.05	<0.05	0.46	<0.05	1.61	<0.05	<0.05	<0.05	0.09	<0.05
Chrysene	µg/g	9.6	0.05	<0.05	<0.05	0.43	<0.05	1.72	<0.05	<0.05	<0.05	0.08	<0.05
Benzo(b)fluoranthene	µg/g	0.96	0.05	<0.05	<0.05	0.43	<0.05	1.74	<0.05	<0.05	<0.05	0.13	<0.05
Benzo(k)fluoranthene	µg/g	0.96	0.05	<0.05	<0.05	0.11	<0.05	0.54	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene	µg/g	0.3	0.05	<0.05	<0.05	0.28	<0.05	1.13	<0.05	<0.05	<0.05	0.08	<0.05
Indeno(1,2,3-cd)pyrene	µg/g	0.76	0.05	<0.05	<0.05	0.11	<0.05	0.48	<0.05	<0.05	<0.05	<0.05	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	0.05	<0.05	<0.05	<0.05	<0.05	0.14	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(g,h,i)perylene	µg/g	9.6	0.05	<0.05	<0.05	0.11	<0.05	0.48	<0.05	<0.05	<0.05	<0.05	<0.05
1 and 2 Methylnaphthalene	µg/g	76	0.05	<0.05	<0.05	0.27	<0.05	<0.05	<0.05	<0.05	<0.05	0.15	<0.05
Moisture Content	%		0.1	13.2	10.1	15.0	10.1	15.9	9.5	9.3	9.9		
Surrogate	Unit	Acceptable Limits											
Naphthalene-d8	%	50-140		69	67	76	70	71	65	67	64		
Acridine-d9	%	50-140		68	69	64	76	87	75	72	68		
Terphenyl-d14	%	50-140		107	61	66	70	70	90	70	67		

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SAMPLING SITE: Hospital

ATTENTION TO: Keith Holmes

SAMPLED BY: RI

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

DATE RECEIVED: 2022-03-10

DATE REPORTED: 2022-03-18

Parameter	Unit	SAMPLE DESCRIPTION:		408 SA2	402 SA6	402 SA3	407 Sa3	410 Sa2	410 Sa5
		G / S	RDL	Soil	Soil	Soil	Soil	Soil	Soil
		DATE SAMPLED:		2022-03-03	2022-03-07	2022-03-07	2022-03-07	2022-03-07	2022-03-07
				12:00	12:00	12:00	12:00	12:00	12:00
				3607725	3607726	3607727	3607728	3607729	3607886
Naphthalene	µg/g	9.6	0.05	0.08	<0.05	0.08	<0.05	<0.05	<0.05
Acenaphthylene	µg/g	0.15	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthene	µg/g	96	0.05	0.12	<0.05	0.07	<0.05	<0.05	<0.05
Fluorene	µg/g	62	0.05	0.15	<0.05	0.14	0.05	<0.05	<0.05
Phenanthrene	µg/g	12	0.05	0.88	<0.05	0.59	0.37	0.12	<0.05
Anthracene	µg/g	0.67	0.05	0.20	<0.05	0.21	0.13	<0.05	<0.05
Fluoranthene	µg/g	9.6	0.05	0.80	<0.05	0.53	0.57	0.23	<0.05
Pyrene	µg/g	96	0.05	0.65	<0.05	0.46	0.48	0.20	<0.05
Benz(a)anthracene	µg/g	0.96	0.05	0.36	<0.05	0.24	0.29	0.12	<0.05
Chrysene	µg/g	9.6	0.05	0.35	<0.05	0.22	0.23	0.10	<0.05
Benzo(b)fluoranthene	µg/g	0.96	0.05	0.36	<0.05	0.24	0.33	0.14	<0.05
Benzo(k)fluoranthene	µg/g	0.96	0.05	0.14	<0.05	0.08	0.12	<0.05	<0.05
Benzo(a)pyrene	µg/g	0.3	0.05	0.24	<0.05	0.16	0.21	0.09	<0.05
Indeno(1,2,3-cd)pyrene	µg/g	0.76	0.05	0.09	<0.05	0.06	0.10	<0.05	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(g,h,i)perylene	µg/g	9.6	0.05	0.09	<0.05	0.06	0.11	<0.05	<0.05
1 and 2 Methyl naphthalene	µg/g	76	0.05	0.18	<0.05	0.06	<0.05	<0.05	<0.05
Moisture Content	%		0.1	15.3	9.0	14.6	8.2	20.9	5.0
Surrogate	Unit	Acceptable Limits							
Naphthalene-d8	%	50-140		80	61	62	63	76	71
Acridine-d9	%	50-140		96	81	96	64	69	76
Terphenyl-d14	%	50-140		86	74	68	77	62	68

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Industrial/Commercial/Community 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.

3607621-3607886 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:



## Certificate of Analysis

AGAT WORK ORDER: 22Z872125

PROJECT: 21451149

5835 COOPERS AVENUE  
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CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE: Hospital

SAMPLED BY: RI

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

DATE RECEIVED: 2022-03-10

DATE REPORTED: 2022-03-18

Parameter	Unit	SAMPLE DESCRIPTION:									
		G / S	RDL	403 SA2	403 SA3	404 SA1	404 SA4	406 SA2	411 SA2	411 SA22	412 SA2
				Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
				2022-02-28	2022-02-28	2022-03-01	2022-03-01	2022-03-01	2022-03-02	2022-03-02	2022-03-01
				12:00	12:00	12:00	12:00	12:00	12:00	12:00	12:00
				3607621	3607718	3607719	3607720	3607721	3607722	3607723	3607724
Benzene	µg/g	0.32	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.31
Toluene	µg/g	68	0.05	<0.05	<0.05	0.08	<0.05	<0.05	<0.05	<0.05	1.35
Ethylbenzene	µg/g	9.5	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.13
m & p-Xylene	µg/g		0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.58
o-Xylene	µg/g		0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.32
Xylenes (Total)	µg/g	26	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.90
F1 (C6 - C10)	µg/g	55	5	<5	<5	<5	<5	<5	<5	<5	15
F1 (C6 to C10) minus BTEX	µg/g	55	5	<5	<5	<5	<5	<5	<5	<5	12
F2 (C10 to C16)	µg/g	230	10	<10	<10	<10	<10	<10	<10	<10	<10
F2 (C10 to C16) minus Naphthalene	µg/g		10	<10	<10	<10	<10	<10	<10	<10	<10
F3 (C16 to C34)	µg/g	1700	50	<50	<50	<50	<50	150	<50	<50	<50
F3 (C16 to C34) minus PAHs	µg/g		50	<50	<50	<50	<50	137	<50	<50	<50
F4 (C34 to C50)	µg/g	3300	50	<50	<50	<50	<50	<50	<50	<50	<50
Gravimetric Heavy Hydrocarbons	µg/g	3300	50	NA	NA	NA	NA	NA	NA	NA	NA
Moisture Content	%		0.1	13.2	10.1	15.0	10.1	15.9	9.5	9.3	9.9
Surrogate	Unit	Acceptable Limits									
Toluene-d8	% Recovery		60-140	72	108	93	97	82	92	94	83
Terphenyl	%		60-140	87	93	66	96	110	80	85	90

Certified By:



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PROJECT: 21451149

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

DATE RECEIVED: 2022-03-10

DATE REPORTED: 2022-03-18

Parameter	Unit	SAMPLE DESCRIPTION:							
		G / S	RDL	408 SA2	402 SA6	402 SA3	407 Sa3	410 Sa2	410 Sa5
				Soil	Soil	Soil	Soil	Soil	Soil
				2022-03-03	2022-03-07	2022-03-07	2022-03-07	2022-03-07	2022-03-07
				12:00	12:00	12:00	12:00	12:00	12:00
				3607725	3607726	3607727	3607728	3607729	3607886
Benzene	µg/g	0.32	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Toluene	µg/g	68	0.05	0.15	<0.05	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	µg/g	9.5	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
m & p-Xylene	µg/g		0.05	0.10	<0.05	<0.05	<0.05	<0.05	<0.05
o-Xylene	µg/g		0.05	0.06	<0.05	<0.05	<0.05	<0.05	<0.05
Xylenes (Total)	µg/g	26	0.05	0.16	<0.05	<0.05	<0.05	<0.05	<0.05
F1 (C6 - C10)	µg/g	55	5	8	<5	5	<5	<5	<5
F1 (C6 to C10) minus BTEX	µg/g	55	5	8	<5	5	<5	<5	<5
F2 (C10 to C16)	µg/g	230	10	<10	<10	<10	<10	<10	<10
F2 (C10 to C16) minus Naphthalene	µg/g		10	<10	<10	<10	<10	<10	<10
F3 (C16 to C34)	µg/g	1700	50	<50	<50	<50	<50	<50	<50
F3 (C16 to C34) minus PAHs	µg/g		50	<50	<50	<50	<50	<50	<50
F4 (C34 to C50)	µg/g	3300	50	<50	<50	<50	<50	<50	<50
Gravimetric Heavy Hydrocarbons	µg/g	3300	50	NA	NA	NA	NA	NA	NA
Moisture Content	%		0.1	15.3	9.0	14.6	8.2	20.9	5.0
Surrogate	Unit	Acceptable Limits							
Toluene-d8	% Recovery	60-140	100	70	123	71	97	106	
Terphenyl	%	60-140	91	87	70	71	85	72	

Certified By:



## Certificate of Analysis

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PROJECT: 21451149

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CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE: Hospital

SAMPLED BY: RI

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

DATE RECEIVED: 2022-03-10

DATE REPORTED: 2022-03-18

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Industrial/Commercial/Community 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.

3607621-3607886 Results are based on sample dry weight.  
The C6-C10 fraction is calculated using toluene response factor.  
Xylenes total is a calculated parameter. The calculated value is the sum of m&p-Xylene and o-Xylene.  
C6-C10 (F1 minus BTEX) is a calculated parameter. The calculated value is F1 minus BTEX.  
The calculated parameters are non-accredited. The parameters that are components of the calculation are accredited.  
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and 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:





## Exceedance Summary

AGAT WORK ORDER: 22Z872125

PROJECT: 21451149

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CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
3607719	404 SA1	ON T3 S ICC CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Lead	µg/g	120	190
3607721	406 SA2	ON T3 S ICC CT	O. Reg. 153(511) - PAHs (Soil)	Anthracene	µg/g	0.67	0.88
3607721	406 SA2	ON T3 S ICC CT	O. Reg. 153(511) - PAHs (Soil)	Benz(a)anthracene	µg/g	0.96	1.61
3607721	406 SA2	ON T3 S ICC CT	O. Reg. 153(511) - PAHs (Soil)	Benzo(a)pyrene	µg/g	0.3	1.13
3607721	406 SA2	ON T3 S ICC CT	O. Reg. 153(511) - PAHs (Soil)	Benzo(b)fluoranthene	µg/g	0.96	1.74
3607721	406 SA2	ON T3 S ICC CT	O. Reg. 153(511) - PAHs (Soil)	Dibenz(a,h)anthracene	µg/g	0.1	0.14
3607721	406 SA2	ON T3 S ICC CT	O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)	Benzo(a)anthracene	µg/g	0.96	1.61
3607721	406 SA2	ON T3 S ICC CT	O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)	Benzo(a)pyrene	µg/g	0.3	1.13
3607721	406 SA2	ON T3 S ICC CT	O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)	Benzo(b)fluoranthene	µg/g	0.96	1.74
3607721	406 SA2	ON T3 S ICC CT	O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)	Dibenzo(a,h)anthracene	µg/g	0.1	0.14
3607728	407 Sa3	ON T3 S ICC CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Lead	µg/g	120	148
3607729	410 Sa2	ON T3 S ICC CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Lead	µg/g	120	208
3607729	410 Sa2	ON T3 S ICC CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	pH, 2:1 CaCl2 Extraction	pH Units	5.0-9.0	9.34

## Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD  
 PROJECT: 21451149  
 SAMPLING SITE: Hospital

AGAT WORK ORDER: 22Z872125  
 ATTENTION TO: Keith Holmes  
 SAMPLED BY: RI

Soil Analysis															
RPT Date: Mar 18, 2022			DUPLICATE				Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE		MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Measured Value		Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

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

Antimony	3607621	3607621	<0.8	<0.8	NA	< 0.8	127%	70%	130%	95%	80%	120%	72%	70%	130%
Arsenic	3607621	3607621	1	1	NA	< 1	111%	70%	130%	96%	80%	120%	99%	70%	130%
Barium	3607621	3607621	124	126	2.2%	< 2.0	102%	70%	130%	101%	80%	120%	107%	70%	130%
Beryllium	3607621	3607621	0.5	<0.4	NA	< 0.4	96%	70%	130%	99%	80%	120%	103%	70%	130%
Boron	3607621	3607621	5	6	NA	< 5	83%	70%	130%	101%	80%	120%	101%	70%	130%
Boron (Hot Water Soluble)	3607621	3607621	0.22	0.24	NA	< 0.10	94%	60%	140%	101%	70%	130%	106%	60%	140%
Cadmium	3607621	3607621	<0.5	<0.5	NA	< 0.5	100%	70%	130%	106%	80%	120%	108%	70%	130%
Chromium	3607621	3607621	27	28	3.2%	< 5	94%	70%	130%	100%	80%	120%	104%	70%	130%
Cobalt	3607621	3607621	8.3	8.5	2.4%	< 0.5	99%	70%	130%	107%	80%	120%	106%	70%	130%
Copper	3607621	3607621	17	17	0.0%	< 1.0	94%	70%	130%	110%	80%	120%	103%	70%	130%
Lead	3607621	3607621	4	5	NA	< 1	102%	70%	130%	101%	80%	120%	103%	70%	130%
Molybdenum	3607621	3607621	<0.5	<0.5	NA	< 0.5	101%	70%	130%	105%	80%	120%	106%	70%	130%
Nickel	3607621	3607621	16	16	1.6%	< 1	92%	70%	130%	102%	80%	120%	100%	70%	130%
Selenium	3607621	3607621	<0.8	<0.8	NA	< 0.8	109%	70%	130%	105%	80%	120%	107%	70%	130%
Silver	3607621	3607621	<0.5	<0.5	NA	< 0.5	98%	70%	130%	104%	80%	120%	99%	70%	130%
Thallium	3607621	3607621	<0.5	<0.5	NA	< 0.5	103%	70%	130%	103%	80%	120%	104%	70%	130%
Uranium	3607621	3607621	0.63	0.60	NA	< 0.50	106%	70%	130%	99%	80%	120%	103%	70%	130%
Vanadium	3607621	3607621	37.3	38.9	4.0%	< 0.4	98%	70%	130%	100%	80%	120%	107%	70%	130%
Zinc	3607621	3607621	45	47	3.1%	< 5	100%	70%	130%	110%	80%	120%	118%	70%	130%
Chromium, Hexavalent	3607726	3607726	<0.2	<0.2	NA	< 0.2	94%	70%	130%	97%	80%	120%	104%	70%	130%
Cyanide, Free	3548867		<0.040	<0.040	NA	< 0.040	99%	70%	130%	102%	80%	120%	104%	70%	130%
Mercury	3607621	3607621	<0.10	<0.10	NA	< 0.10	112%	70%	130%	100%	80%	120%	104%	70%	130%
Electrical Conductivity (2:1)	3609531		0.549	0.547	0.4%	< 0.005	111%	80%	120%						
Sodium Adsorption Ratio (2:1) (Calc.)	3609531		4.62	4.63	0.3%	NA									
pH, 2:1 CaCl2 Extraction	3611905		6.47	6.76	4.4%	NA	100%	80%	120%						

Comments: NA signifies Not Applicable.

pH duplicates QA acceptance criteria was met relative as stated in Table 5-15 of Analytical Protocol document.

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

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

Electrical Conductivity (2:1)	3609556		0.327	0.336	2.7%	< 0.005	99%	80%	120%						
Sodium Adsorption Ratio (2:1) (Calc.)	3610947		17.7	17.5	1.5%	NA									

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: \_\_\_\_\_



*Nivine Basily*

## Quality Assurance

 CLIENT NAME: GOLDER ASSOCIATES LTD  
 PROJECT: 21451149  
 SAMPLING SITE: Hospital

 AGAT WORK ORDER: 22Z872125  
 ATTENTION TO: Keith Holmes  
 SAMPLED BY: RI

### Trace Organics Analysis

RPT Date: Mar 18, 2022			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		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) (Soil)															
Benzene	3611911		<0.02	<0.02	NA	< 0.02	83%	60%	140%	89%	60%	140%	97%	60%	140%
Toluene	3611911		<0.05	<0.05	NA	< 0.05	120%	60%	140%	93%	60%	140%	110%	60%	140%
Ethylbenzene	3611911		<0.05	<0.05	NA	< 0.05	99%	60%	140%	91%	60%	140%	112%	60%	140%
m & p-Xylene	3611911		<0.05	<0.05	NA	< 0.05	116%	60%	140%	92%	60%	140%	122%	60%	140%
o-Xylene	3611911		<0.05	<0.05	NA	< 0.05	82%	60%	140%	119%	60%	140%	95%	60%	140%
F1 (C6 - C10)	3611911		7	6	NA	< 5	94%	60%	140%	112%	60%	140%	104%	60%	140%
F2 (C10 to C16)	3607886 3607886		< 10	< 10	NA	< 10	105%	60%	140%	87%	60%	140%	71%	60%	140%
F3 (C16 to C34)	3607886 3607886		< 50	< 50	NA	< 50	106%	60%	140%	84%	60%	140%	61%	60%	140%
F4 (C34 to C50)	3607886 3607886		< 50	< 50	NA	< 50	95%	60%	140%	103%	60%	140%	80%	60%	140%
Moisture Content	3607719 3607719		14.98	13.24	12.3%	< 0.1	NA			NA			NA		
O. Reg. 153(511) - PAHs (Soil)															
Naphthalene	3607886 3607886		<0.05	<0.05	NA	< 0.05	104%	50%	140%	76%	50%	140%	72%	50%	140%
Acenaphthylene	3607886 3607886		<0.05	<0.05	NA	< 0.05	99%	50%	140%	78%	50%	140%	75%	50%	140%
Acenaphthene	3607886 3607886		<0.05	<0.05	NA	< 0.05	100%	50%	140%	81%	50%	140%	83%	50%	140%
Fluorene	3607886 3607886		<0.05	<0.05	NA	< 0.05	123%	50%	140%	102%	50%	140%	100%	50%	140%
Phenanthrene	3607886 3607886		<0.05	<0.05	NA	< 0.05	119%	50%	140%	103%	50%	140%	102%	50%	140%
Anthracene	3607886 3607886		<0.05	<0.05	NA	< 0.05	119%	50%	140%	105%	50%	140%	101%	50%	140%
Fluoranthene	3607886 3607886		<0.05	<0.05	NA	< 0.05	118%	50%	140%	112%	50%	140%	111%	50%	140%
Pyrene	3607886 3607886		<0.05	<0.05	NA	< 0.05	115%	50%	140%	109%	50%	140%	108%	50%	140%
Benz(a)anthracene	3607886 3607886		<0.05	<0.05	NA	< 0.05	124%	50%	140%	100%	50%	140%	98%	50%	140%
Chrysene	3607886 3607886		<0.05	<0.05	NA	< 0.05	125%	50%	140%	75%	50%	140%	88%	50%	140%
Benzo(b)fluoranthene	3607886 3607886		<0.05	<0.05	NA	< 0.05	123%	50%	140%	76%	50%	140%	84%	50%	140%
Benzo(k)fluoranthene	3607886 3607886		<0.05	<0.05	NA	< 0.05	99%	50%	140%	67%	50%	140%	76%	50%	140%
Benzo(a)pyrene	3607886 3607886		<0.05	<0.05	NA	< 0.05	101%	50%	140%	92%	50%	140%	98%	50%	140%
Indeno(1,2,3-cd)pyrene	3607886 3607886		<0.05	<0.05	NA	< 0.05	87%	50%	140%	71%	50%	140%	67%	50%	140%
Dibenz(a,h)anthracene	3607886 3607886		<0.05	<0.05	NA	< 0.05	102%	50%	140%	73%	50%	140%	79%	50%	140%
Benzo(g,h,i)perylene	3607886 3607886		<0.05	<0.05	NA	< 0.05	101%	50%	140%	65%	50%	140%	69%	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:



## Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 22Z872125

PROJECT: 21451149

ATTENTION TO: Keith Holmes

SAMPLING SITE: Hospital

SAMPLED BY: RI

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, Free	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 CaCl <sub>2</sub> Extraction	INOR-93-6075	modified from EPA 9045D, MCKEAGUE 3.11 E3137	PC TITRATE

## Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 22Z872125

PROJECT: 21451149

ATTENTION TO: Keith Holmes

SAMPLING SITE: Hospital

SAMPLED BY: RI

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 Methylnaphthalene	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	CCME Tier 1 Method	BALANCE
Benzene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
Toluene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
Ethylbenzene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
m & p-Xylene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
o-Xylene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
Xylenes (Total)	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
F1 (C6 - C10)	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/FID
F1 (C6 to C10) minus BTEX	VOL-91-5009	modified from CCME Tier 1 Method	P&T GC/FID
Toluene-d8	VOL-91-5009	modified from EPA SW-846 5030C & 8260D	(P&T)GC/MS
F2 (C10 to C16)	VOL-91-5009	modified from CCME Tier 1 Method	GC/FID
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



## Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 22Z872125

PROJECT: 21451149

ATTENTION TO: Keith Holmes

SAMPLING SITE: Hospital

SAMPLED BY: RI

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
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



# AGAT

## Laboratories

### Short Holding Time

Hold time ending: PHCs

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

#### Laboratory Use Only

Work Order #: 222872125

Cooler Quantity: one-melted ice  
Arrival Temperatures: 14.0 | 13.9 | 14.0

Custody Seal Intact:  Yes  No  N/A  
Notes: 2 Large Ice Pakes

### Chain of Custody Record

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

#### Report Information:

Company: Goldor  
Contact: Keith Holmes  
Address: \_\_\_\_\_  
Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
Reports to be sent to:  
1. Email: kholmes@goldor.com  
2. Email: ljones@goldor.com

#### Regulatory Requirements:

(Please check all applicable boxes)

Regulation 153/04  Excess Soils R406  Sewer Use  
 Sanitary  Storm  
Table 3 Indicate One  
 Ind/Com  Agriculture  
 Res/Park  Regulation 558  
 Agriculture  CCME  
Soil Texture (Check One)  
 Coarse  Fine  
 Other  
Indicate One

#### Project Information:

Project: 2145 1149  
Site Location: Hospital RI  
Sampled By: \_\_\_\_\_  
AGAT ID #: \_\_\_\_\_ PO: \_\_\_\_\_  
Please note: If quotation number is not provided, client will be billed full price for analysis.

#### 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

#### 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	Y/N	Field Filtered - Metals, Hg, CrVI, DOC	Metals & Inorganics (S3 Complete)	Metals - CrVI, Hg, HWSB	BTEX, F1-F4 PHCs	Analyze F4G if required	PAHs	Total PCBs	VOC	O. Reg 558 Landfill Disposal Characterization TOLP: TOLP: <input type="checkbox"/> M&I <input type="checkbox"/> VOCs <input type="checkbox"/> ABNs <input type="checkbox"/> B(a)P <input type="checkbox"/> PCBs	O. Reg 406 Excess Soils S/PLP Rainwater Leach S/PLP: <input type="checkbox"/> Metals <input type="checkbox"/> VOCs <input type="checkbox"/> SVOCs	Excess Soils Characterization Package pH, ICPMS Metals, BTEX, F1-F4	Salt - EC/SAR	Potentially Hazardous or High Concentration (Y/N)
403 SA2	28 Feb/22	12:30 AM	3	S				X	X	X	X	X							
403 SA7	28 Feb/22	1:00 PM	3	S				X	X	X	X	X							
404 SA1	1 Mar/22	1:00 PM	3	S				X	X	X	X	X							
404 SA4	1 Mar/22	1:00 PM	3	S				X	X	X	X	X							
406 SA8	1 Mar/22	1:00 PM	3	S				X	X	X	X	X							
411 SA2	2 Mar/22	1:00 PM	3	S				X	X	X	X	X							
411 SA22	2 Mar/22	1:00 PM	2	S				X	X	X	X	X							
412 SA2	1 Mar/22	1:00 PM	3	S				X	X	X	X	X							
408 SA2	3 Mar/22	1:00 PM	3	S				X	X	X	X	X							
402 SA6	7 Mar/22	1:00 PM	3	S				X	X	X	X	X							
402 SA3	7 Mar/22	1:00 PM	3	S				X	X	X	X	X							

Samples Relinquished By (Print Name and Sign): <u>Keith Holmes</u>	Date: <u>10/1 Mar/22</u>	Time: <u>12:30</u>	Samples Received By (Print Name and Sign): <u>C. Quinn</u>	Date: <u>22/03/10</u>	Time: <u>13h55</u>
Samples Relinquished By (Print Name and Sign): <u>CG to Purulator</u>	Date: <u>22/03/10</u>	Time: <u>16h00</u>	Samples Received By (Print Name and Sign):	Date:	Time:
Samples Relinquished By (Print Name and Sign):	Date:	Time:	Samples Received By (Print Name and Sign):	Date:	Time:

Page 1 of 2

N#: **T114820**



Laboratories

LT → 2.1 2.2 2.4  
2.0 3.1 3.9

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

**Laboratory Use Only**

Work Order #: 222872125  
Cooler Quantity: one-melted ice  
Arrival Temperatures: 14.0/13.9/14.0  
Custody Seal Intact:  Yes  No  N/A  
Notes: 2 large Ice Pails

**Chain of Custody Record**

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

**Report Information:**

Company: \_\_\_\_\_  
Contact: \_\_\_\_\_  
Address: \_\_\_\_\_  
Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
Reports to be sent to:  
1. Email: \_\_\_\_\_  
2. Email: \_\_\_\_\_

**Regulatory Requirements:**

(Please check all applicable boxes)  
 Regulation 153/04  
Table 3  
 Sand/Clay/Gravel  
 Parks/Play  
 Agriculture  
Soil Texture (Check One)  
 Coarse  
 Fine  
 Excess Soils R406  
Table \_\_\_\_\_  
Region \_\_\_\_\_  
 Sewer Use  
 Sanitary  Storm  
 Regulation 558  
 CCME  
 Prov. Water Quality Objectives (PWQO)  
 Other  
Indicate One

**Project Information:**

Project: 21451149  
Site Location: \_\_\_\_\_  
Sampled By: \_\_\_\_\_  
AGAT Quote #: \_\_\_\_\_ PO: \_\_\_\_\_  
Please note: If quotation number is not provided, client will be billed full price for analysis.

**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

**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

Field Filtered - Metals, Hg, CrVI, DOC	Reg 153	O. Reg 558	O. Reg 406	Potentially Hazardous or High Concentration (Y/N)
	Metals & Inorganics <b>153 Complete</b>	Landfill Disposal Characterization TCLP: TCLP: <input type="checkbox"/> M&I <input type="checkbox"/> VOCs <input type="checkbox"/> ABNs <input type="checkbox"/> BtP <input type="checkbox"/> PCBs	Excess Soils Characterization Package pH, ICPMS Metals, BTEX, F1-F4	
	Metals - <input type="checkbox"/> CrVI, <input type="checkbox"/> Hg, <input type="checkbox"/> HWSB	Excess Soils SPLP Rainwater Leach SPLP: <input type="checkbox"/> Metals <input type="checkbox"/> VOCs <input type="checkbox"/> SVOCs	Salt - EC/SAR	
	BTEX, F1-F4 PHCs			
	Analyze F4G if required <input type="checkbox"/> Yes <input type="checkbox"/> No			
	PAHs			
	PCBs			
	VOC			

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Y / N
407-SA3	7/10/11	12 AM	3	S		
410-SA2	↓	↓	↓	↓		
410-SA5						

Samples Relinquished By (Print Name and Sign): <u>CG to purolator</u>	Date: <u>22/03/10</u>	Time: <u>16:00</u>	Samples Received By (Print Name and Sign): <u>C. Griffin</u>	Date: <u>22/03/10</u>	Time: <u>13:55</u>	Page <u>2</u> of <u>2</u>
Samples Relinquished By (Print Name and Sign):	Date:	Time:	Samples Received By (Print Name and Sign):	Date:	Time:	Nº: <b>T 126464</b>





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

ATTENTION TO: Keith Holmes

PROJECT: 21451149

AGAT WORK ORDER: 22Z880712

SOIL ANALYSIS REVIEWED BY: Amanjot Bhela, Inorganic Lab Manager

TRACE ORGANICS REVIEWED BY: Pinkal Patel, Report Reviewer

DATE REPORTED: Apr 11, 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.



## Certificate of Analysis

AGAT WORK ORDER: 22Z880712

PROJECT: 21451149

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  
SAMPLING SITE: TOH

ATTENTION TO: Keith Holmes  
SAMPLED BY: JS

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

DATE RECEIVED: 2022-04-04

DATE REPORTED: 2022-04-11

Parameter	Unit	SAMPLE DESCRIPTION:											
		G / S		RDL		22-109 SA02	22-109 SA03	22-111 SA01B	22-111 DUP01	22-111 SA03	22-112 SA01	22-113 SA02A	22-113 SA04A
						Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
						2022-03-29 12:00	2022-03-29 12:00	2022-03-29 12:00	2022-03-29 12:00	2022-03-29 12:00	2022-03-24 12:00	2022-03-30 12:00	2022-03-30 12:00
		3714055	3714059	3714061	3714064	3714065	3714066	3714067	3714070				
Antimony	µg/g	7.5	0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	
Arsenic	µg/g	18	1	2	<1	8	8	3	4	3	1		
Barium	µg/g	390	2.0	151	45.3	87.4	81.3	514	110	96.0	62.2		
Beryllium	µg/g	4	0.4	<0.4	<0.4	<0.4	<0.4	0.6	0.5	<0.4	<0.4		
Boron	µg/g	120	5	6	6	8	8	<5	<5	13	6		
Boron (Hot Water Soluble)	µg/g	1.5	0.10	0.15	<0.10	0.31	0.30	<0.10	0.33	0.20	<0.10		
Cadmium	µg/g	1.2	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
Chromium	µg/g	160	5	28	13	19	26	120	35	21	16		
Cobalt	µg/g	22	0.5	8.1	5.0	8.6	8.3	25.0	8.2	8.8	7.8		
Copper	µg/g	140	1.0	16.0	8.9	22.2	16.1	55.0	16.9	18.8	13.1		
Lead	µg/g	120	1	16	3	28	23	8	70	9	4		
Molybdenum	µg/g	6.9	0.5	0.7	<0.5	5.6	4.9	<0.5	0.8	1.0	<0.5		
Nickel	µg/g	100	1	16	8	17	17	66	20	16	11		
Selenium	µg/g	2.4	0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8		
Silver	µg/g	20	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
Thallium	µg/g	1	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
Uranium	µg/g	23	0.50	0.68	0.77	0.70	0.66	0.81	1.19	0.60	<0.50		
Vanadium	µg/g	86	0.4	35.7	23.6	43.1	34.5	113	42.6	23.0	30.4		
Zinc	µg/g	340	5	42	18	45	53	137	72	28	26		
Chromium, Hexavalent	µg/g	8	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		
Cyanide, Free	µg/g	0.051	0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040		
Mercury	µg/g	0.27	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10		
Electrical Conductivity (2:1)	mS/cm	0.7	0.005	0.407	0.343	0.411	0.436	1.20	0.203	0.202	0.810		
Sodium Adsorption Ratio (2:1) (Calc.)	N/A	5	N/A	1.89	3.19	0.204	0.192	8.32	0.127	0.571	11.5		
pH, 2:1 CaCl2 Extraction	pH Units	5.0-9.0	NA	11.1	8.00	7.72	9.69	8.12	7.24	7.36	7.48		

Certified By:

*Anamjot Bhele*  




## Certificate of Analysis

AGAT WORK ORDER: 22Z880712

PROJECT: 21451149

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

SAMPLING SITE: TOH

ATTENTION TO: Keith Holmes

SAMPLED BY: JS

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

DATE RECEIVED: 2022-04-04

DATE REPORTED: 2022-04-11

Parameter	Unit	SAMPLE DESCRIPTION:		22-301 SA2	22-301 SA6
		G / S	RDL	3714071	3714072
Antimony	µg/g	7.5	0.8	<0.8	<0.8
Arsenic	µg/g	18	1	3	1
Barium	µg/g	390	2.0	72.9	90.0
Beryllium	µg/g	4	0.4	<0.4	<0.4
Boron	µg/g	120	5	8	7
Boron (Hot Water Soluble)	µg/g	1.5	0.10	<0.10	<0.10
Cadmium	µg/g	1.2	0.5	<0.5	<0.5
Chromium	µg/g	160	5	24	15
Cobalt	µg/g	22	0.5	8.3	6.9
Copper	µg/g	140	1.0	13.7	11.0
Lead	µg/g	120	1	6	4
Molybdenum	µg/g	6.9	0.5	<0.5	<0.5
Nickel	µg/g	100	1	15	10
Selenium	µg/g	2.4	0.8	<0.8	<0.8
Silver	µg/g	20	0.5	<0.5	<0.5
Thallium	µg/g	1	0.5	<0.5	<0.5
Uranium	µg/g	23	0.50	0.56	0.57
Vanadium	µg/g	86	0.4	32.1	26.0
Zinc	µg/g	340	5	29	24
Chromium, Hexavalent	µg/g	8	0.2	<0.2	<0.2
Cyanide, Free	µg/g	0.051	0.040	<0.040	<0.040
Mercury	µg/g	0.27	0.10	<0.10	<0.10
Electrical Conductivity (2:1)	mS/cm	0.7	0.005	0.216	0.125
Sodium Adsorption Ratio (2:1) (Calc.)	N/A	5	N/A	0.095	0.094
pH, 2:1 CaCl2 Extraction	pH Units	5.0-9.0	NA	7.36	7.33

Certified By:





**AGAT** Laboratories

# Certificate of Analysis

AGAT WORK ORDER: 22Z880712

PROJECT: 21451149

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CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE: TOH

SAMPLED BY: JS

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

DATE RECEIVED: 2022-04-04

DATE REPORTED: 2022-04-11

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.  
3714055-3714072 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:

*Anamjot Bhela*  




## Certificate of Analysis

AGAT WORK ORDER: 22Z880712

PROJECT: 21451149

5835 COOPERS AVENUE  
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<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE: TOH

SAMPLED BY: JS

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

DATE RECEIVED: 2022-04-04

DATE REPORTED: 2022-04-11

Parameter	Unit	G / S	RDL	SAMPLE DESCRIPTION:		22-109 SA02	22-109 SA03	22-111 SA01B	22-111 DUP01	22-111 SA03	22-112 SA01	22-113 SA02A	22-113 SA04A
				Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil		
DATE SAMPLED:				2022-03-29	2022-03-29	2022-03-29	2022-03-29	2022-03-29	2022-03-29	2022-03-24	2022-03-30	2022-03-30	2022-03-30
				12:00	12:00	12:00	12:00	12:00	12:00	12:00	12:00	12:00	12:00
				3714055	3714059	3714061	3714064	3714065	3714066	3714067	3714070	3714070	3714070
Naphthalene	µg/g	0.6	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthylene	µg/g	0.15	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthene	µg/g	7.9	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fluorene	µg/g	62	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Phenanthrene	µg/g	6.2	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Anthracene	µg/g	0.67	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fluoranthene	µg/g	0.69	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Pyrene	µg/g	78	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benz(a)anthracene	µg/g	0.5	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chrysene	µg/g	7	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(b)fluoranthene	µg/g	0.78	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(k)fluoranthene	µg/g	0.78	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene	µg/g	0.3	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<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	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<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	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1 and 2 Methylnaphthalene	µg/g	0.99	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Moisture Content	%		0.1	9.2	10.4	5.3	6.5	13.8	24.5	9.1	14.0		
Surrogate	Unit	Acceptable Limits											
Naphthalene-d8	%	50-140		85	96	91	70	94	96	96	96	96	96
Acridine-d9	%	50-140		74	85	71	85	75	85	85	85	85	85
Terphenyl-d14	%	50-140		96	71	82	90	82	70	71	72		

*Jinkal Jata*

Certified By:



## Certificate of Analysis

AGAT WORK ORDER: 22Z880712

PROJECT: 21451149

5835 COOPERS AVENUE  
MISSISSAUGA, ONTARIO  
CANADA L4Z 1Y2  
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<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD

SAMPLING SITE: TOH

ATTENTION TO: Keith Holmes

SAMPLED BY: JS

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

DATE RECEIVED: 2022-04-04

DATE REPORTED: 2022-04-11

Parameter	Unit	SAMPLE DESCRIPTION:		22-301 SA2	22-301 SA6
		G / S	RDL	3714071	3714072
Naphthalene	µg/g	0.6	0.05	<0.05	<0.05
Acenaphthylene	µg/g	0.15	0.05	<0.05	<0.05
Acenaphthene	µg/g	7.9	0.05	<0.05	<0.05
Fluorene	µg/g	62	0.05	<0.05	<0.05
Phenanthrene	µg/g	6.2	0.05	<0.05	<0.05
Anthracene	µg/g	0.67	0.05	<0.05	<0.05
Fluoranthene	µg/g	0.69	0.05	<0.05	<0.05
Pyrene	µg/g	78	0.05	<0.05	<0.05
Benz(a)anthracene	µg/g	0.5	0.05	<0.05	<0.05
Chrysene	µg/g	7	0.05	<0.05	<0.05
Benzo(b)fluoranthene	µg/g	0.78	0.05	<0.05	<0.05
Benzo(k)fluoranthene	µg/g	0.78	0.05	<0.05	<0.05
Benzo(a)pyrene	µg/g	0.3	0.05	<0.05	<0.05
Indeno(1,2,3-cd)pyrene	µg/g	0.38	0.05	<0.05	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	0.05	<0.05	<0.05
Benzo(g,h,i)perylene	µg/g	6.6	0.05	<0.05	<0.05
1 and 2 Methyl naphthalene	µg/g	0.99	0.05	<0.05	<0.05
Moisture Content	%		0.1	13.2	10.1
Surrogate	Unit	Acceptable Limits			
Naphthalene-d8	%	50-140		90	96
Acridine-d9	%	50-140		72	85
Terphenyl-d14	%	50-140		84	71

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

3714055-3714072 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:



## Certificate of Analysis

AGAT WORK ORDER: 22Z880712

PROJECT: 21451149

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

CLIENT NAME: GOLDER ASSOCIATES LTD

SAMPLING SITE: TOH

ATTENTION TO: Keith Holmes

SAMPLED BY: JS

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

DATE RECEIVED: 2022-04-04

DATE REPORTED: 2022-04-11

Parameter	Unit	SAMPLE DESCRIPTION:									
		G / S	RDL	22-109 SA02	22-109 SA03	22-111 SA01B	22-111 DUP01	22-111 SA03	22-112 SA01	22-113 SA02A	22-113 SA04A
SAMPLE TYPE:				Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
DATE SAMPLED:				2022-03-29 12:00	2022-03-29 12:00	2022-03-29 12:00	2022-03-29 12:00	2022-03-29 12:00	2022-03-24 12:00	2022-03-30 12:00	2022-03-30 12:00
				3714055	3714059	3714061	3714064	3714065	3714066	3714067	3714070
Benzene	µg/g	0.21	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Toluene	µg/g	2.3	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	µg/g	2	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
m & p-Xylene	µg/g		0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
o-Xylene	µg/g		0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Xylenes (Total)	µg/g	3.1	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
F1 (C6 - C10)	µg/g	55	5	<5	<5	<5	<5	<5	<5	<5	<5
F1 (C6 to C10) minus BTEX	µg/g	55	5	<5	<5	<5	<5	<5	<5	<5	<5
F2 (C10 to C16)	µg/g	98	10	<10	<10	<10	<10	<10	<10	<10	<10
F2 (C10 to C16) minus Naphthalene	µg/g		10	<10	<10	<10	<10	<10	<10	<10	<10
F3 (C16 to C34)	µg/g	300	50	<50	<50	97	94	<50	<50	<50	<50
F3 (C16 to C34) minus PAHs	µg/g		50	<50	<50	97	94	<50	<50	<50	<50
F4 (C34 to C50)	µg/g	2800	50	<50	<50	190	190	<50	<50	<50	<50
Gravimetric Heavy Hydrocarbons	µg/g	2800	50	NA	NA	NA	NA	NA	NA	NA	NA
Moisture Content	%		0.1	9.2	10.4	5.3	6.5	13.8	24.5	9.1	14.0
Surrogate	Unit	Acceptable Limits									
Toluene-d8	% Recovery	60-140	113	102	103	100	99	91	102	103	
Terphenyl	%	60-140	74	69	82	89	63	95	64	81	

Certified By:



## Certificate of Analysis

AGAT WORK ORDER: 22Z880712

PROJECT: 21451149

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

SAMPLING SITE: TOH

ATTENTION TO: Keith Holmes

SAMPLED BY: JS

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

DATE RECEIVED: 2022-04-04

DATE REPORTED: 2022-04-11

Parameter	Unit	SAMPLE DESCRIPTION:		22-301 SA2	22-301 SA6
		G / S	RDL	3714071	3714072
Benzene	µg/g	0.21	0.02	<0.02	<0.02
Toluene	µg/g	2.3	0.05	<0.05	<0.05
Ethylbenzene	µg/g	2	0.05	<0.05	<0.05
m & p-Xylene	µg/g		0.05	<0.05	<0.05
o-Xylene	µg/g		0.05	<0.05	<0.05
Xylenes (Total)	µg/g	3.1	0.05	<0.05	<0.05
F1 (C6 - C10)	µg/g	55	5	<5	<5
F1 (C6 to C10) minus BTEX	µg/g	55	5	<5	<5
F2 (C10 to C16)	µg/g	98	10	<10	<10
F2 (C10 to C16) minus Naphthalene	µg/g		10	<10	<10
F3 (C16 to C34)	µg/g	300	50	<50	<50
F3 (C16 to C34) minus PAHs	µg/g		50	<50	<50
F4 (C34 to C50)	µg/g	2800	50	<50	<50
Gravimetric Heavy Hydrocarbons	µg/g	2800	50	NA	NA
Moisture Content	%		0.1	13.2	10.1
Surrogate	Unit	Acceptable Limits			
Toluene-d8	% Recovery	60-140	97	101	
Terphenyl	%	60-140	77	71	

Certified By:





## Certificate of Analysis

AGAT WORK ORDER: 22Z880712

PROJECT: 21451149

5835 COOPERS AVENUE  
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<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE: TOH

SAMPLED BY: JS

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

DATE RECEIVED: 2022-04-04

DATE REPORTED: 2022-04-11

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

3714055-3714072 Results are based on sample dry weight.  
The C6-C10 fraction is calculated using toluene response factor.  
Xylenes total is a calculated parameter. The calculated value is the sum of m&p-Xylene and o-Xylene.  
C6-C10 (F1 minus BTEX) is a calculated parameter. The calculated value is F1 minus BTEX.  
The calculated parameters are non-accredited. The parameters that are components of the calculation are accredited.  
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and 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:



## Exceedance Summary

AGAT WORK ORDER: 22Z880712

PROJECT: 21451149

5835 COOPERS AVENUE  
 MISSISSAUGA, ONTARIO  
 CANADA L4Z 1Y2  
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<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
3714055	22-109 SA02	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	pH, 2:1 CaCl2 Extraction	pH Units	5.0-9.0	11.1
3714064	22-111 DUP01	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	pH, 2:1 CaCl2 Extraction	pH Units	5.0-9.0	9.69
3714065	22-111 SA03	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Barium	µg/g	390	514
3714065	22-111 SA03	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Cobalt	µg/g	22	25.0
3714065	22-111 SA03	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Electrical Conductivity (2:1)	mS/cm	0.7	1.20
3714065	22-111 SA03	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Sodium Adsorption Ratio (2:1) (Calc.)	N/A	5	8.32
3714065	22-111 SA03	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Vanadium	µg/g	86	113
3714070	22-113 SA04A	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Electrical Conductivity (2:1)	mS/cm	0.7	0.810
3714070	22-113 SA04A	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Sodium Adsorption Ratio (2:1) (Calc.)	N/A	5	11.5

## Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD  
 PROJECT: 21451149  
 SAMPLING SITE:TOH

AGAT WORK ORDER: 22Z880712  
 ATTENTION TO: Keith Holmes  
 SAMPLED BY:JS

Soil Analysis															
RPT Date: Apr 11, 2022			DUPLICATE				Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE		MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Measured Value		Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

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

Antimony	3714055	3714055	<0.8	<0.8	NA	< 0.8	124%	70%	130%	88%	80%	120%	72%	70%	130%
Arsenic	3714055	3714055	2	2	NA	< 1	129%	70%	130%	93%	80%	120%	101%	70%	130%
Barium	3714055	3714055	151	154	2.0%	< 2.0	108%	70%	130%	96%	80%	120%	105%	70%	130%
Beryllium	3714055	3714055	<0.4	<0.4	NA	< 0.4	94%	70%	130%	98%	80%	120%	83%	70%	130%
Boron	3714055	3714055	6	7	NA	< 5	75%	70%	130%	97%	80%	120%	76%	70%	130%
Boron (Hot Water Soluble)	3710331		0.30	0.31	NA	< 0.10	98%	60%	140%	102%	70%	130%	103%	60%	140%
Cadmium	3714055	3714055	<0.5	<0.5	NA	< 0.5	114%	70%	130%	93%	80%	120%	96%	70%	130%
Chromium	3714055	3714055	28	29	3.5%	< 5	109%	70%	130%	101%	80%	120%	94%	70%	130%
Cobalt	3714055	3714055	8.1	8.3	2.4%	< 0.5	110%	70%	130%	95%	80%	120%	100%	70%	130%
Copper	3714055	3714055	16.0	16.8	4.9%	< 1.0	106%	70%	130%	99%	80%	120%	100%	70%	130%
Lead	3714055	3714055	16	16	0.0%	< 1	109%	70%	130%	94%	80%	120%	85%	70%	130%
Molybdenum	3714055	3714055	0.7	0.7	NA	< 0.5	124%	70%	130%	99%	80%	120%	108%	70%	130%
Nickel	3714055	3714055	16	16	0.0%	< 1	114%	70%	130%	96%	80%	120%	98%	70%	130%
Selenium	3714055	3714055	<0.8	<0.8	NA	< 0.8	90%	70%	130%	94%	80%	120%	103%	70%	130%
Silver	3714055	3714055	<0.5	<0.5	NA	< 0.5	106%	70%	130%	97%	80%	120%	91%	70%	130%
Thallium	3714055	3714055	<0.5	<0.5	NA	< 0.5	109%	70%	130%	97%	80%	120%	95%	70%	130%
Uranium	3714055	3714055	0.68	0.69	NA	< 0.50	120%	70%	130%	95%	80%	120%	99%	70%	130%
Vanadium	3714055	3714055	35.7	36.0	0.8%	< 0.4	123%	70%	130%	97%	80%	120%	104%	70%	130%
Zinc	3714055	3714055	42	43	2.4%	< 5	116%	70%	130%	97%	80%	120%	100%	70%	130%
Chromium, Hexavalent	3596705		<0.2	<0.2	NA	< 0.2	102%	70%	130%	104%	80%	120%	100%	70%	130%
Cyanide, Free	3711947		<0.040	<0.040	NA	< 0.040	91%	70%	130%	106%	80%	120%	100%	70%	130%
Mercury	3714055	3714055	<0.10	<0.10	NA	< 0.10	119%	70%	130%	82%	80%	120%	99%	70%	130%
Electrical Conductivity (2:1)	3710331		0.265	0.269	1.5%	< 0.005	102%	80%	120%	NA			NA		
Sodium Adsorption Ratio (2:1) (Calc.)	3710331		1.02	1.02	0.0%	N/A	NA			NA			NA		
pH, 2:1 CaCl2 Extraction	3713546		6.50	6.78	4.2%	NA	99%	80%	120%	NA			NA		

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.

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

Boron (Hot Water Soluble)	3711729		0.60	0.53	12.2%	< 0.10	88%	60%	140%	104%	70%	130%	98%	60%	140%
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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:

*Amanjot Bhela*  


## Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD  
 PROJECT: 21451149  
 SAMPLING SITE: TOH

AGAT WORK ORDER: 22Z880712  
 ATTENTION TO: Keith Holmes  
 SAMPLED BY: JS

### Trace Organics Analysis

RPT Date: Apr 11, 2022			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		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) (Soil)**

Benzene	3713621		<0.02	<0.02	NA	< 0.02	101%	60%	140%	107%	60%	140%	92%	60%	140%
Toluene	3713621		<0.05	<0.05	NA	< 0.05	106%	60%	140%	98%	60%	140%	96%	60%	140%
Ethylbenzene	3713621		<0.05	<0.05	NA	< 0.05	121%	60%	140%	112%	60%	140%	93%	60%	140%
m & p-Xylene	3713621		<0.05	<0.05	NA	< 0.05	102%	60%	140%	95%	60%	140%	95%	60%	140%
o-Xylene	3713621		<0.05	<0.05	NA	< 0.05	91%	60%	140%	95%	60%	140%	101%	60%	140%
F1 (C6 - C10)	3713621		<5	<5	NA	< 5	93%	60%	140%	83%	60%	140%	81%	60%	140%
F2 (C10 to C16)	3716096		58	73	22.9%	< 10	100%	60%	140%	125%	60%	140%	64%	60%	140%
F3 (C16 to C34)	3716096		< 50	< 50	NA	< 50	107%	60%	140%	102%	60%	140%	82%	60%	140%
F4 (C34 to C50)	3716096		< 50	< 50	NA	< 50	92%	60%	140%	111%	60%	140%	116%	60%	140%

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

Naphthalene	3722129		< 0.05	< 0.05	NA	< 0.05	85%	50%	140%	74%	50%	140%	89%	50%	140%
Acenaphthylene	3722129		< 0.05	< 0.05	NA	< 0.05	74%	50%	140%	85%	50%	140%	74%	50%	140%
Acenaphthene	3722129		< 0.05	< 0.05	NA	< 0.05	96%	50%	140%	96%	50%	140%	85%	50%	140%
Fluorene	3722129		< 0.05	< 0.05	NA	< 0.05	85%	50%	140%	81%	50%	140%	96%	50%	140%
Phenanthrene	3722129		< 0.05	< 0.05	NA	< 0.05	71%	50%	140%	85%	50%	140%	81%	50%	140%
Anthracene	3722129		< 0.05	< 0.05	NA	< 0.05	85%	50%	140%	96%	50%	140%	82%	50%	140%
Fluoranthene	3722129		< 0.05	< 0.05	NA	< 0.05	92%	50%	140%	67%	50%	140%	96%	50%	140%
Pyrene	3722129		< 0.05	< 0.05	NA	< 0.05	71%	50%	140%	85%	50%	140%	83%	50%	140%
Benz(a)anthracene	3722129		< 0.05	< 0.05	NA	< 0.05	82%	50%	140%	78%	50%	140%	82%	50%	140%
Chrysene	3722129		< 0.05	< 0.05	NA	< 0.05	90%	50%	140%	95%	50%	140%	81%	50%	140%
Benzo(b)fluoranthene	3722129		< 0.05	< 0.05	NA	< 0.05	93%	50%	140%	90%	50%	140%	85%	50%	140%
Benzo(k)fluoranthene	3722129		< 0.05	< 0.05	NA	< 0.05	82%	50%	140%	72%	50%	140%	92%	50%	140%
Benzo(a)pyrene	3722129		< 0.05	< 0.05	NA	< 0.05	71%	50%	140%	81%	50%	140%	66%	50%	140%
Indeno(1,2,3-cd)pyrene	3722129		< 0.05	< 0.05	NA	< 0.05	74%	50%	140%	82%	50%	140%	84%	50%	140%
Dibenz(a,h)anthracene	3722129		< 0.05	< 0.05	NA	< 0.05	85%	50%	140%	93%	50%	140%	75%	50%	140%
Benzo(g,h,i)perylene	3722129		< 0.05	< 0.05	NA	< 0.05	72%	50%	140%	94%	50%	140%	95%	50%	140%

Certified By: \_\_\_\_\_

*Jinkal Patel*



## Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD  
PROJECT: 21451149  
SAMPLING SITE:TOH

AGAT WORK ORDER: 22Z880712  
ATTENTION TO: Keith Holmes  
SAMPLED BY:JS

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, Free	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 CaCl <sub>2</sub> Extraction	INOR-93-6075	modified from EPA 9045D, MCKEAGUE 3.11 E3137	PC TITRATE

## Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 22Z880712

PROJECT: 21451149

ATTENTION TO: Keith Holmes

SAMPLING SITE:TOH

SAMPLED BY:JS

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 Methylnaphthalene	ORG-91-5106	modified from EPA 3570 and EPA 8270E	GC/MS
Naphthalene-d8	ORG-91-5106	modified from EPA 3570 and EPA 8270E	GC/MS
Acridine-d9	ORG-91-5106	modified from EPA 3570 and EPA 8270E	GC/MS
Terphenyl-d14	ORG-91-5106	modified from EPA 3570 and EPA 8270E	GC/MS
Moisture Content	VOL-91-5009	modified from CCME Tier 1 Method	BALANCE
Benzene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
Toluene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
Ethylbenzene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
m & p-Xylene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
o-Xylene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
Xylenes (Total)	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
F1 (C6 - C10)	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/FID
F1 (C6 to C10) minus BTEX	VOL-91-5009	modified from CCME Tier 1 Method	P&T GC/FID
Toluene-d8	VOL-91-5009	modified from EPA SW-846 5030C & 8260D	(P&T)GC/MS
F2 (C10 to C16)	VOL-91-5009	modified from CCME Tier 1 Method	GC/FID
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



## Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD  
PROJECT: 21451149  
SAMPLING SITE:TOH

AGAT WORK ORDER: 22Z880712  
ATTENTION TO: Keith Holmes  
SAMPLED BY:JS

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
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

## Chain of Custody Record

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

### Report Information:

Company: Golder  
Contact: Keith Holmes  
Address: \_\_\_\_\_  
Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
Reports to be sent to:  
1. Email: kholmes@golder.com  
2. Email: \_\_\_\_\_

### Regulatory Requirements:

(Please check all applicable boxes)

Regulation 153/04  Excess Soils R406  Sewer Use  
 Ind/Com  Sanitary  Storm  
Table 3 Indicate One Table \_\_\_\_\_ Indicate One  
 Res/Park  Agriculture Region \_\_\_\_\_  
 Agriculture  Regulation 558  Prov. Water Quality Objectives (PWQO)  
Soil Texture (Check One)  CCME  Other  
 Coarse  Fine Indicate One  
 Fine

### Laboratory Use Only

Work Order #: 227890712  
Cooler Quantity: one-no ice/pack  
Arrival Temperatures: 12.5 12.3 12.6  
11.9 9.9 10.8  
Custody Seal Intact:  Yes  No  N/A  
Notes: \_\_\_\_\_

### Project Information:

Project: 21451149  
Site Location: 733 ToH  
Sampled By: \_\_\_\_\_  
AGAT Quote #: \_\_\_\_\_ PO: 21451149  
Please note: if quotation number is not provided, client will be billed full price for analysis.

### 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

### 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

Field Filtered - Metals, Hg, CrVI, DOC

O. Reg 153

Metals & Inorganics SS (on tick)  
Metals -  CrVI,  Hg,  HWSB  
BTEX, F1-F4 PHCs  
Analyze F4G if required  Yes  No

PAHS

PCBS

VOC

O. Reg 558

Landfill Disposal Characterization TCLP:  
TCLP:  M&M  VOCs  ABNs  B(a)P  PCBs

Excess Soils SPLP Rainwater Leach

SPLP:  Metals  VOCs  SVOCs

Excess Soils Characterization Package  
PH, ICPMS Metals, BTEX, F1-F4

Salt - EC/SAR

Potentially Hazardous or High Concentration (Y/N)

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Y/N	Metals & Inorganics	Metals -	BTEX, F1-F4 PHCs	Analyze F4G if required	PAHS	PCBS	VOC	Landfill Disposal Characterization TCLP:	Excess Soils SPLP Rainwater Leach	SPLP:	Excess Soils Characterization Package	PH, ICPMS Metals, BTEX, F1-F4	Salt - EC/SAR	Potentially Hazardous or High Concentration (Y/N)
<del>22-109 SA02</del>	22-109 SA02	29/03/12 1100 AM	3	S			X		X		X									
	22-109 SA05	" AM PM	3																	
	22-111 SA01B	29/03/12 AM PM	4																	
	22-111 SA01	" AM PM	4																	
	22-111 SA03	" AM PM	4																	
	22-112 SA01	24/03/12 AM PM	3																	
	22-113 SA02A	30/03/12 AM PM	3																	
	22-113 SA04A	" AM PM	4																	
	22-301 SA2	18/03/12 AM PM	3		Proceed destroyed old time															
	22-301 SA6	" AM PM	3																	

Samples Relinquished By (Print Name and Sign): <u>Keith Holmes</u>	Date: <u>4/04/12</u>	Time: <u>10:30</u>	Samples Received By (Print Name and Sign): <u>C. G. Smith</u>	Date: <u>01/04/12</u>	Time: <u>15h15</u>
Samples Relinquished By (Print Name and Sign): <u>CG to predecessor</u>	Date: <u>04/04/12</u>	Time: <u>16h00</u>	Samples Received By (Print Name and Sign): <u>Actonville River</u>	Date:	Time:
Samples Relinquished By (Print Name and Sign):	Date:	Time:	Samples Received By (Print Name and Sign):	Date:	Time:

No: **T 128588**





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

ATTENTION TO: Keith Holmes

PROJECT: TOH -

AGAT WORK ORDER: 22Z884672

SOIL ANALYSIS REVIEWED BY: Jacky Zhu, Spectroscopy Technician

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

DATE REPORTED: Apr 25, 2022

PAGES (INCLUDING COVER): 13

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.



## Certificate of Analysis

AGAT WORK ORDER: 22Z884672

PROJECT: TOH -

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

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2022-04-14

DATE REPORTED: 2022-04-25

Parameter	Unit	SAMPLE DESCRIPTION:		22-310 SA02	22-303 SA02
		G / S	RDL	3754498	3754499
Antimony	µg/g	7.5	0.8	<0.8	<0.8
Arsenic	µg/g	18	1	2	2
Barium	µg/g	390	2.0	446	680
Beryllium	µg/g	4	0.4	0.8	0.8
Boron	µg/g	120	5	<5	<5
Boron (Hot Water Soluble)	µg/g	1.5	0.10	<0.10	<0.10
Cadmium	µg/g	1.2	0.5	<0.5	<0.5
Chromium	µg/g	160	5	131	142
Cobalt	µg/g	22	0.5	27.3	30.0
Copper	µg/g	140	1.0	59.6	61.0
Lead	µg/g	120	1	8	9
Molybdenum	µg/g	6.9	0.5	<0.5	<0.5
Nickel	µg/g	100	1	73	77
Selenium	µg/g	2.4	0.8	<0.8	<0.8
Silver	µg/g	20	0.5	<0.5	<0.5
Thallium	µg/g	1	0.5	0.6	0.6
Uranium	µg/g	23	0.50	0.86	0.72
Vanadium	µg/g	86	0.4	131	138
Zinc	µg/g	340	5	164	167
Chromium, Hexavalent	µg/g	8	0.2	<0.2	<0.2
Cyanide, Free	µg/g	0.051	0.040	<0.040	<0.040
Mercury	µg/g	0.27	0.10	<0.10	<0.10
Electrical Conductivity (2:1)	mS/cm	0.7	0.005	0.101	0.103
Sodium Adsorption Ratio (2:1) (Calc.)	N/A	5	N/A	0.493	0.318
pH, 2:1 CaCl2 Extraction	pH Units	5.0-9.0	NA	6.68	6.66

Certified By:





**AGAT** Laboratories

# Certificate of Analysis

AGAT WORK ORDER: 22Z884672

PROJECT: TOH -

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

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2022-04-14

DATE REPORTED: 2022-04-25

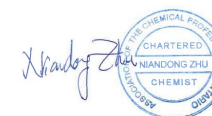
Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Coarse Textured Soils

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.

3754498-3754499 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:





## Certificate of Analysis

AGAT WORK ORDER: 22Z884672

PROJECT: TOH -

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

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2022-04-14

DATE REPORTED: 2022-04-25

Parameter	Unit	SAMPLE DESCRIPTION:		22-310 SA02	22-303 SA02
		G / S	RDL	3754498	3754499
Naphthalene	µg/g	0.6	0.05	<0.05	<0.05
Acenaphthylene	µg/g	0.15	0.05	<0.05	<0.05
Acenaphthene	µg/g	7.9	0.05	<0.05	<0.05
Fluorene	µg/g	62	0.05	<0.05	<0.05
Phenanthrene	µg/g	6.2	0.05	<0.05	<0.05
Anthracene	µg/g	0.67	0.05	<0.05	<0.05
Fluoranthene	µg/g	0.69	0.05	<0.05	<0.05
Pyrene	µg/g	78	0.05	<0.05	<0.05
Benz(a)anthracene	µg/g	0.5	0.05	<0.05	<0.05
Chrysene	µg/g	7	0.05	<0.05	<0.05
Benzo(b)fluoranthene	µg/g	0.78	0.05	<0.05	<0.05
Benzo(k)fluoranthene	µg/g	0.78	0.05	<0.05	<0.05
Benzo(a)pyrene	µg/g	0.3	0.05	<0.05	<0.05
Indeno(1,2,3-cd)pyrene	µg/g	0.38	0.05	<0.05	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	0.05	<0.05	<0.05
Benzo(g,h,i)perylene	µg/g	6.6	0.05	<0.05	<0.05
1 and 2 Methyl naphthalene	µg/g	0.99	0.05	<0.05	<0.05
Moisture Content	%		0.1	28.5	32.9
Surrogate	Unit	Acceptable Limits			
Naphthalene-d8	%	50-140		72	76
Acridine-d9	%	50-140		95	99
Terphenyl-d14	%	50-140		104	76

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

3754498-3754499 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:



## Certificate of Analysis

AGAT WORK ORDER: 22Z884672

PROJECT: TOH -

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

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2022-04-14

DATE REPORTED: 2022-04-25

Parameter	Unit	SAMPLE DESCRIPTION:		22-310 SA02	22-303 SA02
		G / S	RDL	3754498	3754499
Benzene	µg/g	0.21	0.02	<0.02	<0.02
Toluene	µg/g	2.3	0.05	<0.05	<0.05
Ethylbenzene	µg/g	2	0.05	<0.05	<0.05
m & p-Xylene	µg/g		0.05	<0.05	<0.05
o-Xylene	µg/g		0.05	<0.05	<0.05
Xylenes (Total)	µg/g	3.1	0.05	<0.05	<0.05
F1 (C6 - C10)	µg/g	55	5	<5	<5
F1 (C6 to C10) minus BTEX	µg/g	55	5	<5	<5
F2 (C10 to C16)	µg/g	98	10	<10	<10
F2 (C10 to C16) minus Naphthalene	µg/g		10	<10	<10
F3 (C16 to C34)	µg/g	300	50	<50	<50
F3 (C16 to C34) minus PAHs	µg/g		50	<50	<50
F4 (C34 to C50)	µg/g	2800	50	<50	<50
Gravimetric Heavy Hydrocarbons	µg/g	2800	50	NA	NA
Moisture Content	%		0.1	28.5	32.9
Surrogate	Unit	Acceptable Limits			
Toluene-d8	% Recovery	60-140		77	81
Terphenyl	%	60-140		67	80

Certified By:



## Certificate of Analysis

AGAT WORK ORDER: 22Z884672

PROJECT: TOH -

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

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2022-04-14

DATE REPORTED: 2022-04-25

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

3754498-3754499 Results are based on sample dry weight.  
The C6-C10 fraction is calculated using toluene response factor.  
Xylenes total is a calculated parameter. The calculated value is the sum of m&p-Xylene and o-Xylene.  
C6-C10 (F1 minus BTEX) is a calculated parameter. The calculated value is F1 minus BTEX.  
The calculated parameters are non-accredited. The parameters that are components of the calculation are accredited.  
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and 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:



### Exceedance Summary

AGAT WORK ORDER: 22Z884672

PROJECT: TOH -

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

ATTENTION TO: Keith Holmes

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
3754498	22-310 SA02	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Barium	µg/g	390	446
3754498	22-310 SA02	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Cobalt	µg/g	22	27.3
3754498	22-310 SA02	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Vanadium	µg/g	86	131
3754499	22-303 SA02	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Barium	µg/g	390	680
3754499	22-303 SA02	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Cobalt	µg/g	22	30.0
3754499	22-303 SA02	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Vanadium	µg/g	86	138

## Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD  
 PROJECT: TOH -  
 SAMPLING SITE:

AGAT WORK ORDER: 22Z884672  
 ATTENTION TO: Keith Holmes  
 SAMPLED BY:

Soil Analysis																
RPT Date: Apr 25, 2022			DUPLICATE				Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Measured Value		Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits		
								Lower	Upper		Lower	Upper		Lower	Upper	

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

Antimony	3754562		1.6	2.5	NA	< 0.8	129%	70%	130%	96%	80%	120%	89%	70%	130%
Arsenic	3754562		5	4	NA	< 1	126%	70%	130%	103%	80%	120%	108%	70%	130%
Barium	3754562		29.6	26.1	12.6%	< 2.0	107%	70%	130%	106%	80%	120%	112%	70%	130%
Beryllium	3754562		<0.4	<0.4	NA	< 0.4	91%	70%	130%	104%	80%	120%	91%	70%	130%
Boron	3754562		<5	<5	NA	< 5	75%	70%	130%	102%	80%	120%	92%	70%	130%
Boron (Hot Water Soluble)	3762744		0.39	0.46	NA	< 0.10	89%	60%	140%	95%	70%	130%	98%	60%	140%
Cadmium	3754562		<0.5	<0.5	NA	< 0.5	115%	70%	130%	110%	80%	120%	111%	70%	130%
Chromium	3754562		11	10	NA	< 5	113%	70%	130%	118%	80%	120%	116%	70%	130%
Cobalt	3754562		5.9	5.5	7.0%	< 0.5	115%	70%	130%	110%	80%	120%	110%	70%	130%
Copper	3754562		35.1	28.8	19.7%	< 1.0	105%	70%	130%	117%	80%	120%	97%	70%	130%
Lead	3754562		50	46	8.3%	< 1	110%	70%	130%	107%	80%	120%	103%	70%	130%
Molybdenum	3754562		0.7	0.6	NA	< 0.5	119%	70%	130%	112%	80%	120%	118%	70%	130%
Nickel	3754562		22	19	14.6%	< 1	120%	70%	130%	116%	80%	120%	113%	70%	130%
Selenium	3754562		<0.8	<0.8	NA	< 0.8	100%	70%	130%	109%	80%	120%	113%	70%	130%
Silver	3754562		<0.5	<0.5	NA	< 0.5	107%	70%	130%	112%	80%	120%	106%	70%	130%
Thallium	3754562		<0.5	<0.5	NA	< 0.5	113%	70%	130%	107%	80%	120%	103%	70%	130%
Uranium	3754562		<0.50	<0.50	NA	< 0.50	125%	70%	130%	110%	80%	120%	111%	70%	130%
Vanadium	3754562		17.2	13.8	21.9%	< 0.4	124%	70%	130%	117%	80%	120%	118%	70%	130%
Zinc	3754562		81	75	7.7%	< 5	114%	70%	130%	114%	80%	120%	121%	70%	130%
Chromium, Hexavalent	3768060		<0.2	<0.2	NA	< 0.2	101%	70%	130%	84%	80%	120%	86%	70%	130%
Cyanide, Free	3754547		<0.040	<0.040	NA	< 0.040	101%	70%	130%	93%	80%	120%	106%	70%	130%
Mercury	3754562		<0.10	<0.10	NA	< 0.10	113%	70%	130%	103%	80%	120%	103%	70%	130%
Electrical Conductivity (2:1)	3754537		0.097	0.093	4.2%	< 0.005	99%	80%	120%						
Sodium Adsorption Ratio (2:1) (Calc.)	3754537		0.314	0.316	0.6%	NA									
pH, 2:1 CaCl2 Extraction	3757380		6.27	6.51	3.8%	NA	98%	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: \_\_\_\_\_





## Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD  
 PROJECT: TOH -  
 SAMPLING SITE:

AGAT WORK ORDER: 22Z884672  
 ATTENTION TO: Keith Holmes  
 SAMPLED BY:

### Trace Organics Analysis

RPT Date: Apr 25, 2022			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		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) (Soil)**

Benzene	3751096		<0.02	<0.02	NA	< 0.02	107%	60%	140%	106%	60%	140%	112%	60%	140%
Toluene	3751096		<0.05	<0.05	NA	< 0.05	100%	60%	140%	115%	60%	140%	104%	60%	140%
Ethylbenzene	3751096		<0.05	<0.05	NA	< 0.05	115%	60%	140%	107%	60%	140%	108%	60%	140%
m & p-Xylene	3751096		<0.05	<0.05	NA	< 0.05	105%	60%	140%	102%	60%	140%	109%	60%	140%
o-Xylene	3751096		<0.05	<0.05	NA	< 0.05	104%	60%	140%	103%	60%	140%	102%	60%	140%
F1 (C6 - C10)	3751096		<5	<5	NA	< 5	89%	60%	140%	94%	60%	140%	90%	60%	140%
F2 (C10 to C16)	3749690		< 10	< 10	NA	< 10	94%	60%	140%	107%	60%	140%	76%	60%	140%
F3 (C16 to C34)	3749690		< 50	< 50	NA	< 50	102%	60%	140%	89%	60%	140%	69%	60%	140%
F4 (C34 to C50)	3749690		< 50	< 50	NA	< 50	84%	60%	140%	102%	60%	140%	91%	60%	140%

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

Naphthalene	3722129		< 0.05	< 0.05	NA	< 0.05	85%	50%	140%	74%	50%	140%	89%	50%	140%
Acenaphthylene	3722129		< 0.05	< 0.05	NA	< 0.05	74%	50%	140%	85%	50%	140%	74%	50%	140%
Acenaphthene	3722129		< 0.05	< 0.05	NA	< 0.05	96%	50%	140%	96%	50%	140%	85%	50%	140%
Fluorene	3722129		< 0.05	< 0.05	NA	< 0.05	85%	50%	140%	81%	50%	140%	96%	50%	140%
Phenanthrene	3722129		< 0.05	< 0.05	NA	< 0.05	71%	50%	140%	85%	50%	140%	81%	50%	140%
Anthracene	3722129		< 0.05	< 0.05	NA	< 0.05	85%	50%	140%	96%	50%	140%	82%	50%	140%
Fluoranthene	3722129		< 0.05	< 0.05	NA	< 0.05	92%	50%	140%	67%	50%	140%	96%	50%	140%
Pyrene	3722129		< 0.05	< 0.05	NA	< 0.05	71%	50%	140%	85%	50%	140%	83%	50%	140%
Benz(a)anthracene	3722129		< 0.05	< 0.05	NA	< 0.05	82%	50%	140%	78%	50%	140%	82%	50%	140%
Chrysene	3722129		< 0.05	< 0.05	NA	< 0.05	90%	50%	140%	95%	50%	140%	81%	50%	140%
Benzo(b)fluoranthene	3722129		< 0.05	< 0.05	NA	< 0.05	93%	50%	140%	90%	50%	140%	85%	50%	140%
Benzo(k)fluoranthene	3722129		< 0.05	< 0.05	NA	< 0.05	82%	50%	140%	72%	50%	140%	92%	50%	140%
Benzo(a)pyrene	3722129		< 0.05	< 0.05	NA	< 0.05	71%	50%	140%	81%	50%	140%	66%	50%	140%
Indeno(1,2,3-cd)pyrene	3722129		< 0.05	< 0.05	NA	< 0.05	74%	50%	140%	82%	50%	140%	84%	50%	140%
Dibenz(a,h)anthracene	3722129		< 0.05	< 0.05	NA	< 0.05	85%	50%	140%	93%	50%	140%	75%	50%	140%
Benzo(g,h,i)perylene	3722129		< 0.05	< 0.05	NA	< 0.05	72%	50%	140%	94%	50%	140%	95%	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: \_\_\_\_\_



## Method Summary

 CLIENT NAME: GOLDER ASSOCIATES LTD  
 PROJECT: TOH -  
 SAMPLING SITE:

 AGAT WORK ORDER: 22Z884672  
 ATTENTION TO: Keith Holmes  
 SAMPLED BY:

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, Free	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 CaCl <sub>2</sub> Extraction	INOR-93-6075	modified from EPA 9045D, MCKEAGUE 3.11 E3137	PC TITRATE

## Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 22Z884672

PROJECT: TOH -

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

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 Methylnaphthalene	ORG-91-5106	modified from EPA 3570 and EPA 8270E	GC/MS
Naphthalene-d8	ORG-91-5106	modified from EPA 3570 and EPA 8270E	GC/MS
Acridine-d9	ORG-91-5106	modified from EPA 3570 and EPA 8270E	GC/MS
Terphenyl-d14	ORG-91-5106	modified from EPA 3570 and EPA 8270E	GC/MS
Moisture Content	VOL-91-5009	modified from CCME Tier 1 Method	BALANCE
Benzene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
Toluene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
Ethylbenzene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
m & p-Xylene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
o-Xylene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
Xylenes (Total)	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
F1 (C6 - C10)	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/FID
F1 (C6 to C10) minus BTEX	VOL-91-5009	modified from CCME Tier 1 Method	P&T GC/FID
Toluene-d8	VOL-91-5009	modified from EPA SW-846 5030C & 8260D	(P&T)GC/MS
F2 (C10 to C16)	VOL-91-5009	modified from CCME Tier 1 Method	GC/FID
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



## Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 22Z884672

PROJECT: TOH -

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
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





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

ATTENTION TO: Keith Holmes

PROJECT: 21451149

AGAT WORK ORDER: 22Z868295

SOIL ANALYSIS REVIEWED BY: Nivine Basily, Inorganics Report Writer

TRACE ORGANICS REVIEWED BY: Neli Popnikolova, Senior Chemist

DATE REPORTED: Mar 08, 2022

PAGES (INCLUDING COVER): 17

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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- The test results reported herewith relate only to the samples as received by the laboratory.
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- All reportable information as specified by ISO/IEC 17025:2017 is available from AGAT Laboratories upon request.



## Certificate of Analysis

AGAT WORK ORDER: 22Z868295

PROJECT: 21451149

5835 COOPERS AVENUE  
MISSISSAUGA, ONTARIO  
CANADA L4Z 1Y2  
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<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2022-02-28

DATE REPORTED: 2022-03-08

Parameter	Unit	SAMPLE DESCRIPTION:								
		SAMPLE TYPE:		BH22-02 SA2	BH22-04 SA2	BH22-06 SA2	BH22-09 SA2	BH22-01 SA2a	BH22-07 SA3	BH22-10 SA2
		G / S	RDL	Soil	Soil	Soil	Soil	Soil	Soil	Soil
DATE SAMPLED:		2022-02-22	2022-02-22	2022-02-22	2022-02-22	2022-02-23	2022-02-24	2022-02-24	2022-02-24	
		12:00	12:00	12:00	12:00	12:00	12:00	12:00	12:00	
		3571035	3571052	3571053	3571054	3571055	3571056	3571057	3571057	
Antimony	µg/g	7.5	0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Arsenic	µg/g	18	1	1	2	3	3	2	4	2
Barium	µg/g	390	2.0	50.2	80.6	171	169	65.5	281	341
Beryllium	µg/g	4	0.4	<0.4	<0.4	<0.4	0.4	0.4	<0.4	0.7
Boron	µg/g	120	5	<5	<5	<5	<5	8	10	<5
Boron (Hot Water Soluble)	µg/g	1.5	0.10	0.16	0.19	0.24	0.18	0.37	0.31	0.14
Cadmium	µg/g	1.2	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	µg/g	160	5	21	46	33	59	21	20	102
Cobalt	µg/g	22	0.5	5.1	10.8	9.0	13.1	4.5	6.6	22.8
Copper	µg/g	140	1.0	9.8	18.3	19.4	31.5	11.6	12.7	45.8
Lead	µg/g	120	1	15	8	39	23	16	50	13
Molybdenum	µg/g	6.9	0.5	0.9	0.9	0.9	1.2	<0.5	0.7	0.8
Nickel	µg/g	100	1	11	23	17	32	11	10	57
Selenium	µg/g	2.4	0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Silver	µg/g	20	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Thallium	µg/g	1	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Uranium	µg/g	23	0.50	0.76	0.94	0.58	0.93	0.87	0.57	0.99
Vanadium	µg/g	86	0.4	29.1	49.5	38.7	60.9	20.5	25.7	105
Zinc	µg/g	340	5	39	50	73	76	48	132	129
Chromium, Hexavalent	µg/g	8	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cyanide, Free	µg/g	0.051	0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
Mercury	µg/g	0.27	0.10	<0.10	<0.10	0.15	<0.10	<0.10	0.27	<0.10
Electrical Conductivity (2:1)	mS/cm	0.7	0.005	0.169	0.184	0.242	0.170	0.226	3.16	0.308
Sodium Adsorption Ratio (2:1) (Calc.)	N/A	5	N/A	0.120	0.136	0.143	0.174	0.122	0.211	0.191
pH, 2:1 CaCl2 Extraction	pH Units	5.0-9.0	NA	7.22	7.25	7.51	7.37	7.19	10.2	7.71

Certified By:



*Nivine Basly*



## Certificate of Analysis

AGAT WORK ORDER: 22Z868295

PROJECT: 21451149

5835 COOPERS AVENUE  
MISSISSAUGA, ONTARIO  
CANADA L4Z 1Y2  
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<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2022-02-28

DATE REPORTED: 2022-03-08

Parameter	Unit	SAMPLE DESCRIPTION: BH22-03 SA4				BH22-05 SA2	BH22-08 SA3	BH22-405 SA3
		G / S	RDL	RDL	RDL	RDL	RDL	RDL
				3571058		3571059	3571060	3571061
Antimony	µg/g	7.5	0.8	14.6	0.8	<0.8	<0.8	<0.8
Arsenic	µg/g	18	1	452	1	10	12	5
Barium	µg/g	390	2.0	330	2.0	399	111	93.7
Beryllium	µg/g	4	0.4	0.5	0.4	0.6	<0.4	<0.4
Boron	µg/g	120	5	9	5	11	9	6
Boron (Hot Water Soluble)	µg/g	1.5	0.10	0.33	0.10	0.35	1.06	0.18
Cadmium	µg/g	1.2	0.5	15.6	0.5	<0.5	<0.5	<0.5
Chromium	µg/g	160	5	78	5	37	17	22
Cobalt	µg/g	22	0.5	47.2	0.5	9.6	4.3	6.9
Copper	µg/g	140	1.0	1430	1.0	39.8	11.3	21.8
Lead	µg/g	120	1	1140	1	149	52	39
Molybdenum	µg/g	6.9	0.5	53.5	0.5	2.4	2.4	0.6
Nickel	µg/g	100	1	136	1	24	6	14
Selenium	µg/g	2.4	0.8	7.2	0.8	0.9	<0.8	<0.8
Silver	µg/g	20	0.5	8.2	0.5	0.8	<0.5	<0.5
Thallium	µg/g	1	0.5	0.8	0.5	<0.5	<0.5	<0.5
Uranium	µg/g	23	0.50	21.1	0.50	1.57	1.42	0.96
Vanadium	µg/g	86	0.4	46.9	0.4	45.7	20.4	34.6
Zinc	µg/g	340	50	4770	5	217	57	64
Chromium, Hexavalent	µg/g	8	0.2	<0.2	0.2	<0.2	<0.2	<0.2
Cyanide, Free	µg/g	0.051	0.040	<0.040	0.040	<0.040	<0.040	<0.040
Mercury	µg/g	0.27	0.10	2.49	0.10	0.37	0.15	<0.10
Electrical Conductivity (2:1)	mS/cm	0.7	0.005	0.361	0.005	0.240	2.45	0.214
Sodium Adsorption Ratio (2:1) (Calc.)	N/A	5	N/A	1.47	N/A	0.152	0.096	0.130
pH, 2:1 CaCl2 Extraction	pH Units	5.0-9.0	NA	7.56	NA	7.51	7.44	7.52

Certified By:



*Ally Beach*





## Certificate of Analysis

AGAT WORK ORDER: 22Z868295

PROJECT: 21451149

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

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2022-02-28

DATE REPORTED: 2022-03-08

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

3571035-3571057 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.

3571058 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.

Dilution required, RDL has been increased accordingly.

3571059-3571061 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:



*Keith Holmes*



## Certificate of Analysis

AGAT WORK ORDER: 22Z868295

PROJECT: 21451149

5835 COOPERS AVENUE  
MISSISSAUGA, ONTARIO  
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CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2022-02-28

DATE REPORTED: 2022-03-08

Parameter	Unit	SAMPLE DESCRIPTION:		BH22-02 SA2	BH22-04 SA2	BH22-06 SA2	BH22-09 SA2	BH22-01 SA2a	BH22-07 SA3	BH22-10 SA2	BH22-03 SA4
		G / S	RDL	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
DATE SAMPLED:		2022-02-22	2022-02-22	2022-02-22	2022-02-22	2022-02-23	2022-02-24	2022-02-24	2022-02-24	2022-02-23	2022-02-23
		12:00	12:00	12:00	12:00	12:00	12:00	12:00	12:00	12:00	12:00
		3571035	3571052	3571053	3571054	3571055	3571056	3571057	3571058	3571058	3571058
Naphthalene	µg/g	0.6	0.05	<0.05	<0.05	<0.05	<0.05	0.06	0.22	<0.05	<0.05
Acenaphthylene	µg/g	0.15	0.05	0.18	0.46	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthene	µg/g	7.9	0.05	<0.05	0.19	0.10	<0.05	0.08	0.92	<0.05	<0.05
Fluorene	µg/g	62	0.05	<0.05	0.26	0.07	<0.05	0.12	0.83	<0.05	<0.05
Phenanthrene	µg/g	6.2	0.05	0.14	1.88	0.15	0.07	0.54	2.94	<0.05	0.06
Anthracene	µg/g	0.67	0.05	0.12	0.81	0.07	<0.05	0.28	1.22	<0.05	<0.05
Fluoranthene	µg/g	0.69	0.05	0.88	2.01	0.17	0.16	0.50	2.77	<0.05	0.15
Pyrene	µg/g	78	0.05	0.85	2.01	0.15	0.17	0.42	2.53	<0.05	0.16
Benz(a)anthracene	µg/g	0.5	0.05	0.50	1.41	0.06	0.09	0.19	1.31	<0.05	0.06
Chrysene	µg/g	7	0.05	0.40	0.98	<0.05	0.06	0.12	0.66	<0.05	0.05
Benzo(b)fluoranthene	µg/g	0.78	0.05	0.62	1.38	0.06	0.11	0.14	0.83	<0.05	0.07
Benzo(k)fluoranthene	µg/g	0.78	0.05	0.36	0.48	<0.05	<0.05	0.08	0.23	<0.05	<0.05
Benzo(a)pyrene	µg/g	0.3	0.05	0.42	1.09	<0.05	0.11	0.10	0.54	<0.05	<0.05
Indeno(1,2,3-cd)pyrene	µg/g	0.38	0.05	0.16	0.44	<0.05	<0.05	<0.05	0.17	<0.05	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	0.05	<0.05	0.13	<0.05	<0.05	<0.05	0.06	<0.05	<0.05
Benzo(g,h,i)perylene	µg/g	6.6	0.05	0.15	0.45	<0.05	<0.05	<0.05	0.19	<0.05	<0.05
1 and 2 Methylnaphthalene	µg/g	0.99	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.45	<0.05	<0.05
Moisture Content	%		0.1	15.8	10.6	17.6	25.8	23.5	31.3	21.7	22.0
Surrogate	Unit	Acceptable Limits									
Naphthalene-d8	%	50-140		67	62	64	62	66	78	68	64
Acridine-d9	%	50-140		85	79	85	78	76	76	79	79
Terphenyl-d14	%	50-140		89	85	97	84	84	88	85	85

Certified By:



## Certificate of Analysis

AGAT WORK ORDER: 22Z868295

PROJECT: 21451149

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CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2022-02-28

DATE REPORTED: 2022-03-08

Parameter	Unit	G / S	RDL	SAMPLE DESCRIPTION: BH22-05 SA2	BH22-08 SA3	BH22-405 SA3
				Soil	Soil	Soil
				DATE SAMPLED: 2022-02-22	2022-02-25	2022-02-25
				12:00	12:00	12:00
				3571059	3571060	3571061
Naphthalene	µg/g	0.6	0.05	<0.05	<0.05	<0.05
Acenaphthylene	µg/g	0.15	0.05	0.18	<0.05	0.11
Acenaphthene	µg/g	7.9	0.05	0.11	<0.05	0.14
Fluorene	µg/g	62	0.05	0.18	<0.05	0.19
Phenanthrene	µg/g	6.2	0.05	1.74	0.14	1.41
Anthracene	µg/g	0.67	0.05	0.76	0.09	0.65
Fluoranthene	µg/g	0.69	0.05	2.24	0.38	1.88
Pyrene	µg/g	78	0.05	2.08	0.39	1.92
Benz(a)anthracene	µg/g	0.5	0.05	1.25	0.18	1.36
Chrysene	µg/g	7	0.05	0.75	0.12	0.92
Benzo(b)fluoranthene	µg/g	0.78	0.05	0.89	0.17	1.12
Benzo(k)fluoranthene	µg/g	0.78	0.05	0.47	0.09	0.47
Benzo(a)pyrene	µg/g	0.3	0.05	0.70	0.14	0.83
Indeno(1,2,3-cd)pyrene	µg/g	0.38	0.05	0.24	<0.05	0.33
Dibenz(a,h)anthracene	µg/g	0.1	0.05	0.06	<0.05	0.10
Benzo(g,h,i)perylene	µg/g	6.6	0.05	0.22	<0.05	0.33
1 and 2 Methyl naphthalene	µg/g	0.99	0.05	<0.05	<0.05	<0.05
Moisture Content	%		0.1	17.5	20.1	8.1
Surrogate	Unit	Acceptable Limits				
Naphthalene-d8	%	50-140		63	75	63
Acridine-d9	%	50-140		84	89	84
Terphenyl-d14	%	50-140		79	85	79

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

3571035-3571061 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:



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AGAT WORK ORDER: 22Z868295

PROJECT: 21451149

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CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2022-02-28

DATE REPORTED: 2022-03-08

Parameter	Unit	SAMPLE DESCRIPTION: BH22-02 SA2 BH22-04 SA2 BH22-06 SA2 BH22-09 SA2 BH22-01 SA2a BH22-07 SA3 BH22-10 SA2 BH22-03 SA4									
		G / S	RDL	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
DATE SAMPLED:		2022-02-22	2022-02-22	2022-02-22	2022-02-22	2022-02-23	2022-02-24	2022-02-24	2022-02-23	2022-02-24	2022-02-23
Time		12:00	12:00	12:00	12:00	12:00	12:00	12:00	12:00	12:00	12:00
Sample ID		3571035	3571052	3571053	3571054	3571055	3571056	3571057	3571058	3571059	3571060
Benzene	µg/g	0.21	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Toluene	µg/g	2.3	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	µg/g	2	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
m & p-Xylene	µg/g		0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
o-Xylene	µg/g		0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Xylenes (Total)	µg/g	3.1	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
F1 (C6 - C10)	µg/g	55	5	<5	<5	<5	<5	<5	<5	<5	<5
F1 (C6 to C10) minus BTEX	µg/g	55	5	<5	<5	<5	<5	<5	<5	<5	<5
F2 (C10 to C16)	µg/g	98	10	<10	<10	<10	<10	<10	<10	<10	<10
F2 (C10 to C16) minus Naphthalene	µg/g		10	<10	<10	<10	<10	<10	<10	<10	<10
F3 (C16 to C34)	µg/g	300	50	<50	<50	<50	<50	<50	300	<50	<50
F3 (C16 to C34) minus PAHs	µg/g		50	<50	<50	<50	<50	<50	289	<50	<50
F4 (C34 to C50)	µg/g	2800	50	<50	<50	<50	<50	<50	63	200	<50
Gravimetric Heavy Hydrocarbons	µg/g	2800	50	NA	NA	NA	NA	NA	NA	NA	NA
Moisture Content	%		0.1	15.8	10.6	6.23	25.8	23.5	31.3	21.7	22.0
Surrogate	Unit	Acceptable Limits									
Toluene-d8	% Recovery	60-140	78	78	92	79	84	99	74	72	
Terphenyl	%	60-140	73	76	74	91	78	91	87	96	

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CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2022-02-28

DATE REPORTED: 2022-03-08

Parameter	Unit	SAMPLE DESCRIPTION:				
		G / S	RDL	BH22-05 SA2	BH22-08 SA3	BH22-405 SA3
				Soil	Soil	Soil
				2022-02-22	2022-02-25	2022-02-25
				12:00	12:00	12:00
				3571059	3571060	3571061
Benzene	µg/g	0.21	0.02	<0.02	<0.02	<0.02
Toluene	µg/g	2.3	0.05	<0.05	<0.05	<0.05
Ethylbenzene	µg/g	2	0.05	<0.05	<0.05	<0.05
m & p-Xylene	µg/g		0.05	<0.05	<0.05	<0.05
o-Xylene	µg/g		0.05	<0.05	<0.05	<0.05
Xylenes (Total)	µg/g	3.1	0.05	<0.05	<0.05	<0.05
F1 (C6 - C10)	µg/g	55	5	<5	<5	<5
F1 (C6 to C10) minus BTEX	µg/g	55	5	<5	<5	<5
F2 (C10 to C16)	µg/g	98	10	<10	<10	<10
F2 (C10 to C16) minus Naphthalene	µg/g		10	<10	<10	<10
F3 (C16 to C34)	µg/g	300	50	<50	<50	<50
F3 (C16 to C34) minus PAHs	µg/g		50	<50	<50	<50
F4 (C34 to C50)	µg/g	2800	50	<50	<50	<50
Gravimetric Heavy Hydrocarbons	µg/g	2800	50	NA	NA	NA
Moisture Content	%		0.1	17.5	20.1	8.1
Surrogate	Unit	Acceptable Limits				
Toluene-d8	% Recovery	60-140	109	102	109	
Terphenyl	%	60-140	87	92	99	

Certified By:



## Certificate of Analysis

AGAT WORK ORDER: 22Z868295

PROJECT: 21451149

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CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2022-02-28

DATE REPORTED: 2022-03-08

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

3571035-3571061 Results are based on sample dry weight.  
The C6-C10 fraction is calculated using toluene response factor.  
Xylenes total is a calculated parameter. The calculated value is the sum of m&p-Xylene and o-Xylene.  
C6-C10 (F1 minus BTEX) is a calculated parameter. The calculated value is F1 minus BTEX.  
The calculated parameters are non-accredited. The parameters that are components of the calculation are accredited.  
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and 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:



## Exceedance Summary

AGAT WORK ORDER: 22Z868295

PROJECT: 21451149

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ATTENTION TO: Keith Holmes

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
3571035	BH22-02 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Acenaphthylene	µg/g	0.15	0.18
3571035	BH22-02 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Benzo(a)pyrene	µg/g	0.3	0.42
3571035	BH22-02 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Fluoranthene	µg/g	0.69	0.88
3571035	BH22-02 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)	Benzo(a)pyrene	µg/g	0.3	0.42
3571035	BH22-02 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)	Fluoranthene	µg/g	0.69	0.88
3571052	BH22-04 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Acenaphthylene	µg/g	0.15	0.46
3571052	BH22-04 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Anthracene	µg/g	0.67	0.81
3571052	BH22-04 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Benz(a)anthracene	µg/g	0.5	1.41
3571052	BH22-04 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Benzo(a)pyrene	µg/g	0.3	1.09
3571052	BH22-04 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Benzo(b)fluoranthene	µg/g	0.78	1.38
3571052	BH22-04 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Dibenz(a,h)anthracene	µg/g	0.1	0.13
3571052	BH22-04 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Fluoranthene	µg/g	0.69	2.01
3571052	BH22-04 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Indeno(1,2,3-cd)pyrene	µg/g	0.38	0.44
3571052	BH22-04 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)	Benzo(a)anthracene	µg/g	0.5	1.41
3571052	BH22-04 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)	Benzo(a)pyrene	µg/g	0.3	1.09
3571052	BH22-04 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)	Benzo(b)fluoranthene	µg/g	0.78	1.38
3571052	BH22-04 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)	Dibenzo(a,h)anthracene	µg/g	0.1	0.13
3571052	BH22-04 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)	Fluoranthene	µg/g	0.69	2.01
3571052	BH22-04 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)	Indeno(1,2,3-cd)pyrene	µg/g	0.38	0.44
3571056	BH22-07 SA3	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Electrical Conductivity (2:1)	mS/cm	0.7	3.16
3571056	BH22-07 SA3	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	pH, 2:1 CaCl2 Extraction	pH Units	5.0-9.0	10.2
3571056	BH22-07 SA3	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Anthracene	µg/g	0.67	1.22
3571056	BH22-07 SA3	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Benz(a)anthracene	µg/g	0.5	1.31
3571056	BH22-07 SA3	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Benzo(a)pyrene	µg/g	0.3	0.54
3571056	BH22-07 SA3	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Benzo(b)fluoranthene	µg/g	0.78	0.83
3571056	BH22-07 SA3	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Fluoranthene	µg/g	0.69	2.77
3571056	BH22-07 SA3	ON T3 S RPI CT	O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)	Benzo(a)anthracene	µg/g	0.5	1.31
3571056	BH22-07 SA3	ON T3 S RPI CT	O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)	Benzo(a)pyrene	µg/g	0.3	0.54
3571056	BH22-07 SA3	ON T3 S RPI CT	O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)	Benzo(b)fluoranthene	µg/g	0.78	0.83
3571056	BH22-07 SA3	ON T3 S RPI CT	O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)	Fluoranthene	µg/g	0.69	2.77
3571057	BH22-10 SA2	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Cobalt	µg/g	22	22.8
3571057	BH22-10 SA2	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Vanadium	µg/g	86	105
3571058	BH22-03 SA4	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Antimony	µg/g	7.5	14.6
3571058	BH22-03 SA4	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Arsenic	µg/g	18	452
3571058	BH22-03 SA4	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Cadmium	µg/g	1.2	15.6
3571058	BH22-03 SA4	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Cobalt	µg/g	22	47.2
3571058	BH22-03 SA4	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Copper	µg/g	140	1430
3571058	BH22-03 SA4	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Lead	µg/g	120	1140
3571058	BH22-03 SA4	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Mercury	µg/g	0.27	2.49
3571058	BH22-03 SA4	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Molybdenum	µg/g	6.9	53.5
3571058	BH22-03 SA4	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Nickel	µg/g	100	136
3571058	BH22-03 SA4	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Selenium	µg/g	2.4	7.2
3571058	BH22-03 SA4	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Zinc	µg/g	340	4770



## Exceedance Summary

AGAT WORK ORDER: 22Z868295

PROJECT: 21451149

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

ATTENTION TO: Keith Holmes

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
3571059	BH22-05 SA2	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Barium	µg/g	390	399
3571059	BH22-05 SA2	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Lead	µg/g	120	149
3571059	BH22-05 SA2	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Mercury	µg/g	0.27	0.37
3571059	BH22-05 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Acenaphthylene	µg/g	0.15	0.18
3571059	BH22-05 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Anthracene	µg/g	0.67	0.76
3571059	BH22-05 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Benz(a)anthracene	µg/g	0.5	1.25
3571059	BH22-05 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Benzo(a)pyrene	µg/g	0.3	0.70
3571059	BH22-05 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Benzo(b)fluoranthene	µg/g	0.78	0.89
3571059	BH22-05 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Fluoranthene	µg/g	0.69	2.24
3571059	BH22-05 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)	Benzo(a)anthracene	µg/g	0.5	1.25
3571059	BH22-05 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)	Benzo(a)pyrene	µg/g	0.3	0.70
3571059	BH22-05 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)	Benzo(b)fluoranthene	µg/g	0.78	0.89
3571059	BH22-05 SA2	ON T3 S RPI CT	O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)	Fluoranthene	µg/g	0.69	2.24
3571060	BH22-08 SA3	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Electrical Conductivity (2:1)	mS/cm	0.7	2.45
3571061	BH22-405 SA3	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Benz(a)anthracene	µg/g	0.5	1.36
3571061	BH22-405 SA3	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Benzo(a)pyrene	µg/g	0.3	0.83
3571061	BH22-405 SA3	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Benzo(b)fluoranthene	µg/g	0.78	1.12
3571061	BH22-405 SA3	ON T3 S RPI CT	O. Reg. 153(511) - PAHs (Soil)	Fluoranthene	µg/g	0.69	1.88
3571061	BH22-405 SA3	ON T3 S RPI CT	O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)	Benzo(a)anthracene	µg/g	0.5	1.36
3571061	BH22-405 SA3	ON T3 S RPI CT	O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)	Benzo(a)pyrene	µg/g	0.3	0.83
3571061	BH22-405 SA3	ON T3 S RPI CT	O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)	Benzo(b)fluoranthene	µg/g	0.78	1.12
3571061	BH22-405 SA3	ON T3 S RPI CT	O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)	Fluoranthene	µg/g	0.69	1.88



## Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 22Z868295

PROJECT: 21451149

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

Soil Analysis															
RPT Date: Mar 08, 2022			DUPLICATE				Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE		MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Measured Value		Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

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

Antimony	3571760		<0.8	<0.8	NA	< 0.8	106%	70%	130%	95%	80%	120%	70%	70%	130%
Arsenic	3571760		7	7	0.0%	< 1	124%	70%	130%	100%	80%	120%	105%	70%	130%
Barium	3571760		85.0	86.9	2.2%	< 2.0	101%	70%	130%	100%	80%	120%	102%	70%	130%
Beryllium	3571760		0.6	0.7	NA	< 0.4	87%	70%	130%	103%	80%	120%	91%	70%	130%
Boron	3571760		11	10	NA	< 5	76%	70%	130%	100%	80%	120%	81%	70%	130%
Boron (Hot Water Soluble)	3571035	3571035	0.16	0.15	NA	< 0.10	84%	60%	140%	101%	70%	130%	106%	60%	140%
Cadmium	3571760		<0.5	<0.5	NA	< 0.5	109%	70%	130%	104%	80%	120%	104%	70%	130%
Chromium	3571760		27	28	3.6%	< 5	113%	70%	130%	107%	80%	120%	119%	70%	130%
Cobalt	3571760		13.2	13.1	0.8%	< 0.5	110%	70%	130%	105%	80%	120%	106%	70%	130%
Copper	3571760		39.7	39.4	0.8%	< 1.0	98%	70%	130%	105%	80%	120%	100%	70%	130%
Lead	3571760		36	36	0.0%	< 1	108%	70%	130%	106%	80%	120%	103%	70%	130%
Molybdenum	3571760		0.6	0.6	NA	< 0.5	118%	70%	130%	110%	80%	120%	116%	70%	130%
Nickel	3571760		33	34	3.0%	< 1	107%	70%	130%	105%	80%	120%	101%	70%	130%
Selenium	3571760		<0.8	0.8	NA	< 0.8	129%	70%	130%	106%	80%	120%	110%	70%	130%
Silver	3571760		<0.5	<0.5	NA	< 0.5	103%	70%	130%	107%	80%	120%	98%	70%	130%
Thallium	3571760		<0.5	<0.5	NA	< 0.5	115%	70%	130%	103%	80%	120%	104%	70%	130%
Uranium	3571760		0.72	0.72	NA	< 0.50	122%	70%	130%	106%	80%	120%	109%	70%	130%
Vanadium	3571760		35.5	35.7	0.6%	< 0.4	118%	70%	130%	104%	80%	120%	111%	70%	130%
Zinc	3571760		153	155	1.3%	< 5	107%	70%	130%	105%	80%	120%	112%	70%	130%
Chromium, Hexavalent	3571056	3571056	<0.2	<0.2	NA	< 0.2	100%	70%	130%	95%	80%	120%	90%	70%	130%
Cyanide, Free	3572457		<0.040	<0.040	NA	< 0.040	90%	70%	130%	95%	80%	120%	108%	70%	130%
Mercury	3571760		<0.10	<0.10	NA	< 0.10	108%	70%	130%	98%	80%	120%	101%	70%	130%
Electrical Conductivity (2:1)	3571035	3571035	0.169	0.168	0.6%	< 0.005	102%	80%	120%						
Sodium Adsorption Ratio (2:1) (Calc.)	3571035	3571035	0.120	0.115	4.3%	NA									
pH, 2:1 CaCl2 Extraction	3572450		6.53	6.83	4.5%	NA	99%	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:



*Nivine Basily*

## Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD  
 PROJECT: 21451149  
 SAMPLING SITE:

AGAT WORK ORDER: 22Z868295  
 ATTENTION TO: Keith Holmes  
 SAMPLED BY:

### Trace Organics Analysis

RPT Date: Mar 08, 2022			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		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) (Soil)**

Benzene	3571053	3571053	<0.02	<0.02	NA	< 0.02	90%	60%	140%	81%	60%	140%	94%	60%	140%
Toluene	3571053	3571053	<0.05	<0.05	NA	< 0.05	87%	60%	140%	106%	60%	140%	100%	60%	140%
Ethylbenzene	3571053	3571053	<0.05	<0.05	NA	< 0.05	106%	60%	140%	91%	60%	140%	99%	60%	140%
m & p-Xylene	3571053	3571053	<0.05	<0.05	NA	< 0.05	107%	60%	140%	105%	60%	140%	91%	60%	140%
o-Xylene	3571053	3571053	<0.05	<0.05	NA	< 0.05	84%	60%	140%	93%	60%	140%	112%	60%	140%
F1 (C6 - C10)	3571053	3571053	<5	<5	NA	< 5	107%	60%	140%	96%	60%	140%	103%	60%	140%
F2 (C10 to C16)	3573721		< 10	< 10	NA	< 10	110%	60%	140%	128%	60%	140%	64%	60%	140%
F3 (C16 to C34)	3573721		710	720	1.4%	< 50	114%	60%	140%	120%	60%	140%	68%	60%	140%
F4 (C34 to C50)	3573721		280	220	NA	< 50	101%	60%	140%	97%	60%	140%	112%	60%	140%

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

Naphthalene	3573135		<0.05	<0.05	NA	< 0.05	89%	50%	140%	89%	50%	140%	110%	50%	140%
Acenaphthylene	3573135		<0.05	<0.05	NA	< 0.05	89%	50%	140%	97%	50%	140%	112%	50%	140%
Acenaphthene	3573135		<0.05	<0.05	NA	< 0.05	85%	50%	140%	103%	50%	140%	105%	50%	140%
Fluorene	3573135		<0.05	<0.05	NA	< 0.05	79%	50%	140%	112%	50%	140%	107%	50%	140%
Phenanthrene	3573135		<0.05	<0.05	NA	< 0.05	97%	50%	140%	89%	50%	140%	102%	50%	140%
Anthracene	3573135		<0.05	<0.05	NA	< 0.05	89%	50%	140%	114%	50%	140%	103%	50%	140%
Fluoranthene	3573135		<0.05	<0.05	NA	< 0.05	89%	50%	140%	97%	50%	140%	111%	50%	140%
Pyrene	3573135		<0.05	<0.05	NA	< 0.05	89%	50%	140%	111%	50%	140%	109%	50%	140%
Benz(a)anthracene	3573135		<0.05	<0.05	NA	< 0.05	67%	50%	140%	73%	50%	140%	84%	50%	140%
Chrysene	3573135		<0.05	<0.05	NA	< 0.05	67%	50%	140%	89%	50%	140%	107%	50%	140%
Benzo(b)fluoranthene	3573135		<0.05	<0.05	NA	< 0.05	89%	50%	140%	84%	50%	140%	97%	50%	140%
Benzo(k)fluoranthene	3573135		<0.05	<0.05	NA	< 0.05	84%	50%	140%	79%	50%	140%	114%	50%	140%
Benzo(a)pyrene	3573135		<0.05	<0.05	NA	< 0.05	115%	50%	140%	89%	50%	140%	96%	50%	140%
Indeno(1,2,3-cd)pyrene	3573135		<0.05	<0.05	NA	< 0.05	82%	50%	140%	85%	50%	140%	74%	50%	140%
Dibenz(a,h)anthracene	3573135		<0.05	<0.05	NA	< 0.05	86%	50%	140%	89%	50%	140%	77%	50%	140%
Benzo(g,h,i)perylene	3573135		<0.05	<0.05	NA	< 0.05	79%	50%	140%	89%	50%	140%	77%	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: \_\_\_\_\_



## Method Summary

 CLIENT NAME: GOLDER ASSOCIATES LTD  
 PROJECT: 21451149  
 SAMPLING SITE:

 AGAT WORK ORDER: 22Z868295  
 ATTENTION TO: Keith Holmes  
 SAMPLED BY:

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, Free	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-93-6036	modified from MSA PART 3, CH 14 and SM 2510 B	EC METER
Sodium Adsorption Ratio (2:1) (Calc.)	INOR-93-6007	modified from EPA 6010D & Analytical Protocol	ICP/OES
pH, 2:1 CaCl <sub>2</sub> Extraction	INOR-93-6075	modified from EPA 9045D, MCKEAGUE 3.11 E3137	PC TITRATE



## Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD  
 PROJECT: 21451149  
 SAMPLING SITE:

AGAT WORK ORDER: 22Z868295  
 ATTENTION TO: Keith Holmes  
 SAMPLED BY:

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 Methylnaphthalene	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	CCME Tier 1 Method	BALANCE
Benzene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
Toluene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
Ethylbenzene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
m & p-Xylene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
o-Xylene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
Xylenes (Total)	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
F1 (C6 - C10)	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/FID
F1 (C6 to C10) minus BTEX	VOL-91-5009	modified from CCME Tier 1 Method	P&T GC/FID
Toluene-d8	VOL-91-5009	modified from EPA SW-846 5030C & 8260D	(P&T)GC/MS
F2 (C10 to C16)	VOL-91-5009	modified from CCME Tier 1 Method	GC/FID
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



## Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 22Z868295

PROJECT: 21451149

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
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



# AGAT Laboratories

5835 Coopers Avenue  
Mississauga, ON  
L4Z 1Y2

www.agatlabs.com • webearth.agatlabs.com

## Laboratory Use Only

Arrival Temperature: 13.6/13.7/13.6  
AGAT WO #: 272868295  
Lab Temperature: 3.1/3.2/3.4  
Notes: Bagged Ice

## Chain of Custody Record

P: 905.712.5100 • F: 905.712.5122 • TF: 800.856.6261

### Client Information

Company: Golder  
Contact: Keith Holmes  
Address: \_\_\_\_\_  
Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
Project: 21451149 PO: \_\_\_\_\_  
AGAT Quotation #: \_\_\_\_\_

Please note, if quotation number is not provided, client will be billed full price for analysis.

### Regulatory Requirements

- Regulation 153/04 (reg. 511 Amend.)  Sewer Use  Regulation 558
- Table 3 Region \_\_\_\_\_ Indicate one
- Ind/Com  Sanitary  Other (specify) \_\_\_\_\_
- Res/Park  Storm  Prov. Water Quality Objectives (PWQO)
- Agriculture  None
- Soil Texture (check one)
- Coarse  Fine

### Turnaround Time Required (TAT) Required\*

#### Regular TAT

5 to 7 Working Days

Rush TAT (please provide prior notification)

Rush Surcharges Apply

3 Working Days

2 Working Days

1 Working Day

OR

Date Required (Rush surcharges may apply): \_\_\_\_\_

\*TAT is exclusive of weekends and statutory holidays

### Invoice To

Same: Yes  No

Company: \_\_\_\_\_  
Contact: \_\_\_\_\_  
Address: \_\_\_\_\_

### Is this a drinking water sample?

(potable water intended for human consumption)

Yes  No

If "Yes", please use the Drinking Water Chain of Custody Form

### Is this submission for a Record of Site Condition?

Yes  No

### Legend Matrix

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

### Report Information - reports to be sent to:

1. Name: Keith Holmes  
Email: kholmes@golder.com
2. Name: Laura Jones  
Email: ljones@golder.com

Sample Identification	Date Sampled	Time Sampled	Sample Matrix	# of Containers	Comments Site/Sample Information	Metals and Inorganics	Metal Scan	Hydride Forming Metals	Client Custom Metals	ORPs: <input type="checkbox"/> B-HWS <input type="checkbox"/> Cl- <input type="checkbox"/> CN- <input type="checkbox"/> EC	<input type="checkbox"/> FOC <input type="checkbox"/> Cr+6 <input type="checkbox"/> SAR	<input type="checkbox"/> NO <sub>3</sub> /NO <sub>2</sub> <input type="checkbox"/> N-Total <input type="checkbox"/> Hg <input type="checkbox"/> pH	Nutrients: <input type="checkbox"/> TP <input type="checkbox"/> NH <sub>3</sub> <input type="checkbox"/> TKN <input type="checkbox"/> NO <sub>3</sub> <input type="checkbox"/> NO <sub>2</sub> <input type="checkbox"/> NO <sub>x</sub> /NO <sub>2</sub>	VOC: <input type="checkbox"/> VOC <input type="checkbox"/> THM <input checked="" type="checkbox"/> BTX	CCME Fractions 1 to 4	ABNS	PAHS	Chlorophenols	PCBs	Organochlorine Pesticides	TCLP Metals/Inorganics	Sewer Use	
BH22-02 SA2	24/1/12	12:00	S	3		X								X	X			X					
BH22-04 SA2	22/2/12					X								X	X			X					
BH22-06 SA2	"					X								X	X			X					
BH22-09 SA2	"					X								X	X			X					
BH22-01 SA2a	23/2/12					X								X	X			X					
BH22-07 SA3	24/1/12					X								X	X			X					
BH22-10 SA2	"					X								X	X			X					
BH22-03 SA4	23/1/12					X								X	X			X					
BH22-05 SA2	21/1/12					X								X	X			X					
BH22-08 SA2	25/2/12					X								X	X			X					
BH22-405 SA3	25/2/12					X								X	X			X					

Samples Relinquished By (Print Name and Sign): <u>Keith Holmes</u>	Date/Time: <u>1:30 23/1/12</u>	Samples Received By (Print Name and Sign): <u>Anthony Dasilva</u>	Date/Time: <u>15h35 22/02/12</u>	Pink Copy - Client	Page <u>1</u> of <u>1</u>
Samples Relinquished By (Print Name and Sign): <u>CC to purulator</u>	Date/Time: <u>16h00 22/03/12</u>	Samples Received By (Print Name and Sign): <u>Anthony Dasilva</u>	Date/Time:	Yellow Copy - AGAT	N#: <b>197506</b>
				White Copy - AGAT	



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

ATTENTION TO: Keith Holmes

PROJECT: 21451149

AGAT WORK ORDER: 22Z872125

SOIL ANALYSIS REVIEWED BY: Nivine Basily, Inorganics Report Writer

TRACE ORGANICS REVIEWED BY: Neli Popnikolova, Senior Chemist

DATE REPORTED: Mar 18, 2022

PAGES (INCLUDING COVER): 17

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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- All reportable information as specified by ISO/IEC 17025:2017 is available from AGAT Laboratories upon request.



## Certificate of Analysis

AGAT WORK ORDER: 22Z872125

PROJECT: 21451149

5835 COOPERS AVENUE  
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<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE: Hospital

SAMPLED BY: RI

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

DATE RECEIVED: 2022-03-10

DATE REPORTED: 2022-03-18

Parameter	Unit	SAMPLE DESCRIPTION:										
		G / S	RDL	403 SA2	403 SA3	404 SA1	404 SA4	406 SA2	411 SA2	411 SA22	412 SA2	
				Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
				2022-02-28	2022-02-28	2022-03-01	2022-03-01	2022-03-01	2022-03-02	2022-03-02	2022-03-02	2022-03-01
				12:00	12:00	12:00	12:00	12:00	12:00	12:00	12:00	12:00
				3607621	3607718	3607719	3607720	3607721	3607722	3607723	3607724	3607724
Antimony	µg/g	40	0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Arsenic	µg/g	18	1	1	1	4	1	4	1	1	1	10
Barium	µg/g	670	2.0	124	105	152	84.3	82.6	52.2	48.4	122	122
Beryllium	µg/g	8	0.4	0.5	<0.4	0.5	<0.4	<0.4	<0.4	<0.4	0.7	0.7
Boron	µg/g	120	5	5	15	21	8	7	9	8	23	23
Boron (Hot Water Soluble)	µg/g	2	0.10	0.22	0.74	0.15	<0.10	0.25	<0.10	<0.10	0.26	0.26
Cadmium	µg/g	1.9	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	µg/g	160	5	27	17	25	11	17	11	11	20	20
Cobalt	µg/g	80	0.5	8.3	4.1	7.3	5.0	5.3	5.3	6.1	6.6	6.6
Copper	µg/g	230	1.0	17	18.5	24.0	10.2	11.3	8.6	8.4	32.2	32.2
Lead	µg/g	120	1	4	7	190	6	50	4	3	62	62
Molybdenum	µg/g	40	0.5	<0.5	<0.5	1.0	<0.5	0.9	<0.5	<0.5	1.6	1.6
Nickel	µg/g	270	1	16	8	17	7	9	7	7	14	14
Selenium	µg/g	5.5	0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	0.9	0.9
Silver	µg/g	40	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.7	0.7
Thallium	µg/g	3.3	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Uranium	µg/g	33	0.50	0.63	0.68	0.68	0.76	0.51	<0.50	<0.50	0.68	0.68
Vanadium	µg/g	86	0.4	37.3	20.6	42.5	19.5	27.6	21.1	20.4	30.1	30.1
Zinc	µg/g	340	5	45	37	82	20	57	17	17	55	55
Chromium, Hexavalent	µg/g	8	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cyanide, Free	µg/g	0.051	0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
Mercury	µg/g	3.9	0.10	<0.10	<0.10	<0.10	<0.10	0.11	<0.10	<0.10	<0.10	<0.10
Electrical Conductivity (2:1)	mS/cm	1.4	0.005	0.233	0.859	0.163	0.181	0.221	0.187	0.211	0.166	0.166
Sodium Adsorption Ratio (2:1) (Calc.)	N/A	12	N/A	1.78	2.87	0.147	0.248	0.170	0.297	0.292	0.245	0.245
pH, 2:1 CaCl2 Extraction	pH Units	5.0-9.0	NA	7.27	7.46	7.39	7.44	7.38	7.32	7.23	7.26	7.26

Certified By:



*Nivine Basly*





## Certificate of Analysis

AGAT WORK ORDER: 22Z872125

PROJECT: 21451149

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<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE: Hospital

SAMPLED BY: RI

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

DATE RECEIVED: 2022-03-10

DATE REPORTED: 2022-03-18

Parameter	Unit	SAMPLE DESCRIPTION:							
		G / S	RDL	408 SA2	402 SA6	402 SA3	407 Sa3	410 Sa2	410 Sa5
				Soil	Soil	Soil	Soil	Soil	Soil
				2022-03-03	2022-03-07	2022-03-07	2022-03-07	2022-03-07	2022-03-07
				12:00	12:00	12:00	12:00	12:00	12:00
				3607725	3607726	3607727	3607728	3607729	3607886
Antimony	µg/g	40	0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Arsenic	µg/g	18	1	3	1	6	3	4	1
Barium	µg/g	670	2.0	140	74.7	143	156	141	78.2
Beryllium	µg/g	8	0.4	0.5	<0.4	0.7	<0.4	0.5	<0.4
Boron	µg/g	120	5	14	7	8	9	9	8
Boron (Hot Water Soluble)	µg/g	2	0.10	0.28	<0.10	0.16	0.21	0.17	<0.10
Cadmium	µg/g	1.9	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	µg/g	160	5	30	11	21	17	24	12
Cobalt	µg/g	80	0.5	8.5	4.8	10.7	5.5	7.0	4.5
Copper	µg/g	230	1.0	20.9	8.5	33.6	22.3	16.0	9.3
Lead	µg/g	120	1	21	3	65	148	208	4
Molybdenum	µg/g	40	0.5	0.6	0.5	3.7	1.1	0.7	<0.5
Nickel	µg/g	270	1	18	6	40	11	13	7
Selenium	µg/g	5.5	0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Silver	µg/g	40	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Thallium	µg/g	3.3	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Uranium	µg/g	33	0.50	0.69	0.51	1.47	0.53	0.55	0.72
Vanadium	µg/g	86	0.4	45.2	19.8	31.4	23.0	29.9	21.3
Zinc	µg/g	340	5	55	15	82	69	69	17
Chromium, Hexavalent	µg/g	8	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cyanide, Free	µg/g	0.051	0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
Mercury	µg/g	3.9	0.10	<0.10	<0.10	0.18	<0.10	<0.10	<0.10
Electrical Conductivity (2:1)	mS/cm	1.4	0.005	0.229	0.223	0.185	0.295	0.299	0.205
Sodium Adsorption Ratio (2:1) (Calc.)	N/A	12	N/A	1.52	2.51	0.181	0.109	0.359	0.610
pH, 2:1 CaCl2 Extraction	pH Units	5.0-9.0	NA	7.36	7.34	7.37	7.30	9.34	7.77

Certified By:



*Nvine Basly*



**AGAT** Laboratories

# Certificate of Analysis

AGAT WORK ORDER: 22Z872125

PROJECT: 21451149

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<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE: Hospital

SAMPLED BY: RI

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

DATE RECEIVED: 2022-03-10

DATE REPORTED: 2022-03-18

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Industrial/Commercial/Community 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.

3607621-3607886 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:



*Keith Holmes*



## Certificate of Analysis

AGAT WORK ORDER: 22Z872125

PROJECT: 21451149

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CLIENT NAME: GOLDER ASSOCIATES LTD

SAMPLING SITE: Hospital

ATTENTION TO: Keith Holmes

SAMPLED BY: RI

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

DATE RECEIVED: 2022-03-10

DATE REPORTED: 2022-03-18

Parameter	Unit	G / S	RDL	SAMPLE DESCRIPTION:	403 SA2	403 SA3	404 SA1	404 SA4	406 SA2	411 SA2	411 SA22	412 SA2
				SAMPLE TYPE:	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
DATE SAMPLED:				2022-02-28	2022-02-28	2022-03-01	2022-03-01	2022-03-01	2022-03-01	2022-03-02	2022-03-02	2022-03-01
				12:00	12:00	12:00	12:00	12:00	12:00	12:00	12:00	12:00
				3607621	3607718	3607719	3607720	3607721	3607722	3607723	3607724	3607724
Naphthalene	µg/g	9.6	0.05	<0.05	<0.05	0.08	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthylene	µg/g	0.15	0.05	<0.05	<0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthene	µg/g	96	0.05	<0.05	<0.05	0.06	<0.05	0.36	<0.05	<0.05	<0.05	<0.05
Fluorene	µg/g	62	0.05	<0.05	<0.05	0.12	<0.05	0.44	<0.05	<0.05	<0.05	<0.05
Phenanthrene	µg/g	12	0.05	<0.05	<0.05	0.79	<0.05	2.22	<0.05	<0.05	<0.05	0.10
Anthracene	µg/g	0.67	0.05	<0.05	<0.05	0.27	<0.05	0.88	<0.05	<0.05	<0.05	<0.05
Fluoranthene	µg/g	9.6	0.05	<0.05	<0.05	0.89	<0.05	2.65	<0.05	<0.05	<0.05	0.14
Pyrene	µg/g	96	0.05	<0.05	<0.05	0.73	<0.05	2.25	<0.05	<0.05	<0.05	0.13
Benz(a)anthracene	µg/g	0.96	0.05	<0.05	<0.05	0.46	<0.05	1.61	<0.05	<0.05	<0.05	0.09
Chrysene	µg/g	9.6	0.05	<0.05	<0.05	0.43	<0.05	1.72	<0.05	<0.05	<0.05	0.08
Benzo(b)fluoranthene	µg/g	0.96	0.05	<0.05	<0.05	0.43	<0.05	1.74	<0.05	<0.05	<0.05	0.13
Benzo(k)fluoranthene	µg/g	0.96	0.05	<0.05	<0.05	0.11	<0.05	0.54	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene	µg/g	0.3	0.05	<0.05	<0.05	0.28	<0.05	1.13	<0.05	<0.05	<0.05	0.08
Indeno(1,2,3-cd)pyrene	µg/g	0.76	0.05	<0.05	<0.05	0.11	<0.05	0.48	<0.05	<0.05	<0.05	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	0.05	<0.05	<0.05	<0.05	<0.05	0.14	<0.05	<0.05	<0.05	<0.05
Benzo(g,h,i)perylene	µg/g	9.6	0.05	<0.05	<0.05	0.11	<0.05	0.48	<0.05	<0.05	<0.05	<0.05
1 and 2 Methylnaphthalene	µg/g	76	0.05	<0.05	<0.05	0.27	<0.05	<0.05	<0.05	<0.05	<0.05	0.15
Moisture Content	%		0.1	13.2	10.1	15.0	10.1	15.9	9.5	9.3	9.9	
Surrogate	Unit	Acceptable Limits										
Naphthalene-d8	%	50-140		69	67	76	70	71	65	67	64	
Acridine-d9	%	50-140		68	69	64	76	87	75	72	68	
Terphenyl-d14	%	50-140		107	61	66	70	70	90	70	67	

Certified By:





## Certificate of Analysis

AGAT WORK ORDER: 22Z872125

PROJECT: 21451149

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CLIENT NAME: GOLDER ASSOCIATES LTD

SAMPLING SITE: Hospital

ATTENTION TO: Keith Holmes

SAMPLED BY: RI

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

DATE RECEIVED: 2022-03-10

DATE REPORTED: 2022-03-18

Parameter	Unit	SAMPLE DESCRIPTION:		408 SA2	402 SA6	402 SA3	407 Sa3	410 Sa2	410 Sa5
		G / S	RDL	Soil	Soil	Soil	Soil	Soil	Soil
		DATE SAMPLED:		2022-03-03	2022-03-07	2022-03-07	2022-03-07	2022-03-07	2022-03-07
				12:00	12:00	12:00	12:00	12:00	12:00
				3607725	3607726	3607727	3607728	3607729	3607886
Naphthalene	µg/g	9.6	0.05	0.08	<0.05	0.08	<0.05	<0.05	<0.05
Acenaphthylene	µg/g	0.15	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthene	µg/g	96	0.05	0.12	<0.05	0.07	<0.05	<0.05	<0.05
Fluorene	µg/g	62	0.05	0.15	<0.05	0.14	0.05	<0.05	<0.05
Phenanthrene	µg/g	12	0.05	0.88	<0.05	0.59	0.37	0.12	<0.05
Anthracene	µg/g	0.67	0.05	0.20	<0.05	0.21	0.13	<0.05	<0.05
Fluoranthene	µg/g	9.6	0.05	0.80	<0.05	0.53	0.57	0.23	<0.05
Pyrene	µg/g	96	0.05	0.65	<0.05	0.46	0.48	0.20	<0.05
Benz(a)anthracene	µg/g	0.96	0.05	0.36	<0.05	0.24	0.29	0.12	<0.05
Chrysene	µg/g	9.6	0.05	0.35	<0.05	0.22	0.23	0.10	<0.05
Benzo(b)fluoranthene	µg/g	0.96	0.05	0.36	<0.05	0.24	0.33	0.14	<0.05
Benzo(k)fluoranthene	µg/g	0.96	0.05	0.14	<0.05	0.08	0.12	<0.05	<0.05
Benzo(a)pyrene	µg/g	0.3	0.05	0.24	<0.05	0.16	0.21	0.09	<0.05
Indeno(1,2,3-cd)pyrene	µg/g	0.76	0.05	0.09	<0.05	0.06	0.10	<0.05	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(g,h,i)perylene	µg/g	9.6	0.05	0.09	<0.05	0.06	0.11	<0.05	<0.05
1 and 2 Methyl naphthalene	µg/g	76	0.05	0.18	<0.05	0.06	<0.05	<0.05	<0.05
Moisture Content	%		0.1	15.3	9.0	14.6	8.2	20.9	5.0
Surrogate	Unit	Acceptable Limits							
Naphthalene-d8	%	50-140		80	61	62	63	76	71
Acridine-d9	%	50-140		96	81	96	64	69	76
Terphenyl-d14	%	50-140		86	74	68	77	62	68

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Industrial/Commercial/Community 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.

3607621-3607886 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:



## Certificate of Analysis

AGAT WORK ORDER: 22Z872125

PROJECT: 21451149

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CLIENT NAME: GOLDER ASSOCIATES LTD

SAMPLING SITE: Hospital

ATTENTION TO: Keith Holmes

SAMPLED BY: RI

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

DATE RECEIVED: 2022-03-10

DATE REPORTED: 2022-03-18

Parameter	Unit	SAMPLE DESCRIPTION:									
		G / S	RDL	403 SA2	403 SA3	404 SA1	404 SA4	406 SA2	411 SA2	411 SA22	412 SA2
				Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
				2022-02-28	2022-02-28	2022-03-01	2022-03-01	2022-03-01	2022-03-02	2022-03-02	2022-03-01
				12:00	12:00	12:00	12:00	12:00	12:00	12:00	12:00
				3607621	3607718	3607719	3607720	3607721	3607722	3607723	3607724
Benzene	µg/g	0.32	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.31
Toluene	µg/g	68	0.05	<0.05	<0.05	0.08	<0.05	<0.05	<0.05	<0.05	1.35
Ethylbenzene	µg/g	9.5	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.13
m & p-Xylene	µg/g		0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.58
o-Xylene	µg/g		0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.32
Xylenes (Total)	µg/g	26	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.90
F1 (C6 - C10)	µg/g	55	5	<5	<5	<5	<5	<5	<5	<5	15
F1 (C6 to C10) minus BTEX	µg/g	55	5	<5	<5	<5	<5	<5	<5	<5	12
F2 (C10 to C16)	µg/g	230	10	<10	<10	<10	<10	<10	<10	<10	<10
F2 (C10 to C16) minus Naphthalene	µg/g		10	<10	<10	<10	<10	<10	<10	<10	<10
F3 (C16 to C34)	µg/g	1700	50	<50	<50	<50	<50	150	<50	<50	<50
F3 (C16 to C34) minus PAHs	µg/g		50	<50	<50	<50	<50	137	<50	<50	<50
F4 (C34 to C50)	µg/g	3300	50	<50	<50	<50	<50	<50	<50	<50	<50
Gravimetric Heavy Hydrocarbons	µg/g	3300	50	NA	NA	NA	NA	NA	NA	NA	NA
Moisture Content	%		0.1	13.2	10.1	15.0	10.1	15.9	9.5	9.3	9.9
Surrogate	Unit	Acceptable Limits									
Toluene-d8	% Recovery		60-140	72	108	93	97	82	92	94	83
Terphenyl	%		60-140	87	93	66	96	110	80	85	90

Certified By:



## Certificate of Analysis

AGAT WORK ORDER: 22Z872125

PROJECT: 21451149

5835 COOPERS AVENUE  
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<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD

SAMPLING SITE: Hospital

ATTENTION TO: Keith Holmes

SAMPLED BY: RI

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

DATE RECEIVED: 2022-03-10

DATE REPORTED: 2022-03-18

Parameter	Unit	SAMPLE DESCRIPTION:							
		G / S	RDL	408 SA2	402 SA6	402 SA3	407 Sa3	410 Sa2	410 Sa5
				Soil	Soil	Soil	Soil	Soil	Soil
				2022-03-03	2022-03-07	2022-03-07	2022-03-07	2022-03-07	2022-03-07
				12:00	12:00	12:00	12:00	12:00	12:00
				3607725	3607726	3607727	3607728	3607729	3607886
Benzene	µg/g	0.32	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Toluene	µg/g	68	0.05	0.15	<0.05	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	µg/g	9.5	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
m & p-Xylene	µg/g		0.05	0.10	<0.05	<0.05	<0.05	<0.05	<0.05
o-Xylene	µg/g		0.05	0.06	<0.05	<0.05	<0.05	<0.05	<0.05
Xylenes (Total)	µg/g	26	0.05	0.16	<0.05	<0.05	<0.05	<0.05	<0.05
F1 (C6 - C10)	µg/g	55	5	8	<5	5	<5	<5	<5
F1 (C6 to C10) minus BTEX	µg/g	55	5	8	<5	5	<5	<5	<5
F2 (C10 to C16)	µg/g	230	10	<10	<10	<10	<10	<10	<10
F2 (C10 to C16) minus Naphthalene	µg/g		10	<10	<10	<10	<10	<10	<10
F3 (C16 to C34)	µg/g	1700	50	<50	<50	<50	<50	<50	<50
F3 (C16 to C34) minus PAHs	µg/g		50	<50	<50	<50	<50	<50	<50
F4 (C34 to C50)	µg/g	3300	50	<50	<50	<50	<50	<50	<50
Gravimetric Heavy Hydrocarbons	µg/g	3300	50	NA	NA	NA	NA	NA	NA
Moisture Content	%		0.1	15.3	9.0	14.6	8.2	20.9	5.0
Surrogate	Unit	Acceptable Limits							
Toluene-d8	% Recovery	60-140	100	70	123	71	97	106	
Terphenyl	%	60-140	91	87	70	71	85	72	

Certified By:



## Certificate of Analysis

AGAT WORK ORDER: 22Z872125

PROJECT: 21451149

5835 COOPERS AVENUE  
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CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE: Hospital

SAMPLED BY: RI

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

DATE RECEIVED: 2022-03-10

DATE REPORTED: 2022-03-18

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Industrial/Commercial/Community 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.

3607621-3607886 Results are based on sample dry weight.  
The C6-C10 fraction is calculated using toluene response factor.  
Xylenes total is a calculated parameter. The calculated value is the sum of m&p-Xylene and o-Xylene.  
C6-C10 (F1 minus BTEX) is a calculated parameter. The calculated value is F1 minus BTEX.  
The calculated parameters are non-accredited. The parameters that are components of the calculation are accredited.  
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and 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:



## Exceedance Summary

AGAT WORK ORDER: 22Z872125

PROJECT: 21451149

5835 COOPERS AVENUE  
 MISSISSAUGA, ONTARIO  
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CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
3607719	404 SA1	ON T3 S ICC CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Lead	µg/g	120	190
3607721	406 SA2	ON T3 S ICC CT	O. Reg. 153(511) - PAHs (Soil)	Anthracene	µg/g	0.67	0.88
3607721	406 SA2	ON T3 S ICC CT	O. Reg. 153(511) - PAHs (Soil)	Benz(a)anthracene	µg/g	0.96	1.61
3607721	406 SA2	ON T3 S ICC CT	O. Reg. 153(511) - PAHs (Soil)	Benzo(a)pyrene	µg/g	0.3	1.13
3607721	406 SA2	ON T3 S ICC CT	O. Reg. 153(511) - PAHs (Soil)	Benzo(b)fluoranthene	µg/g	0.96	1.74
3607721	406 SA2	ON T3 S ICC CT	O. Reg. 153(511) - PAHs (Soil)	Dibenz(a,h)anthracene	µg/g	0.1	0.14
3607721	406 SA2	ON T3 S ICC CT	O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)	Benzo(a)anthracene	µg/g	0.96	1.61
3607721	406 SA2	ON T3 S ICC CT	O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)	Benzo(a)pyrene	µg/g	0.3	1.13
3607721	406 SA2	ON T3 S ICC CT	O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)	Benzo(b)fluoranthene	µg/g	0.96	1.74
3607721	406 SA2	ON T3 S ICC CT	O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)	Dibenzo(a,h)anthracene	µg/g	0.1	0.14
3607728	407 Sa3	ON T3 S ICC CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Lead	µg/g	120	148
3607729	410 Sa2	ON T3 S ICC CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Lead	µg/g	120	208
3607729	410 Sa2	ON T3 S ICC CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	pH, 2:1 CaCl2 Extraction	pH Units	5.0-9.0	9.34



## Quality Assurance

CLIENT NAME: GOLDR ASSOCIATES LTD  
 PROJECT: 21451149  
 SAMPLING SITE: Hospital

AGAT WORK ORDER: 22Z872125  
 ATTENTION TO: Keith Holmes  
 SAMPLED BY: RI

Soil Analysis															
RPT Date: Mar 18, 2022			DUPLICATE				Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE		MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Measured Value		Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

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

Antimony	3607621	3607621	<0.8	<0.8	NA	< 0.8	127%	70%	130%	95%	80%	120%	72%	70%	130%
Arsenic	3607621	3607621	1	1	NA	< 1	111%	70%	130%	96%	80%	120%	99%	70%	130%
Barium	3607621	3607621	124	126	2.2%	< 2.0	102%	70%	130%	101%	80%	120%	107%	70%	130%
Beryllium	3607621	3607621	0.5	<0.4	NA	< 0.4	96%	70%	130%	99%	80%	120%	103%	70%	130%
Boron	3607621	3607621	5	6	NA	< 5	83%	70%	130%	101%	80%	120%	101%	70%	130%
Boron (Hot Water Soluble)	3607621	3607621	0.22	0.24	NA	< 0.10	94%	60%	140%	101%	70%	130%	106%	60%	140%
Cadmium	3607621	3607621	<0.5	<0.5	NA	< 0.5	100%	70%	130%	106%	80%	120%	108%	70%	130%
Chromium	3607621	3607621	27	28	3.2%	< 5	94%	70%	130%	100%	80%	120%	104%	70%	130%
Cobalt	3607621	3607621	8.3	8.5	2.4%	< 0.5	99%	70%	130%	107%	80%	120%	106%	70%	130%
Copper	3607621	3607621	17	17	0.0%	< 1.0	94%	70%	130%	110%	80%	120%	103%	70%	130%
Lead	3607621	3607621	4	5	NA	< 1	102%	70%	130%	101%	80%	120%	103%	70%	130%
Molybdenum	3607621	3607621	<0.5	<0.5	NA	< 0.5	101%	70%	130%	105%	80%	120%	106%	70%	130%
Nickel	3607621	3607621	16	16	1.6%	< 1	92%	70%	130%	102%	80%	120%	100%	70%	130%
Selenium	3607621	3607621	<0.8	<0.8	NA	< 0.8	109%	70%	130%	105%	80%	120%	107%	70%	130%
Silver	3607621	3607621	<0.5	<0.5	NA	< 0.5	98%	70%	130%	104%	80%	120%	99%	70%	130%
Thallium	3607621	3607621	<0.5	<0.5	NA	< 0.5	103%	70%	130%	103%	80%	120%	104%	70%	130%
Uranium	3607621	3607621	0.63	0.60	NA	< 0.50	106%	70%	130%	99%	80%	120%	103%	70%	130%
Vanadium	3607621	3607621	37.3	38.9	4.0%	< 0.4	98%	70%	130%	100%	80%	120%	107%	70%	130%
Zinc	3607621	3607621	45	47	3.1%	< 5	100%	70%	130%	110%	80%	120%	118%	70%	130%
Chromium, Hexavalent	3607726	3607726	<0.2	<0.2	NA	< 0.2	94%	70%	130%	97%	80%	120%	104%	70%	130%
Cyanide, Free	3548867		<0.040	<0.040	NA	< 0.040	99%	70%	130%	102%	80%	120%	104%	70%	130%
Mercury	3607621	3607621	<0.10	<0.10	NA	< 0.10	112%	70%	130%	100%	80%	120%	104%	70%	130%
Electrical Conductivity (2:1)	3609531		0.549	0.547	0.4%	< 0.005	111%	80%	120%						
Sodium Adsorption Ratio (2:1) (Calc.)	3609531		4.62	4.63	0.3%	NA									
pH, 2:1 CaCl2 Extraction	3611905		6.47	6.76	4.4%	NA	100%	80%	120%						

Comments: NA signifies Not Applicable.

pH duplicates QA acceptance criteria was met relative as stated in Table 5-15 of Analytical Protocol document.

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

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

Electrical Conductivity (2:1)	3609556		0.327	0.336	2.7%	< 0.005	99%	80%	120%						
Sodium Adsorption Ratio (2:1) (Calc.)	3610947		17.7	17.5	1.5%	NA									

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:



*Nivine Basily*

## Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD  
PROJECT: 21451149  
SAMPLING SITE: Hospital

AGAT WORK ORDER: 22Z872125  
ATTENTION TO: Keith Holmes  
SAMPLED BY: RI

### Trace Organics Analysis

RPT Date: Mar 18, 2022			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		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) (Soil)															
Benzene	3611911		<0.02	<0.02	NA	< 0.02	83%	60%	140%	89%	60%	140%	97%	60%	140%
Toluene	3611911		<0.05	<0.05	NA	< 0.05	120%	60%	140%	93%	60%	140%	110%	60%	140%
Ethylbenzene	3611911		<0.05	<0.05	NA	< 0.05	99%	60%	140%	91%	60%	140%	112%	60%	140%
m & p-Xylene	3611911		<0.05	<0.05	NA	< 0.05	116%	60%	140%	92%	60%	140%	122%	60%	140%
o-Xylene	3611911		<0.05	<0.05	NA	< 0.05	82%	60%	140%	119%	60%	140%	95%	60%	140%
F1 (C6 - C10)	3611911		7	6	NA	< 5	94%	60%	140%	112%	60%	140%	104%	60%	140%
F2 (C10 to C16)	3607886 3607886		< 10	< 10	NA	< 10	105%	60%	140%	87%	60%	140%	71%	60%	140%
F3 (C16 to C34)	3607886 3607886		< 50	< 50	NA	< 50	106%	60%	140%	84%	60%	140%	61%	60%	140%
F4 (C34 to C50)	3607886 3607886		< 50	< 50	NA	< 50	95%	60%	140%	103%	60%	140%	80%	60%	140%
Moisture Content	3607719 3607719		14.98	13.24	12.3%	< 0.1	NA			NA			NA		
O. Reg. 153(511) - PAHs (Soil)															
Naphthalene	3607886 3607886		<0.05	<0.05	NA	< 0.05	104%	50%	140%	76%	50%	140%	72%	50%	140%
Acenaphthylene	3607886 3607886		<0.05	<0.05	NA	< 0.05	99%	50%	140%	78%	50%	140%	75%	50%	140%
Acenaphthene	3607886 3607886		<0.05	<0.05	NA	< 0.05	100%	50%	140%	81%	50%	140%	83%	50%	140%
Fluorene	3607886 3607886		<0.05	<0.05	NA	< 0.05	123%	50%	140%	102%	50%	140%	100%	50%	140%
Phenanthrene	3607886 3607886		<0.05	<0.05	NA	< 0.05	119%	50%	140%	103%	50%	140%	102%	50%	140%
Anthracene	3607886 3607886		<0.05	<0.05	NA	< 0.05	119%	50%	140%	105%	50%	140%	101%	50%	140%
Fluoranthene	3607886 3607886		<0.05	<0.05	NA	< 0.05	118%	50%	140%	112%	50%	140%	111%	50%	140%
Pyrene	3607886 3607886		<0.05	<0.05	NA	< 0.05	115%	50%	140%	109%	50%	140%	108%	50%	140%
Benz(a)anthracene	3607886 3607886		<0.05	<0.05	NA	< 0.05	124%	50%	140%	100%	50%	140%	98%	50%	140%
Chrysene	3607886 3607886		<0.05	<0.05	NA	< 0.05	125%	50%	140%	75%	50%	140%	88%	50%	140%
Benzo(b)fluoranthene	3607886 3607886		<0.05	<0.05	NA	< 0.05	123%	50%	140%	76%	50%	140%	84%	50%	140%
Benzo(k)fluoranthene	3607886 3607886		<0.05	<0.05	NA	< 0.05	99%	50%	140%	67%	50%	140%	76%	50%	140%
Benzo(a)pyrene	3607886 3607886		<0.05	<0.05	NA	< 0.05	101%	50%	140%	92%	50%	140%	98%	50%	140%
Indeno(1,2,3-cd)pyrene	3607886 3607886		<0.05	<0.05	NA	< 0.05	87%	50%	140%	71%	50%	140%	67%	50%	140%
Dibenz(a,h)anthracene	3607886 3607886		<0.05	<0.05	NA	< 0.05	102%	50%	140%	73%	50%	140%	79%	50%	140%
Benzo(g,h,i)perylene	3607886 3607886		<0.05	<0.05	NA	< 0.05	101%	50%	140%	65%	50%	140%	69%	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: \_\_\_\_\_



## Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 22Z872125

PROJECT: 21451149

ATTENTION TO: Keith Holmes

SAMPLING SITE: Hospital

SAMPLED BY: RI

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, Free	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 CaCl <sub>2</sub> Extraction	INOR-93-6075	modified from EPA 9045D, MCKEAGUE 3.11 E3137	PC TITRATE

## Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 22Z872125

PROJECT: 21451149

ATTENTION TO: Keith Holmes

SAMPLING SITE: Hospital

SAMPLED BY: RI

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 Methylnaphthalene	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	CCME Tier 1 Method	BALANCE
Benzene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
Toluene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
Ethylbenzene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
m & p-Xylene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
o-Xylene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
Xylenes (Total)	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
F1 (C6 - C10)	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/FID
F1 (C6 to C10) minus BTEX	VOL-91-5009	modified from CCME Tier 1 Method	P&T GC/FID
Toluene-d8	VOL-91-5009	modified from EPA SW-846 5030C & 8260D	(P&T)GC/MS
F2 (C10 to C16)	VOL-91-5009	modified from CCME Tier 1 Method	GC/FID
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



## Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 22Z872125

PROJECT: 21451149

ATTENTION TO: Keith Holmes

SAMPLING SITE: Hospital

SAMPLED BY: RI

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
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



# AGAT

## Laboratories

### Short Holding Time

Hold time ending: PHCs

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

### Chain of Custody Record

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

#### Report Information:

Company: Goldor  
 Contact: Keith Holmes  
 Address: \_\_\_\_\_  
 Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
 Reports to be sent to:  
 1. Email: kholmes@goldor.com  
 2. Email: ljones@goldor.com

#### Project Information:

Project: 2145 1149  
 Site Location: Hospital RI  
 Sampled By: \_\_\_\_\_  
 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: \_\_\_\_\_

#### Regulatory Requirements:

(Please check all applicable boxes)

Regulation 153/04  Excess Soils R406  Sewer Use  
 Sanitary  Storm  
 Table 3 Indicate One  
 Ind/Com  Agriculture  
 Res/Park  
 Soil Texture (Check One)  
 Coarse  CCME  
 Fine  Other  
 Indicate One

#### Is this submission for a Record of Site Condition?

Yes  No

#### Report Guideline on Certificate of Analysis

Yes  No

#### Sample Matrix Legend

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

Field Filtered - Metals, Hg, CrVI, DOC

Metals & Inorganics	Metals - CrVI, Hg, HWSB	BTEX, F1-F4 PHCs	Analyze F4G if required	PAHs	Total PCBs	VOC	Landfill Disposal Characterization TOLP:	Excess Soils SPLP Rainwater Leach	Excess Soils Characterization Package	Salt - EC/SAR	Potentially Hazardous or High Concentration (Y/N)
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/Special Instructions	Y/N
403 SA2	28/10/22	12:30 AM	3	S		
403 SA7	28/10/22	AM	3			
404 SA1	1/Nov/22	AM	3			
404 SA4	1/Nov/22	AM	3			
406 SA8	1/Nov/22	AM	3			
411 SA2	2/Nov/22	AM	3			
411 SA22	2/Nov/22	AM	2			
412 SA2	1/Nov/22	AM	3			
408 SA2	3/Nov/22	AM	3			
402 SA6	7/Nov/22	AM	3			
402 SA3	7/Nov/22	AM	3			

Samples Relinquished By (Print Name and Sign): <u>Keith Holmes</u>	Date: <u>10/11/22</u>	Time: <u>12:30</u>	Samples Received By (Print Name and Sign): <u>C. Quinn</u>	Date: <u>22/03/10</u>	Time: <u>13h55</u>
Samples Relinquished By (Print Name and Sign): <u>CG to Pulatorov</u>	Date: <u>22/03/10</u>	Time: <u>16h00</u>	Samples Received By (Print Name and Sign):	Date:	Time:
Samples Relinquished By (Print Name and Sign):	Date:	Time:	Samples Received By (Print Name and Sign):	Date:	Time:

**Laboratory Use Only**  
 Work Order #: 222872125  
 Cooler Quantity: one-melted ice  
 Arrival Temperatures: 14.0 | 13.9 | 14.0  
 Custody Seal Intact:  Yes  No  N/A  
 Notes: 2 Large Ice Pakes

**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



# AGAT

## Laboratories

LT → 2.1 2.2 2.4  
2.0 3.1 3.9

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

### Laboratory Use Only

Work Order #: 227872125  
Cooler Quantity: one-melted ice  
Arrival Temperatures: 14.0/13.9/14.0  
Custody Seal Intact:  Yes  No  N/A  
Notes: 2 large Ice Pails

### Chain of Custody Record

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

#### Report Information:

Company: \_\_\_\_\_  
Contact: As per Page 1  
Address: \_\_\_\_\_  
Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
Reports to be sent to:  
1. Email: \_\_\_\_\_  
2. Email: \_\_\_\_\_

#### Regulatory Requirements:

(Please check all applicable boxes)

Regulation 153/04  Excess Soils R406  Sewer Use  
 Sand/Com  Sanitary  Storm  
 Parks/Park  Agriculture  Regulation 558  Prov. Water Quality Objectives (PWQO)  
 Agriculture  CCME  Other  
Soil Texture (Check One)  Coarse  Fine  
Indicate One

#### Project Information:

Project: 21451149  
Site Location: \_\_\_\_\_  
Sampled By: \_\_\_\_\_  
AGAT Quote #: \_\_\_\_\_ PO: \_\_\_\_\_  
Please note: if quotation number is not provided, client will be billed full price for analysis.

#### 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): \_\_\_\_\_

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

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

#### 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

Field Filtered - Metals, Hg, CrVI, DOC

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Y / N	Metals & Inorganics 153 Complete	Reg 153 Metals - <input type="checkbox"/> CrVI, <input type="checkbox"/> Hg, <input type="checkbox"/> HWSB BTEX, F1-F4 PHCs Analyze F4G if required <input type="checkbox"/> Yes <input type="checkbox"/> No	PAHs	PCBs	VOC	O. Reg 558 Landfill Disposal Characterization TCLP: TCLP: <input type="checkbox"/> M&I <input type="checkbox"/> VOCs <input type="checkbox"/> ABNs <input type="checkbox"/> BtP <input type="checkbox"/> PCBs Excess Soils SPLP Rainwater Leach SPLP: <input type="checkbox"/> Metals <input type="checkbox"/> VOCs <input type="checkbox"/> SVOCs Excess Soils Characterization Package pH, IC/PMS Metals, BTEX, F1-F4 Salt - EC/SAR	O. Reg 406	Potentially Hazardous or High Concentration (Y/N)
407-SA3	7/10/11	12 AM	3	S			X	X	X					
410-SA2	↓	↓	↓	↓			X	X	X					
410-SA5							X	X	X					

Samples Relinquished By (Print Name and Sign): <u>C. G. W. [Signature]</u>	Date: _____	Time: _____	Samples Received By (Print Name and Sign): <u>C. G. W. [Signature]</u>	Date: <u>22/03/10</u>	Time: <u>13h55</u>
Samples Relinquished By (Print Name and Sign): <u>C. G. W. [Signature]</u>	Date: <u>22/03/10</u>	Time: <u>16h00</u>	Samples Received By (Print Name and Sign):	Date:	Time:
Samples Relinquished By (Print Name and Sign):	Date:	Time:	Samples Received By (Print Name and Sign):	Date:	Time:

Page 2 of 2  
N<sup>o</sup>: **T 126464**



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

ATTENTION TO: Keith Holmes

PROJECT: 21451149

AGAT WORK ORDER: 22Z880712

SOIL ANALYSIS REVIEWED BY: Amanjot Bhela, Inorganic Lab Manager

TRACE ORGANICS REVIEWED BY: Pinkal Patel, Report Reviewer

DATE REPORTED: Apr 11, 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.





## Certificate of Analysis

AGAT WORK ORDER: 22Z880712

PROJECT: 21451149

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  
SAMPLING SITE: TOH

ATTENTION TO: Keith Holmes  
SAMPLED BY: JS

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

DATE RECEIVED: 2022-04-04

DATE REPORTED: 2022-04-11

Parameter	Unit	SAMPLE DESCRIPTION:											
		G / S		RDL		22-109 SA02	22-109 SA03	22-111 SA01B	22-111 DUP01	22-111 SA03	22-112 SA01	22-113 SA02A	22-113 SA04A
						Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
						2022-03-29 12:00	2022-03-29 12:00	2022-03-29 12:00	2022-03-29 12:00	2022-03-29 12:00	2022-03-24 12:00	2022-03-30 12:00	2022-03-30 12:00
				3714055	3714059	3714061	3714064	3714065	3714066	3714067	3714070		
Antimony	µg/g	7.5	0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	
Arsenic	µg/g	18	1	2	<1	8	8	3	4	3	1		
Barium	µg/g	390	2.0	151	45.3	87.4	81.3	514	110	96.0	62.2		
Beryllium	µg/g	4	0.4	<0.4	<0.4	<0.4	<0.4	0.6	0.5	<0.4	<0.4		
Boron	µg/g	120	5	6	6	8	8	<5	<5	13	6		
Boron (Hot Water Soluble)	µg/g	1.5	0.10	0.15	<0.10	0.31	0.30	<0.10	0.33	0.20	<0.10		
Cadmium	µg/g	1.2	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
Chromium	µg/g	160	5	28	13	19	26	120	35	21	16		
Cobalt	µg/g	22	0.5	8.1	5.0	8.6	8.3	25.0	8.2	8.8	7.8		
Copper	µg/g	140	1.0	16.0	8.9	22.2	16.1	55.0	16.9	18.8	13.1		
Lead	µg/g	120	1	16	3	28	23	8	70	9	4		
Molybdenum	µg/g	6.9	0.5	0.7	<0.5	5.6	4.9	<0.5	0.8	1.0	<0.5		
Nickel	µg/g	100	1	16	8	17	17	66	20	16	11		
Selenium	µg/g	2.4	0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8		
Silver	µg/g	20	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
Thallium	µg/g	1	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
Uranium	µg/g	23	0.50	0.68	0.77	0.70	0.66	0.81	1.19	0.60	<0.50		
Vanadium	µg/g	86	0.4	35.7	23.6	43.1	34.5	113	42.6	23.0	30.4		
Zinc	µg/g	340	5	42	18	45	53	137	72	28	26		
Chromium, Hexavalent	µg/g	8	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		
Cyanide, Free	µg/g	0.051	0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040		
Mercury	µg/g	0.27	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10		
Electrical Conductivity (2:1)	mS/cm	0.7	0.005	0.407	0.343	0.411	0.436	1.20	0.203	0.202	0.810		
Sodium Adsorption Ratio (2:1) (Calc.)	N/A	5	N/A	1.89	3.19	0.204	0.192	8.32	0.127	0.571	11.5		
pH, 2:1 CaCl2 Extraction	pH Units	5.0-9.0	NA	11.1	8.00	7.72	9.69	8.12	7.24	7.36	7.48		

Certified By:

*Anamjot Bhela*  




## Certificate of Analysis

AGAT WORK ORDER: 22Z880712

PROJECT: 21451149

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

SAMPLING SITE: TOH

ATTENTION TO: Keith Holmes

SAMPLED BY: JS

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

DATE RECEIVED: 2022-04-04

DATE REPORTED: 2022-04-11

Parameter	Unit	SAMPLE DESCRIPTION:		22-301 SA2	22-301 SA6
		G / S	RDL	3714071	3714072
Antimony	µg/g	7.5	0.8	<0.8	<0.8
Arsenic	µg/g	18	1	3	1
Barium	µg/g	390	2.0	72.9	90.0
Beryllium	µg/g	4	0.4	<0.4	<0.4
Boron	µg/g	120	5	8	7
Boron (Hot Water Soluble)	µg/g	1.5	0.10	<0.10	<0.10
Cadmium	µg/g	1.2	0.5	<0.5	<0.5
Chromium	µg/g	160	5	24	15
Cobalt	µg/g	22	0.5	8.3	6.9
Copper	µg/g	140	1.0	13.7	11.0
Lead	µg/g	120	1	6	4
Molybdenum	µg/g	6.9	0.5	<0.5	<0.5
Nickel	µg/g	100	1	15	10
Selenium	µg/g	2.4	0.8	<0.8	<0.8
Silver	µg/g	20	0.5	<0.5	<0.5
Thallium	µg/g	1	0.5	<0.5	<0.5
Uranium	µg/g	23	0.50	0.56	0.57
Vanadium	µg/g	86	0.4	32.1	26.0
Zinc	µg/g	340	5	29	24
Chromium, Hexavalent	µg/g	8	0.2	<0.2	<0.2
Cyanide, Free	µg/g	0.051	0.040	<0.040	<0.040
Mercury	µg/g	0.27	0.10	<0.10	<0.10
Electrical Conductivity (2:1)	mS/cm	0.7	0.005	0.216	0.125
Sodium Adsorption Ratio (2:1) (Calc.)	N/A	5	N/A	0.095	0.094
pH, 2:1 CaCl2 Extraction	pH Units	5.0-9.0	NA	7.36	7.33

Certified By:





**AGAT** Laboratories

# Certificate of Analysis

AGAT WORK ORDER: 22Z880712

PROJECT: 21451149

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

ATTENTION TO: Keith Holmes

SAMPLING SITE: TOH

SAMPLED BY: JS

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

DATE RECEIVED: 2022-04-04

DATE REPORTED: 2022-04-11

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.  
3714055-3714072 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:

*Anamjot Bhela*  




## Certificate of Analysis

AGAT WORK ORDER: 22Z880712

PROJECT: 21451149

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

ATTENTION TO: Keith Holmes

SAMPLING SITE: TOH

SAMPLED BY: JS

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

DATE RECEIVED: 2022-04-04

DATE REPORTED: 2022-04-11

Parameter	Unit	G / S	RDL	SAMPLE DESCRIPTION:		22-109 SA02	22-109 SA03	22-111 SA01B	22-111 DUP01	22-111 SA03	22-112 SA01	22-113 SA02A	22-113 SA04A
				Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil		
DATE SAMPLED:		2022-03-29	2022-03-29	2022-03-29	2022-03-29	2022-03-29	2022-03-24	2022-03-30	2022-03-30	2022-03-30	2022-03-30	2022-03-30	2022-03-30
		12:00	12:00	12:00	12:00	12:00	12:00	12:00	12:00	12:00	12:00	12:00	12:00
		3714055	3714059	3714061	3714064	3714065	3714066	3714067	3714070	3714070	3714070	3714070	3714070
Naphthalene	µg/g	0.6	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthylene	µg/g	0.15	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthene	µg/g	7.9	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fluorene	µg/g	62	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Phenanthrene	µg/g	6.2	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Anthracene	µg/g	0.67	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fluoranthene	µg/g	0.69	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Pyrene	µg/g	78	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benz(a)anthracene	µg/g	0.5	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chrysene	µg/g	7	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(b)fluoranthene	µg/g	0.78	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(k)fluoranthene	µg/g	0.78	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene	µg/g	0.3	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<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	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<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	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1 and 2 Methylnaphthalene	µg/g	0.99	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Moisture Content	%		0.1	9.2	10.4	5.3	6.5	13.8	24.5	9.1	14.0		
Surrogate	Unit	Acceptable Limits											
Naphthalene-d8	%	50-140		85	96	91	70	94	96	96	96	96	96
Acridine-d9	%	50-140		74	85	71	85	75	85	85	85	85	85
Terphenyl-d14	%	50-140		96	71	82	90	82	70	71	72		

Certified By:

*Jinkal Jata*



## Certificate of Analysis

AGAT WORK ORDER: 22Z880712

PROJECT: 21451149

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CLIENT NAME: GOLDER ASSOCIATES LTD

SAMPLING SITE: TOH

ATTENTION TO: Keith Holmes

SAMPLED BY: JS

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

DATE RECEIVED: 2022-04-04

DATE REPORTED: 2022-04-11

Parameter	Unit	SAMPLE DESCRIPTION:		22-301 SA2	22-301 SA6
		G / S	RDL	3714071	3714072
Naphthalene	µg/g	0.6	0.05	<0.05	<0.05
Acenaphthylene	µg/g	0.15	0.05	<0.05	<0.05
Acenaphthene	µg/g	7.9	0.05	<0.05	<0.05
Fluorene	µg/g	62	0.05	<0.05	<0.05
Phenanthrene	µg/g	6.2	0.05	<0.05	<0.05
Anthracene	µg/g	0.67	0.05	<0.05	<0.05
Fluoranthene	µg/g	0.69	0.05	<0.05	<0.05
Pyrene	µg/g	78	0.05	<0.05	<0.05
Benz(a)anthracene	µg/g	0.5	0.05	<0.05	<0.05
Chrysene	µg/g	7	0.05	<0.05	<0.05
Benzo(b)fluoranthene	µg/g	0.78	0.05	<0.05	<0.05
Benzo(k)fluoranthene	µg/g	0.78	0.05	<0.05	<0.05
Benzo(a)pyrene	µg/g	0.3	0.05	<0.05	<0.05
Indeno(1,2,3-cd)pyrene	µg/g	0.38	0.05	<0.05	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	0.05	<0.05	<0.05
Benzo(g,h,i)perylene	µg/g	6.6	0.05	<0.05	<0.05
1 and 2 Methyl naphthalene	µg/g	0.99	0.05	<0.05	<0.05
Moisture Content	%		0.1	13.2	10.1
Surrogate	Unit	Acceptable Limits			
Naphthalene-d8	%	50-140		90	96
Acridine-d9	%	50-140		72	85
Terphenyl-d14	%	50-140		84	71

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

3714055-3714072 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:



## Certificate of Analysis

AGAT WORK ORDER: 22Z880712

PROJECT: 21451149

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CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE: TOH

SAMPLED BY: JS

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

DATE RECEIVED: 2022-04-04

DATE REPORTED: 2022-04-11

Parameter	Unit	SAMPLE DESCRIPTION:									
		G / S	RDL	22-109 SA02	22-109 SA03	22-111 SA01B	22-111 DUP01	22-111 SA03	22-112 SA01	22-113 SA02A	22-113 SA04A
SAMPLE TYPE:		Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
DATE SAMPLED:		2022-03-29	2022-03-29	2022-03-29	2022-03-29	2022-03-29	2022-03-29	2022-03-29	2022-03-24	2022-03-30	2022-03-30
		12:00	12:00	12:00	12:00	12:00	12:00	12:00	12:00	12:00	12:00
		3714055	3714059	3714061	3714064	3714065	3714066	3714067	3714070		
Benzene	µg/g	0.21	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Toluene	µg/g	2.3	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	µg/g	2	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
m & p-Xylene	µg/g		0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
o-Xylene	µg/g		0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Xylenes (Total)	µg/g	3.1	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
F1 (C6 - C10)	µg/g	55	5	<5	<5	<5	<5	<5	<5	<5	<5
F1 (C6 to C10) minus BTEX	µg/g	55	5	<5	<5	<5	<5	<5	<5	<5	<5
F2 (C10 to C16)	µg/g	98	10	<10	<10	<10	<10	<10	<10	<10	<10
F2 (C10 to C16) minus Naphthalene	µg/g		10	<10	<10	<10	<10	<10	<10	<10	<10
F3 (C16 to C34)	µg/g	300	50	<50	<50	97	94	<50	<50	<50	<50
F3 (C16 to C34) minus PAHs	µg/g		50	<50	<50	97	94	<50	<50	<50	<50
F4 (C34 to C50)	µg/g	2800	50	<50	<50	190	190	<50	<50	<50	<50
Gravimetric Heavy Hydrocarbons	µg/g	2800	50	NA	NA	NA	NA	NA	NA	NA	NA
Moisture Content	%		0.1	9.2	10.4	5.3	6.5	13.8	24.5	9.1	14.0
Surrogate	Unit	Acceptable Limits									
Toluene-d8	% Recovery	60-140	113	102	103	100	99	91	102	103	
Terphenyl	%	60-140	74	69	82	89	63	95	64	81	

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PROJECT: 21451149

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CLIENT NAME: GOLDER ASSOCIATES LTD

SAMPLING SITE: TOH

ATTENTION TO: Keith Holmes

SAMPLED BY: JS

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

DATE RECEIVED: 2022-04-04

DATE REPORTED: 2022-04-11

Parameter	Unit	SAMPLE DESCRIPTION:		22-301 SA2	22-301 SA6
		G / S	RDL	3714071	3714072
Benzene	µg/g	0.21	0.02	<0.02	<0.02
Toluene	µg/g	2.3	0.05	<0.05	<0.05
Ethylbenzene	µg/g	2	0.05	<0.05	<0.05
m & p-Xylene	µg/g		0.05	<0.05	<0.05
o-Xylene	µg/g		0.05	<0.05	<0.05
Xylenes (Total)	µg/g	3.1	0.05	<0.05	<0.05
F1 (C6 - C10)	µg/g	55	5	<5	<5
F1 (C6 to C10) minus BTEX	µg/g	55	5	<5	<5
F2 (C10 to C16)	µg/g	98	10	<10	<10
F2 (C10 to C16) minus Naphthalene	µg/g		10	<10	<10
F3 (C16 to C34)	µg/g	300	50	<50	<50
F3 (C16 to C34) minus PAHs	µg/g		50	<50	<50
F4 (C34 to C50)	µg/g	2800	50	<50	<50
Gravimetric Heavy Hydrocarbons	µg/g	2800	50	NA	NA
Moisture Content	%		0.1	13.2	10.1
Surrogate	Unit	Acceptable Limits			
Toluene-d8	% Recovery	60-140	97	101	
Terphenyl	%	60-140	77	71	

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PROJECT: 21451149

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CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE: TOH

SAMPLED BY: JS

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

DATE RECEIVED: 2022-04-04

DATE REPORTED: 2022-04-11

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

3714055-3714072 Results are based on sample dry weight.  
The C6-C10 fraction is calculated using toluene response factor.  
Xylenes total is a calculated parameter. The calculated value is the sum of m&p-Xylene and o-Xylene.  
C6-C10 (F1 minus BTEX) is a calculated parameter. The calculated value is F1 minus BTEX.  
The calculated parameters are non-accredited. The parameters that are components of the calculation are accredited.  
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and 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:





**Exceedance Summary**

AGAT WORK ORDER: 22Z880712

PROJECT: 21451149

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CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
3714055	22-109 SA02	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	pH, 2:1 CaCl2 Extraction	pH Units	5.0-9.0	11.1
3714064	22-111 DUP01	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	pH, 2:1 CaCl2 Extraction	pH Units	5.0-9.0	9.69
3714065	22-111 SA03	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Barium	µg/g	390	514
3714065	22-111 SA03	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Cobalt	µg/g	22	25.0
3714065	22-111 SA03	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Electrical Conductivity (2:1)	mS/cm	0.7	1.20
3714065	22-111 SA03	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Sodium Adsorption Ratio (2:1) (Calc.)	N/A	5	8.32
3714065	22-111 SA03	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Vanadium	µg/g	86	113
3714070	22-113 SA04A	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Electrical Conductivity (2:1)	mS/cm	0.7	0.810
3714070	22-113 SA04A	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Sodium Adsorption Ratio (2:1) (Calc.)	N/A	5	11.5

## Quality Assurance

CLIENT NAME: GOLDR ASSOCIATES LTD  
 PROJECT: 21451149  
 SAMPLING SITE:TOH

AGAT WORK ORDER: 22Z880712  
 ATTENTION TO: Keith Holmes  
 SAMPLED BY:JS

Soil Analysis															
RPT Date: Apr 11, 2022			DUPLICATE				Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE		MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Measured Value		Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

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

Antimony	3714055	3714055	<0.8	<0.8	NA	< 0.8	124%	70%	130%	88%	80%	120%	72%	70%	130%
Arsenic	3714055	3714055	2	2	NA	< 1	129%	70%	130%	93%	80%	120%	101%	70%	130%
Barium	3714055	3714055	151	154	2.0%	< 2.0	108%	70%	130%	96%	80%	120%	105%	70%	130%
Beryllium	3714055	3714055	<0.4	<0.4	NA	< 0.4	94%	70%	130%	98%	80%	120%	83%	70%	130%
Boron	3714055	3714055	6	7	NA	< 5	75%	70%	130%	97%	80%	120%	76%	70%	130%
Boron (Hot Water Soluble)	3710331		0.30	0.31	NA	< 0.10	98%	60%	140%	102%	70%	130%	103%	60%	140%
Cadmium	3714055	3714055	<0.5	<0.5	NA	< 0.5	114%	70%	130%	93%	80%	120%	96%	70%	130%
Chromium	3714055	3714055	28	29	3.5%	< 5	109%	70%	130%	101%	80%	120%	94%	70%	130%
Cobalt	3714055	3714055	8.1	8.3	2.4%	< 0.5	110%	70%	130%	95%	80%	120%	100%	70%	130%
Copper	3714055	3714055	16.0	16.8	4.9%	< 1.0	106%	70%	130%	99%	80%	120%	100%	70%	130%
Lead	3714055	3714055	16	16	0.0%	< 1	109%	70%	130%	94%	80%	120%	85%	70%	130%
Molybdenum	3714055	3714055	0.7	0.7	NA	< 0.5	124%	70%	130%	99%	80%	120%	108%	70%	130%
Nickel	3714055	3714055	16	16	0.0%	< 1	114%	70%	130%	96%	80%	120%	98%	70%	130%
Selenium	3714055	3714055	<0.8	<0.8	NA	< 0.8	90%	70%	130%	94%	80%	120%	103%	70%	130%
Silver	3714055	3714055	<0.5	<0.5	NA	< 0.5	106%	70%	130%	97%	80%	120%	91%	70%	130%
Thallium	3714055	3714055	<0.5	<0.5	NA	< 0.5	109%	70%	130%	97%	80%	120%	95%	70%	130%
Uranium	3714055	3714055	0.68	0.69	NA	< 0.50	120%	70%	130%	95%	80%	120%	99%	70%	130%
Vanadium	3714055	3714055	35.7	36.0	0.8%	< 0.4	123%	70%	130%	97%	80%	120%	104%	70%	130%
Zinc	3714055	3714055	42	43	2.4%	< 5	116%	70%	130%	97%	80%	120%	100%	70%	130%
Chromium, Hexavalent	3596705		<0.2	<0.2	NA	< 0.2	102%	70%	130%	104%	80%	120%	100%	70%	130%
Cyanide, Free	3711947		<0.040	<0.040	NA	< 0.040	91%	70%	130%	106%	80%	120%	100%	70%	130%
Mercury	3714055	3714055	<0.10	<0.10	NA	< 0.10	119%	70%	130%	82%	80%	120%	99%	70%	130%
Electrical Conductivity (2:1)	3710331		0.265	0.269	1.5%	< 0.005	102%	80%	120%	NA			NA		
Sodium Adsorption Ratio (2:1) (Calc.)	3710331		1.02	1.02	0.0%	N/A	NA			NA			NA		
pH, 2:1 CaCl2 Extraction	3713546		6.50	6.78	4.2%	NA	99%	80%	120%	NA			NA		

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.

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

Boron (Hot Water Soluble)	3711729		0.60	0.53	12.2%	< 0.10	88%	60%	140%	104%	70%	130%	98%	60%	140%
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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:




## Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD  
 PROJECT: 21451149  
 SAMPLING SITE: TOH

AGAT WORK ORDER: 22Z880712  
 ATTENTION TO: Keith Holmes  
 SAMPLED BY: JS

### Trace Organics Analysis

RPT Date: Apr 11, 2022			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		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) (Soil)**

Benzene	3713621		<0.02	<0.02	NA	< 0.02	101%	60%	140%	107%	60%	140%	92%	60%	140%
Toluene	3713621		<0.05	<0.05	NA	< 0.05	106%	60%	140%	98%	60%	140%	96%	60%	140%
Ethylbenzene	3713621		<0.05	<0.05	NA	< 0.05	121%	60%	140%	112%	60%	140%	93%	60%	140%
m & p-Xylene	3713621		<0.05	<0.05	NA	< 0.05	102%	60%	140%	95%	60%	140%	95%	60%	140%
o-Xylene	3713621		<0.05	<0.05	NA	< 0.05	91%	60%	140%	95%	60%	140%	101%	60%	140%
F1 (C6 - C10)	3713621		<5	<5	NA	< 5	93%	60%	140%	83%	60%	140%	81%	60%	140%
F2 (C10 to C16)	3716096		58	73	22.9%	< 10	100%	60%	140%	125%	60%	140%	64%	60%	140%
F3 (C16 to C34)	3716096		< 50	< 50	NA	< 50	107%	60%	140%	102%	60%	140%	82%	60%	140%
F4 (C34 to C50)	3716096		< 50	< 50	NA	< 50	92%	60%	140%	111%	60%	140%	116%	60%	140%

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

Naphthalene	3722129		< 0.05	< 0.05	NA	< 0.05	85%	50%	140%	74%	50%	140%	89%	50%	140%
Acenaphthylene	3722129		< 0.05	< 0.05	NA	< 0.05	74%	50%	140%	85%	50%	140%	74%	50%	140%
Acenaphthene	3722129		< 0.05	< 0.05	NA	< 0.05	96%	50%	140%	96%	50%	140%	85%	50%	140%
Fluorene	3722129		< 0.05	< 0.05	NA	< 0.05	85%	50%	140%	81%	50%	140%	96%	50%	140%
Phenanthrene	3722129		< 0.05	< 0.05	NA	< 0.05	71%	50%	140%	85%	50%	140%	81%	50%	140%
Anthracene	3722129		< 0.05	< 0.05	NA	< 0.05	85%	50%	140%	96%	50%	140%	82%	50%	140%
Fluoranthene	3722129		< 0.05	< 0.05	NA	< 0.05	92%	50%	140%	67%	50%	140%	96%	50%	140%
Pyrene	3722129		< 0.05	< 0.05	NA	< 0.05	71%	50%	140%	85%	50%	140%	83%	50%	140%
Benz(a)anthracene	3722129		< 0.05	< 0.05	NA	< 0.05	82%	50%	140%	78%	50%	140%	82%	50%	140%
Chrysene	3722129		< 0.05	< 0.05	NA	< 0.05	90%	50%	140%	95%	50%	140%	81%	50%	140%
Benzo(b)fluoranthene	3722129		< 0.05	< 0.05	NA	< 0.05	93%	50%	140%	90%	50%	140%	85%	50%	140%
Benzo(k)fluoranthene	3722129		< 0.05	< 0.05	NA	< 0.05	82%	50%	140%	72%	50%	140%	92%	50%	140%
Benzo(a)pyrene	3722129		< 0.05	< 0.05	NA	< 0.05	71%	50%	140%	81%	50%	140%	66%	50%	140%
Indeno(1,2,3-cd)pyrene	3722129		< 0.05	< 0.05	NA	< 0.05	74%	50%	140%	82%	50%	140%	84%	50%	140%
Dibenz(a,h)anthracene	3722129		< 0.05	< 0.05	NA	< 0.05	85%	50%	140%	93%	50%	140%	75%	50%	140%
Benzo(g,h,i)perylene	3722129		< 0.05	< 0.05	NA	< 0.05	72%	50%	140%	94%	50%	140%	95%	50%	140%

Certified By: \_\_\_\_\_

*Jinkal Patel*



## Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD  
PROJECT: 21451149  
SAMPLING SITE:TOH

AGAT WORK ORDER: 22Z880712  
ATTENTION TO: Keith Holmes  
SAMPLED BY:JS

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, Free	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 CaCl <sub>2</sub> Extraction	INOR-93-6075	modified from EPA 9045D, MCKEAGUE 3.11 E3137	PC TITRATE



## Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD  
 PROJECT: 21451149  
 SAMPLING SITE:TOH

AGAT WORK ORDER: 22Z880712  
 ATTENTION TO: Keith Holmes  
 SAMPLED BY:JS

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
Benzene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
Toluene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
Ethylbenzene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
m & p-Xylene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
o-Xylene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
Xylenes (Total)	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
F1 (C6 - C10)	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/FID
F1 (C6 to C10) minus BTEX	VOL-91-5009	modified from CCME Tier 1 Method	P&T GC/FID
Toluene-d8	VOL-91-5009	modified from EPA SW-846 5030C & 8260D	(P&T)GC/MS
F2 (C10 to C16)	VOL-91-5009	modified from CCME Tier 1 Method	GC/FID
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



## Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD  
PROJECT: 21451149  
SAMPLING SITE:TOH

AGAT WORK ORDER: 22Z880712  
ATTENTION TO: Keith Holmes  
SAMPLED BY:JS

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
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

### Laboratory Use Only

Work Order #: 227890712

Cooler Quantity: one-no ice/pack

Arrival Temperatures: 12.5 12.3 12.6  
11.9 9.9 10.8

Custody Seal Intact:  Yes  No  N/A

Notes:

## Chain of Custody Record

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

### Report Information:

Company: Golder  
Contact: Keith Holmes  
Address: \_\_\_\_\_  
Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
Reports to be sent to:  
1. Email: kholmes@golder.com  
2. Email: \_\_\_\_\_

### Regulatory Requirements:

(Please check all applicable boxes)

Regulation 153/04  Excess Soils R406  Sewer Use  
 Ind/Com  Sanitary  Storm  
Table 3 Indicate One Table \_\_\_\_\_ Indicate One  
 Res/Park  Agriculture Region \_\_\_\_\_  
 Agriculture  Regulation 558  Prov. Water Quality Objectives (PWQO)  
Soil Texture (Check One)  CCME  Other  
 Coarse  Fine Indicate One  
 Fine

### Project Information:

Project: 21451149  
Site Location: 733 ToH  
Sampled By: \_\_\_\_\_  
AGAT Quote #: \_\_\_\_\_ PO: 21451149  
Please note: if quotation number is not provided, client will be billed full price for analysis.

### Is this submission for a Record of Site Condition?

Yes  No

### Report Guideline on Certificate of Analysis

Yes  No

### 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

Field Filtered - Metals, Hg, CrVI, DOC

O. Reg 153

Metals & Inorganics SS (on tick)  
Metals -  CrVI,  Hg,  HWSB  
BTEX, F1-F4 PHCs  
Analyze F4G if required  Yes  No

PAHs

PCBs

VOC

O. Reg 558

Landfill Disposal Characterization TCLP:  
TCLP:  M&M  VOCs  ABNs  B(a)P  PCBs

Excess Soils SPLP Rainwater Leach

SPLP:  Metals  VOCs  SVOCs

Excess Soils Characterization Package  
PH, ICPMS Metals, BTEX, F1-F4

Salt - EC/SAR

Potentially Hazardous or High Concentration (Y/N)

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Y/N	Metals & Inorganics	Metals - CrVI, Hg, HWSB	BTEX, F1-F4 PHCs	Analyze F4G if required	PAHs	PCBs	VOC	Landfill Disposal Characterization TCLP	Excess Soils SPLP Rainwater Leach	SPLP: Metals, VOCs, SVOCs	Excess Soils Characterization Package	PH, ICPMS Metals, BTEX, F1-F4	Salt - EC/SAR	Potentially Hazardous or High Concentration (Y/N)
<del>22-109 SA02</del>	22-109 SA02	29/03/12	100	AM PM	3	S														
	22-109 SA05	"		AM PM	3															
	22-111 SA01B	29/03/12		AM PM	4															
	22-111 SA01	"		AM PM	4															
	22-111 SA03	"		AM PM	4															
	22-112 SA01	24/03/12		AM PM	3															
	22-113 SA02A	30/03/12		AM PM	3															
	22-113 SA04A	"		AM PM	4															
	22-301 SA2	18/03/12		AM PM	3															
	22-301 SA6	"		AM PM	3															
				AM PM																

Samples Relinquished By (Print Name and Sign): <u>Keith Holmes</u>	Date: <u>4/04/12</u>	Time: <u>10:30</u>	Samples Received By (Print Name and Sign): <u>C. G. ...</u>	Date: <u>01/04/12</u>	Time: <u>15h15</u>
Samples Relinquished By (Print Name and Sign): <u>CG to ...</u>	Date: <u>04/04/12</u>	Time: <u>16h00</u>	Samples Received By (Print Name and Sign): <u>...</u>	Date:	Time:
Samples Relinquished By (Print Name and Sign):	Date:	Time:	Samples Received By (Print Name and Sign):	Date:	Time:

No: **T 128588**



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

ATTENTION TO: Keith Holmes

PROJECT: TOH -

AGAT WORK ORDER: 22Z884672

SOIL ANALYSIS REVIEWED BY: Jacky Zhu, Spectroscopy Technician

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

DATE REPORTED: Apr 25, 2022

PAGES (INCLUDING COVER): 13

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.





## Certificate of Analysis

AGAT WORK ORDER: 22Z884672

PROJECT: TOH -

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

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2022-04-14

DATE REPORTED: 2022-04-25

Parameter	Unit	SAMPLE DESCRIPTION:		22-310 SA02	22-303 SA02
		G / S	RDL	3754498	3754499
Antimony	µg/g	7.5	0.8	<0.8	<0.8
Arsenic	µg/g	18	1	2	2
Barium	µg/g	390	2.0	446	680
Beryllium	µg/g	4	0.4	0.8	0.8
Boron	µg/g	120	5	<5	<5
Boron (Hot Water Soluble)	µg/g	1.5	0.10	<0.10	<0.10
Cadmium	µg/g	1.2	0.5	<0.5	<0.5
Chromium	µg/g	160	5	131	142
Cobalt	µg/g	22	0.5	27.3	30.0
Copper	µg/g	140	1.0	59.6	61.0
Lead	µg/g	120	1	8	9
Molybdenum	µg/g	6.9	0.5	<0.5	<0.5
Nickel	µg/g	100	1	73	77
Selenium	µg/g	2.4	0.8	<0.8	<0.8
Silver	µg/g	20	0.5	<0.5	<0.5
Thallium	µg/g	1	0.5	0.6	0.6
Uranium	µg/g	23	0.50	0.86	0.72
Vanadium	µg/g	86	0.4	131	138
Zinc	µg/g	340	5	164	167
Chromium, Hexavalent	µg/g	8	0.2	<0.2	<0.2
Cyanide, Free	µg/g	0.051	0.040	<0.040	<0.040
Mercury	µg/g	0.27	0.10	<0.10	<0.10
Electrical Conductivity (2:1)	mS/cm	0.7	0.005	0.101	0.103
Sodium Adsorption Ratio (2:1) (Calc.)	N/A	5	N/A	0.493	0.318
pH, 2:1 CaCl2 Extraction	pH Units	5.0-9.0	NA	6.68	6.66

Certified By:





**AGAT** Laboratories

# Certificate of Analysis

AGAT WORK ORDER: 22Z884672

PROJECT: TOH -

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

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2022-04-14

DATE REPORTED: 2022-04-25

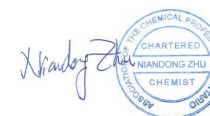
Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Coarse Textured Soils

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.

3754498-3754499 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:





## Certificate of Analysis

AGAT WORK ORDER: 22Z884672

PROJECT: TOH -

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

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2022-04-14

DATE REPORTED: 2022-04-25

Parameter	Unit	SAMPLE DESCRIPTION:		22-310 SA02	22-303 SA02
		G / S	RDL	3754498	3754499
Naphthalene	µg/g	0.6	0.05	<0.05	<0.05
Acenaphthylene	µg/g	0.15	0.05	<0.05	<0.05
Acenaphthene	µg/g	7.9	0.05	<0.05	<0.05
Fluorene	µg/g	62	0.05	<0.05	<0.05
Phenanthrene	µg/g	6.2	0.05	<0.05	<0.05
Anthracene	µg/g	0.67	0.05	<0.05	<0.05
Fluoranthene	µg/g	0.69	0.05	<0.05	<0.05
Pyrene	µg/g	78	0.05	<0.05	<0.05
Benz(a)anthracene	µg/g	0.5	0.05	<0.05	<0.05
Chrysene	µg/g	7	0.05	<0.05	<0.05
Benzo(b)fluoranthene	µg/g	0.78	0.05	<0.05	<0.05
Benzo(k)fluoranthene	µg/g	0.78	0.05	<0.05	<0.05
Benzo(a)pyrene	µg/g	0.3	0.05	<0.05	<0.05
Indeno(1,2,3-cd)pyrene	µg/g	0.38	0.05	<0.05	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	0.05	<0.05	<0.05
Benzo(g,h,i)perylene	µg/g	6.6	0.05	<0.05	<0.05
1 and 2 Methyl naphthalene	µg/g	0.99	0.05	<0.05	<0.05
Moisture Content	%		0.1	28.5	32.9
Surrogate	Unit	Acceptable Limits			
Naphthalene-d8	%		50-140	72	76
Acridine-d9	%		50-140	95	99
Terphenyl-d14	%		50-140	104	76

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

3754498-3754499 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:



## Certificate of Analysis

AGAT WORK ORDER: 22Z884672

PROJECT: TOH -

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

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2022-04-14

DATE REPORTED: 2022-04-25

Parameter	Unit	SAMPLE DESCRIPTION:		22-310 SA02	22-303 SA02
		G / S	RDL	3754498	3754499
Benzene	µg/g	0.21	0.02	<0.02	<0.02
Toluene	µg/g	2.3	0.05	<0.05	<0.05
Ethylbenzene	µg/g	2	0.05	<0.05	<0.05
m & p-Xylene	µg/g		0.05	<0.05	<0.05
o-Xylene	µg/g		0.05	<0.05	<0.05
Xylenes (Total)	µg/g	3.1	0.05	<0.05	<0.05
F1 (C6 - C10)	µg/g	55	5	<5	<5
F1 (C6 to C10) minus BTEX	µg/g	55	5	<5	<5
F2 (C10 to C16)	µg/g	98	10	<10	<10
F2 (C10 to C16) minus Naphthalene	µg/g		10	<10	<10
F3 (C16 to C34)	µg/g	300	50	<50	<50
F3 (C16 to C34) minus PAHs	µg/g		50	<50	<50
F4 (C34 to C50)	µg/g	2800	50	<50	<50
Gravimetric Heavy Hydrocarbons	µg/g	2800	50	NA	NA
Moisture Content	%		0.1	28.5	32.9
Surrogate	Unit	Acceptable Limits			
Toluene-d8	% Recovery	60-140	77	81	
Terphenyl	%	60-140	67	80	

Certified By:



## Certificate of Analysis

AGAT WORK ORDER: 22Z884672

PROJECT: TOH -

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

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2022-04-14

DATE REPORTED: 2022-04-25

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards 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.

3754498-3754499 Results are based on sample dry weight.  
The C6-C10 fraction is calculated using toluene response factor.  
Xylenes total is a calculated parameter. The calculated value is the sum of m&p-Xylene and o-Xylene.  
C6-C10 (F1 minus BTEX) is a calculated parameter. The calculated value is F1 minus BTEX.  
The calculated parameters are non-accredited. The parameters that are components of the calculation are accredited.  
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and 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:



### Exceedance Summary

AGAT WORK ORDER: 22Z884672

PROJECT: TOH -

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

ATTENTION TO: Keith Holmes

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
3754498	22-310 SA02	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Barium	µg/g	390	446
3754498	22-310 SA02	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Cobalt	µg/g	22	27.3
3754498	22-310 SA02	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Vanadium	µg/g	86	131
3754499	22-303 SA02	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Barium	µg/g	390	680
3754499	22-303 SA02	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Cobalt	µg/g	22	30.0
3754499	22-303 SA02	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Vanadium	µg/g	86	138

## Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD  
 PROJECT: TOH -  
 SAMPLING SITE:

AGAT WORK ORDER: 22Z884672  
 ATTENTION TO: Keith Holmes  
 SAMPLED BY:

Soil Analysis																
RPT Date: Apr 25, 2022			DUPLICATE				Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Measured Value		Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits		
								Lower	Upper		Lower	Upper		Lower	Upper	

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

Antimony	3754562		1.6	2.5	NA	< 0.8	129%	70%	130%	96%	80%	120%	89%	70%	130%
Arsenic	3754562		5	4	NA	< 1	126%	70%	130%	103%	80%	120%	108%	70%	130%
Barium	3754562		29.6	26.1	12.6%	< 2.0	107%	70%	130%	106%	80%	120%	112%	70%	130%
Beryllium	3754562		<0.4	<0.4	NA	< 0.4	91%	70%	130%	104%	80%	120%	91%	70%	130%
Boron	3754562		<5	<5	NA	< 5	75%	70%	130%	102%	80%	120%	92%	70%	130%
Boron (Hot Water Soluble)	3762744		0.39	0.46	NA	< 0.10	89%	60%	140%	95%	70%	130%	98%	60%	140%
Cadmium	3754562		<0.5	<0.5	NA	< 0.5	115%	70%	130%	110%	80%	120%	111%	70%	130%
Chromium	3754562		11	10	NA	< 5	113%	70%	130%	118%	80%	120%	116%	70%	130%
Cobalt	3754562		5.9	5.5	7.0%	< 0.5	115%	70%	130%	110%	80%	120%	110%	70%	130%
Copper	3754562		35.1	28.8	19.7%	< 1.0	105%	70%	130%	117%	80%	120%	97%	70%	130%
Lead	3754562		50	46	8.3%	< 1	110%	70%	130%	107%	80%	120%	103%	70%	130%
Molybdenum	3754562		0.7	0.6	NA	< 0.5	119%	70%	130%	112%	80%	120%	118%	70%	130%
Nickel	3754562		22	19	14.6%	< 1	120%	70%	130%	116%	80%	120%	113%	70%	130%
Selenium	3754562		<0.8	<0.8	NA	< 0.8	100%	70%	130%	109%	80%	120%	113%	70%	130%
Silver	3754562		<0.5	<0.5	NA	< 0.5	107%	70%	130%	112%	80%	120%	106%	70%	130%
Thallium	3754562		<0.5	<0.5	NA	< 0.5	113%	70%	130%	107%	80%	120%	103%	70%	130%
Uranium	3754562		<0.50	<0.50	NA	< 0.50	125%	70%	130%	110%	80%	120%	111%	70%	130%
Vanadium	3754562		17.2	13.8	21.9%	< 0.4	124%	70%	130%	117%	80%	120%	118%	70%	130%
Zinc	3754562		81	75	7.7%	< 5	114%	70%	130%	114%	80%	120%	121%	70%	130%
Chromium, Hexavalent	3768060		<0.2	<0.2	NA	< 0.2	101%	70%	130%	84%	80%	120%	86%	70%	130%
Cyanide, Free	3754547		<0.040	<0.040	NA	< 0.040	101%	70%	130%	93%	80%	120%	106%	70%	130%
Mercury	3754562		<0.10	<0.10	NA	< 0.10	113%	70%	130%	103%	80%	120%	103%	70%	130%
Electrical Conductivity (2:1)	3754537		0.097	0.093	4.2%	< 0.005	99%	80%	120%						
Sodium Adsorption Ratio (2:1) (Calc.)	3754537		0.314	0.316	0.6%	NA									
pH, 2:1 CaCl2 Extraction	3757380		6.27	6.51	3.8%	NA	98%	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: \_\_\_\_\_



## Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD  
 PROJECT: TOH -  
 SAMPLING SITE:

AGAT WORK ORDER: 22Z884672  
 ATTENTION TO: Keith Holmes  
 SAMPLED BY:

Trace Organics Analysis															
RPT Date: Apr 25, 2022			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		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) (Soil)**

Benzene	3751096		<0.02	<0.02	NA	< 0.02	107%	60%	140%	106%	60%	140%	112%	60%	140%
Toluene	3751096		<0.05	<0.05	NA	< 0.05	100%	60%	140%	115%	60%	140%	104%	60%	140%
Ethylbenzene	3751096		<0.05	<0.05	NA	< 0.05	115%	60%	140%	107%	60%	140%	108%	60%	140%
m & p-Xylene	3751096		<0.05	<0.05	NA	< 0.05	105%	60%	140%	102%	60%	140%	109%	60%	140%
o-Xylene	3751096		<0.05	<0.05	NA	< 0.05	104%	60%	140%	103%	60%	140%	102%	60%	140%
F1 (C6 - C10)	3751096		<5	<5	NA	< 5	89%	60%	140%	94%	60%	140%	90%	60%	140%
F2 (C10 to C16)	3749690		< 10	< 10	NA	< 10	94%	60%	140%	107%	60%	140%	76%	60%	140%
F3 (C16 to C34)	3749690		< 50	< 50	NA	< 50	102%	60%	140%	89%	60%	140%	69%	60%	140%
F4 (C34 to C50)	3749690		< 50	< 50	NA	< 50	84%	60%	140%	102%	60%	140%	91%	60%	140%

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

Naphthalene	3722129		< 0.05	< 0.05	NA	< 0.05	85%	50%	140%	74%	50%	140%	89%	50%	140%
Acenaphthylene	3722129		< 0.05	< 0.05	NA	< 0.05	74%	50%	140%	85%	50%	140%	74%	50%	140%
Acenaphthene	3722129		< 0.05	< 0.05	NA	< 0.05	96%	50%	140%	96%	50%	140%	85%	50%	140%
Fluorene	3722129		< 0.05	< 0.05	NA	< 0.05	85%	50%	140%	81%	50%	140%	96%	50%	140%
Phenanthrene	3722129		< 0.05	< 0.05	NA	< 0.05	71%	50%	140%	85%	50%	140%	81%	50%	140%
Anthracene	3722129		< 0.05	< 0.05	NA	< 0.05	85%	50%	140%	96%	50%	140%	82%	50%	140%
Fluoranthene	3722129		< 0.05	< 0.05	NA	< 0.05	92%	50%	140%	67%	50%	140%	96%	50%	140%
Pyrene	3722129		< 0.05	< 0.05	NA	< 0.05	71%	50%	140%	85%	50%	140%	83%	50%	140%
Benz(a)anthracene	3722129		< 0.05	< 0.05	NA	< 0.05	82%	50%	140%	78%	50%	140%	82%	50%	140%
Chrysene	3722129		< 0.05	< 0.05	NA	< 0.05	90%	50%	140%	95%	50%	140%	81%	50%	140%
Benzo(b)fluoranthene	3722129		< 0.05	< 0.05	NA	< 0.05	93%	50%	140%	90%	50%	140%	85%	50%	140%
Benzo(k)fluoranthene	3722129		< 0.05	< 0.05	NA	< 0.05	82%	50%	140%	72%	50%	140%	92%	50%	140%
Benzo(a)pyrene	3722129		< 0.05	< 0.05	NA	< 0.05	71%	50%	140%	81%	50%	140%	66%	50%	140%
Indeno(1,2,3-cd)pyrene	3722129		< 0.05	< 0.05	NA	< 0.05	74%	50%	140%	82%	50%	140%	84%	50%	140%
Dibenz(a,h)anthracene	3722129		< 0.05	< 0.05	NA	< 0.05	85%	50%	140%	93%	50%	140%	75%	50%	140%
Benzo(g,h,i)perylene	3722129		< 0.05	< 0.05	NA	< 0.05	72%	50%	140%	94%	50%	140%	95%	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: \_\_\_\_\_





## Method Summary

 CLIENT NAME: GOLDER ASSOCIATES LTD  
 PROJECT: TOH -  
 SAMPLING SITE:

 AGAT WORK ORDER: 22Z884672  
 ATTENTION TO: Keith Holmes  
 SAMPLED BY:

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, Free	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 CaCl <sub>2</sub> Extraction	INOR-93-6075	modified from EPA 9045D, MCKEAGUE 3.11 E3137	PC TITRATE

## Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 22Z884672

PROJECT: TOH -

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

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 Methylnaphthalene	ORG-91-5106	modified from EPA 3570 and EPA 8270E	GC/MS
Naphthalene-d8	ORG-91-5106	modified from EPA 3570 and EPA 8270E	GC/MS
Acridine-d9	ORG-91-5106	modified from EPA 3570 and EPA 8270E	GC/MS
Terphenyl-d14	ORG-91-5106	modified from EPA 3570 and EPA 8270E	GC/MS
Moisture Content	VOL-91-5009	modified from CCME Tier 1 Method	BALANCE
Benzene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
Toluene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
Ethylbenzene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
m & p-Xylene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
o-Xylene	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
Xylenes (Total)	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/MS
F1 (C6 - C10)	VOL-91-5009	modified from CCME Tier 1 Method	(P&T)GC/FID
F1 (C6 to C10) minus BTEX	VOL-91-5009	modified from CCME Tier 1 Method	P&T GC/FID
Toluene-d8	VOL-91-5009	modified from EPA SW-846 5030C & 8260D	(P&T)GC/MS
F2 (C10 to C16)	VOL-91-5009	modified from CCME Tier 1 Method	GC/FID
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



## Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 22Z884672

PROJECT: TOH -

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
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





Your Project #: 215451149  
 Your C.O.C. #: 891201-01-01

**Attention: Catherine Knoll**

Golder Associates Ltd  
 1931 Robertson Rd  
 Ottawa, ON  
 CANADA K2H 5B7

**Report Date: 2022/08/23**  
 Report #: R7265448  
 Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**BUREAU VERITAS JOB #: C2M1669**

**Received: 2022/08/05, 15:10**

Sample Matrix: Water  
 # Samples Received: 7

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Methylnaphthalene Sum (1)	3	N/A	2022/08/11	CAM SOP-00301	EPA 8270D m
ABN Compounds in Water by GC/MS (1)	2	2022/08/14	2022/08/15	CAM SOP-00301	EPA 8270 m
Sewer Use By-Law Semivolatile Organics (1)	2	2022/08/11	2022/08/12	CAM SOP 00301	EPA 8270 m
Carbonaceous BOD (1)	2	2022/08/08	2022/08/13	CAM SOP-00427	SM 23 5210B m
Total Cyanide (1)	2	2022/08/10	2022/08/10	CAM SOP-00457	OMOE E3015 5 m
Dioxins/Furans in Water (1613B) (1, 2)	2	2022/08/09	2022/08/11	BRL SOP-00410	EPA 1613B m
Petroleum Hydro. CCME F1 & BTEX in Water (1)	7	N/A	2022/08/10	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Water (1, 3)	1	2022/08/10	2022/08/11	CAM SOP-00316	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Water (1, 3)	4	2022/08/09	2022/08/10	CAM SOP-00316	CCME PHC-CWS m
Fluoride (1)	2	2022/08/09	2022/08/10	CAM SOP-00449	SM 23 4500-F C m
Mercury in Water by CVAA (1)	2	2022/08/11	2022/08/11	CAM SOP-00453	EPA 7470A m
Dissolved Metals by ICPMS (1)	2	N/A	2022/08/10	CAM SOP-00447	EPA 6020B m
Total Metals Analysis by ICPMS (1)	2	N/A	2022/08/11	CAM SOP-00447	EPA 6020B m
Nitrosamines in Water (1, 4)	2	2022/08/10	2022/08/11	BRL SOP-00012	EPA M 607/1625B mod
Total Nonylphenol in Liquids by HPLC (1)	2	2022/08/12	2022/08/12	CAM SOP-00313	In-house Method
Nonylphenol Ethoxylates in Liquids: HPLC (1)	2	2022/08/12	2022/08/12	CAM SOP-00313	BV Labs Method
Animal and Vegetable Oil and Grease (1)	2	N/A	2022/08/11	CAM SOP-00326	EPA1664B m,SM5520B m
Total Oil and Grease (1)	2	2022/08/11	2022/08/11	CAM SOP-00326	EPA1664B m,SM5520B m
OC Pesticides (Selected) & PCB (1, 5)	2	2022/08/10	2022/08/11	CAM SOP-00307	EPA 8081A/8082B m
OC Pesticides Summed Parameters (1)	2	N/A	2022/08/10	CAM SOP-00307	EPA 8081A/8082B m
PAH Compounds in Water by GC/MS (SIM) (1)	3	2022/08/09	2022/08/10	CAM SOP-00318	EPA 8270D m
pH (1)	2	2022/08/09	2022/08/10	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP) (1)	2	N/A	2022/08/10	CAM SOP-00444	OMOE E3179 m
Sulphate by Automated Colourimetry (1)	2	N/A	2022/08/10	CAM SOP-00464	EPA 375.4 m
Sulphide (1)	2	N/A	2022/08/11	CAM SOP-00455	SM 23 4500-S G m
Total Kjeldahl Nitrogen in Water (1)	2	2022/08/10	2022/08/11	CAM SOP-00938	OMOE E3516 m
Total PAHs (Hamilton, Ottawa S.U.B.) (1, 6)	2	N/A	2022/08/15	CAM SOP - 00301	
Mineral/Synthetic O & G (TPH Heavy Oil) (1, 7)	2	2022/08/11	2022/08/11	CAM SOP-00326	EPA1664B m,SM5520F m
Total Suspended Solids (1)	2	2022/08/10	2022/08/11	CAM SOP-00428	SM 23 2540D m
Volatile Organic Compounds in Water (1)	2	N/A	2022/08/10	CAM SOP-00226	EPA 8260C m
Non-Routine Volatile Organic Compounds (1)	2	N/A	2022/08/10	CAM SOP-00226	EPA 8260 m



Your Project #: 215451149  
Your C.O.C. #: 891201-01-01

**Attention: Catherine Knoll**

Golder Associates Ltd  
1931 Robertson Rd  
Ottawa, ON  
CANADA K2H 5B7

**Report Date: 2022/08/23**  
Report #: R7265448  
Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**BUREAU VERITAS JOB #: C2M1669**

**Received: 2022/08/05, 15:10**

**Remarks:**

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

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

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

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

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

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

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

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

- (1) This test was performed by Bureau Veritas Mississauga, 6740 Campobello Rd, Mississauga, ON, L5N 2L8
- (2) Confirmatory runs for 2,3,7,8-TCDF are performed only if the primary result is greater than the RDL.
- (3) All CCME PHC results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Bureau Veritas conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following "Alberta Environment's Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Validation of Performance-Based Alternative Methods September 2003". Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.
- (4) Non-target compounds, if reported, represents the total of all reportable parameters requested with the exception of NDMA.
- (5) Chlordane ( Total ) = Alpha Chlordane + Gamma Chlordane
- (6) Total PAHs include only those PAHs specified in the sewer use by-by-law.
- (7) Note: TPH (Heavy Oil) is equivalent to Mineral / Synthetic Oil & Grease



Your Project #: 215451149  
Your C.O.C. #: 891201-01-01

**Attention: Catherine Knoll**

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**Report Date: 2022/08/23**  
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**CERTIFICATE OF ANALYSIS**

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**Received: 2022/08/05, 15:10**

Encryption Key

Katherine Szozda  
Project Manager  
23 Aug 2022 12:50:22

Please direct all questions regarding this Certificate of Analysis to your Project Manager.  
Katherine Szozda, Project Manager  
Email: Katherine.Szozda@bureauveritas.com  
Phone# (613)274-0573 Ext:7063633

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Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.  
For Service Group specific validation please refer to the Validation Signature Page.



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VERITAS

Bureau Veritas Job #: C2M1669  
Report Date: 2022/08/23

Golder Associates Ltd  
Client Project #: 215451149  
Sampler Initials: C.K

### OTTAWA SANITARY SEWER BYLAW (2003-514)

Bureau Veritas ID		TJK869						
Sampling Date		2022/08/04 11:30						
COC Number		891201-01-01			TOXIC EQUIVALENCY		# of	
	UNITS	MW22-411S	EDL	RDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
<b>Semivolatile Organics</b>								
N-Nitrosodimethylamine	ng/L	<8.00	N/A	8.00				8157377
<b>Calculated Parameters</b>								
Total Animal/Vegetable Oil and Grease	mg/L	<0.50	N/A	0.50				8152799
<b>Inorganics</b>								
Fluoride (F-)	mg/L	0.29	N/A	0.10				8157136
Total Kjeldahl Nitrogen (TKN)	mg/L	0.36	N/A	0.20				8157722
pH	pH	7.83						8157137
Phenols-4AAP	mg/L	<0.0010	N/A	0.0010				8159384
Total Suspended Solids	mg/L	9900	N/A	100				8155123
Dissolved Sulphate (SO4)	mg/L	62	N/A	1.0				8157180
Sulphide	mg/L	0.027	N/A	0.020				8160434
Total Cyanide (CN)	mg/L	<0.0050	N/A	0.0050				8157419
<b>Petroleum Hydrocarbons</b>								
Total Oil & Grease	mg/L	<0.50	N/A	0.50				8160207
Total Oil & Grease Mineral/Synthetic	mg/L	<0.50	N/A	0.50				8160211
<b>Miscellaneous Parameters</b>								
Nonylphenol Ethoxylate (Total)	mg/L	<0.025	N/A	0.025				8162420
Nonylphenol (Total)	mg/L	<0.001	N/A	0.001				8162407
<b>Metals</b>								
Mercury (Hg)	mg/L	<0.00010	N/A	0.00010				8160143
Total Aluminum (Al)	ug/L	75000	N/A	49				8160171
Total Antimony (Sb)	ug/L	<0.50	N/A	0.50				8160171
Total Arsenic (As)	ug/L	23	N/A	1.0				8160171
Total Bismuth (Bi)	ug/L	<1.0	N/A	1.0				8160171
Total Boron (B)	ug/L	100	N/A	10				8160171
Total Cadmium (Cd)	ug/L	0.51	N/A	0.090				8160171
Total Chromium (Cr)	ug/L	160	N/A	5.0				8160171
Total Cobalt (Co)	ug/L	75	N/A	0.50				8160171
EDL = Estimated Detection Limit RDL = Reportable Detection Limit TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient, The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.  WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds QC Batch = Quality Control Batch N/A = Not Applicable								





**OTTAWA SANITARY SEWER BYLAW (2003-514)**

Bureau Veritas ID		TJK869						
Sampling Date		2022/08/04 11:30						
COC Number		891201-01-01			TOXIC EQUIVALENCY		# of	
	UNITS	MW22-411S	EDL	RDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Total Copper (Cu)	ug/L	150	N/A	0.90				8160171
Total Lead (Pb)	ug/L	70	N/A	0.50				8160171
Total Manganese (Mn)	ug/L	5200	N/A	2.0				8160171
Total Molybdenum (Mo)	ug/L	5.7	N/A	0.50				8160171
Total Nickel (Ni)	ug/L	160	N/A	1.0				8160171
Total Phosphorus (P)	ug/L	9000	N/A	100				8160171
Total Selenium (Se)	ug/L	<2.0	N/A	2.0				8160171
Total Silver (Ag)	ug/L	4.5	N/A	0.090				8160171
Total Tin (Sn)	ug/L	4.4	N/A	1.0				8160171
Total Titanium (Ti)	ug/L	4100	N/A	50				8160171
Total Vanadium (V)	ug/L	190	N/A	0.50				8160171
Total Zinc (Zn)	ug/L	290	N/A	5.0				8160171
<b>Semivolatile Organics</b>								
1-Methylnaphthalene	ug/L	<0.3	N/A	0.3				8160090
2-Methylnaphthalene	ug/L	<0.3	N/A	0.3				8160090
Fluorene	ug/L	<0.3	N/A	0.3				8160090
Naphthalene	ug/L	<0.3	N/A	0.3				8160090
Di-N-butyl phthalate	ug/L	4	N/A	2				8160090
Bis(2-ethylhexyl)phthalate	ug/L	<2	N/A	2				8160090
Phenanthrene	ug/L	0.3	N/A	0.2				8160090
Anthracene	ug/L	<0.2	N/A	0.2				8160090
Fluoranthene	ug/L	<0.2	N/A	0.2				8160090
Pyrene	ug/L	<0.2	N/A	0.2				8160090
Benzo(a)anthracene	ug/L	<0.2	N/A	0.2				8160090
Chrysene	ug/L	<0.2	N/A	0.2				8160090
Benzo(b/j)fluoranthene	ug/L	<0.2	N/A	0.2				8160090
Benzo(k)fluoranthene	ug/L	<0.2	N/A	0.2				8160090
Benzo(a)pyrene	ug/L	<0.2	N/A	0.2				8160090
Indeno(1,2,3-cd)pyrene	ug/L	<0.2	N/A	0.2				8160090
EDL = Estimated Detection Limit RDL = Reportable Detection Limit TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient, The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested. WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds QC Batch = Quality Control Batch N/A = Not Applicable								



**OTTAWA SANITARY SEWER BYLAW (2003-514)**

Bureau Veritas ID		TJK869						
Sampling Date		2022/08/04 11:30						
COC Number		891201-01-01			TOXIC EQUIVALENCY		# of	
	UNITS	MW22-411S	EDL	RDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Dibenzo(a,h)anthracene	ug/L	<0.2	N/A	0.2				8160090
Benzo(g,h,i)perylene	ug/L	<0.2	N/A	0.2				8160090
Dibenzo(a,i)pyrene	ug/L	<0.2	N/A	0.2				8160090
Benzo(e)pyrene	ug/L	<0.2	N/A	0.2				8160090
Perylene	ug/L	<0.2	N/A	0.2				8160090
Dibenzo(a,j) acridine	ug/L	<0.4	N/A	0.4				8160090
7H-Dibenzo(c,g) Carbazole	ug/L	<0.4	N/A	0.4				8160090
2,4-Dichlorophenol	ug/L	<0.30	N/A	0.30				8165355
Benzyl butyl phthalate	ug/L	<0.50	N/A	0.50				8165355
Bis(2-chloroethoxy)methane	ug/L	<0.50	N/A	0.50				8165355
di-n-octyl phthalate	ug/L	<0.80	N/A	0.80				8165355
Diethyl phthalate	ug/L	<1.0	N/A	1.0				8165355
Indole	ug/L	<1.0	N/A	1.0				8165355
<b>Calculated Parameters</b>								
Total PAHs (18 PAHs)	ug/L	<0.96	N/A	0.96				8153391
<b>Volatile Organics</b>								
Benzene	ug/L	<0.10	N/A	0.10				8153358
Bromodichloromethane	ug/L	<0.10	N/A	0.10				8153358
Bromoform	ug/L	<0.20	N/A	0.20				8153358
Bromomethane	ug/L	<0.50	N/A	0.50				8153358
Carbon Tetrachloride	ug/L	<0.10	N/A	0.10				8153358
Chlorobenzene	ug/L	<0.10	N/A	0.10				8153358
Chloroethane	ug/L	<0.20	N/A	0.20				8153358
Chloroform	ug/L	<0.10	N/A	0.10				8153358
Chloromethane	ug/L	<0.50	N/A	0.50				8153358
Dibromochloromethane	ug/L	<0.20	N/A	0.20				8153358
1,2-Dichlorobenzene	ug/L	<0.20	N/A	0.20				8153358
1,3-Dichlorobenzene	ug/L	<0.20	N/A	0.20				8153358
1,4-Dichlorobenzene	ug/L	<0.20	N/A	0.20				8153358
EDL = Estimated Detection Limit RDL = Reportable Detection Limit TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient, The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.  WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds QC Batch = Quality Control Batch N/A = Not Applicable								



BUREAU  
VERITAS

Bureau Veritas Job #: C2M1669  
Report Date: 2022/08/23

Golder Associates Ltd  
Client Project #: 215451149  
Sampler Initials: C.K

**OTTAWA SANITARY SEWER BYLAW (2003-514)**

Bureau Veritas ID		TJK869						
Sampling Date		2022/08/04 11:30						
COC Number		891201-01-01			TOXIC EQUIVALENCY		# of	
	UNITS	MW22-411S	EDL	RDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
1,1-Dichloroethane	ug/L	<0.10	N/A	0.10				8153358
1,2-Dichloroethane	ug/L	<0.20	N/A	0.20				8153358
1,1-Dichloroethylene	ug/L	<0.10	N/A	0.10				8153358
cis-1,2-Dichloroethylene	ug/L	<0.10	N/A	0.10				8153358
trans-1,2-Dichloroethylene	ug/L	<0.10	N/A	0.10				8153358
1,2-Dichloropropane	ug/L	<0.10	N/A	0.10				8153358
cis-1,3-Dichloropropene	ug/L	<0.20	N/A	0.20				8153358
trans-1,3-Dichloropropene	ug/L	<0.20	N/A	0.20				8153358
Ethylbenzene	ug/L	<0.10	N/A	0.10				8153358
Ethylene Dibromide	ug/L	<0.20	N/A	0.20				8153358
Methylene Chloride(Dichloromethane)	ug/L	<0.50	N/A	0.50				8153358
Styrene	ug/L	<0.20	N/A	0.20				8153358
1,1,2,2-Tetrachloroethane	ug/L	<0.20	N/A	0.20				8153358
Tetrachloroethylene	ug/L	<0.10	N/A	0.10				8153358
1,3,5-Trimethylbenzene	ug/L	<0.20	N/A	0.20				8156342
Toluene	ug/L	<0.20	N/A	0.20				8153358
1,1,1-Trichloroethane	ug/L	<0.10	N/A	0.10				8153358
1,1,2-Trichloroethane	ug/L	<0.20	N/A	0.20				8153358
Trichloroethylene	ug/L	<0.10	N/A	0.10				8153358
Trichlorofluoromethane (FREON 11)	ug/L	<0.20	N/A	0.20				8153358
Vinyl Chloride	ug/L	<0.20	N/A	0.20				8153358
p+m-Xylene	ug/L	<0.10	N/A	0.10				8153358
o-Xylene	ug/L	<0.10	N/A	0.10				8153358
Total Xylenes	ug/L	<0.10	N/A	0.10				8153358
<b>Dioxins &amp; Furans</b>								
2,3,7,8-Tetra CDD *	pg/L	<0.983	0.983	9.52	1.00	0.983		8160911
1,2,3,7,8-Penta CDD *	pg/L	<1.28	1.28	47.6	1.00	1.28		8160911
1,2,3,4,7,8-Hexa CDD *	pg/L	<1.18	1.18	47.6	0.100	0.118		8160911
EDL = Estimated Detection Limit RDL = Reportable Detection Limit TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient, The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested. WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds QC Batch = Quality Control Batch N/A = Not Applicable * CDD = Chloro Dibenzo-p-Dioxin								



**OTTAWA SANITARY SEWER BYLAW (2003-514)**

Bureau Veritas ID		TJK869						
Sampling Date		2022/08/04 11:30						
COC Number		891201-01-01			TOXIC EQUIVALENCY		# of	
	UNITS	MW22-411S	EDL	RDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
1,2,3,6,7,8-Hexa CDD *	pg/L	<1.16	1.16	47.6	0.100	0.116		8160911
1,2,3,7,8,9-Hexa CDD *	pg/L	<1.25	1.25	47.6	0.100	0.125		8160911
1,2,3,4,6,7,8-Hepta CDD *	pg/L	<1.35	1.35	47.6	0.0100	0.0135		8160911
Octa CDD *	pg/L	15.2	1.14	95.2	0.000300	0.00456		8160911
Total Tetra CDD *	pg/L	<0.983	0.983	9.52			0	8160911
Total Penta CDD *	pg/L	<1.28	1.28	47.6			0	8160911
Total Hexa CDD *	pg/L	<1.25	1.25	47.6			0	8160911
Total Hepta CDD *	pg/L	2.12	1.35	47.6			1	8160911
2,3,7,8-Tetra CDF **	pg/L	<1.07	1.07	9.52	0.100	0.107		8160911
1,2,3,7,8-Penta CDF **	pg/L	<1.24	1.24	47.6	0.0300	0.0372		8160911
2,3,4,7,8-Penta CDF **	pg/L	<1.13	1.13	47.6	0.300	0.339		8160911
1,2,3,4,7,8-Hexa CDF **	pg/L	<1.38	1.38	47.6	0.100	0.138		8160911
1,2,3,6,7,8-Hexa CDF **	pg/L	<1.46	1.46	47.6	0.100	0.146		8160911
2,3,4,6,7,8-Hexa CDF **	pg/L	<1.34	1.34	47.6	0.100	0.134		8160911
1,2,3,7,8,9-Hexa CDF **	pg/L	<1.44	1.44	47.6	0.100	0.144		8160911
1,2,3,4,6,7,8-Hepta CDF **	pg/L	<0.964	0.964	47.6	0.0100	0.00964		8160911
1,2,3,4,7,8,9-Hepta CDF **	pg/L	<0.998	0.998	47.6	0.0100	0.00998		8160911
Octa CDF **	pg/L	<1.25	1.25	95.2	0.000300	0.000375		8160911
Total Tetra CDF **	pg/L	<1.07	1.07	9.52			0	8160911
Total Penta CDF **	pg/L	<1.18	1.18	47.6			0	8160911
Total Hexa CDF **	pg/L	<1.40	1.40	47.6			0	8160911
Total Hepta CDF **	pg/L	<0.981	0.981	47.6			0	8160911
TOTAL TOXIC EQUIVALENCY	pg/L					3.71		
<b>Surrogate Recovery (%)</b>								
2,4,6-Tribromophenol	%	37						8165355
2-Fluorobiphenyl	%	76						8165355
2-Fluorophenol	%	21						8165355
D14-Terphenyl	%	84						8165355
EDL = Estimated Detection Limit RDL = Reportable Detection Limit TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient, The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.  WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds  QC Batch = Quality Control Batch * CDD = Chloro Dibenzo-p-Dioxin ** CDF = Chloro Dibenzo-p-Furan								



**OTTAWA SANITARY SEWER BYLAW (2003-514)**

Bureau Veritas ID		TJK869						
Sampling Date		2022/08/04 11:30						
COC Number		891201-01-01			TOXIC EQUIVALENCY		# of	
	UNITS	MW22-411S	EDL	RDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
D5-Nitrobenzene	%	86						8165355
D5-Phenol	%	23						8165355
2,4,6-Tribromophenol	%	20						8160090
2-Fluorobiphenyl	%	82						8160090
D14-Terphenyl (FS)	%	79						8160090
D5-Nitrobenzene	%	88						8160090
D8-Acenaphthylene	%	88						8160090
37CL4 2378 Tetra CDD *	%	85						8160911
C13-1234678 HeptaCDD *	%	91						8160911
C13-1234678 HeptaCDF **	%	106						8160911
C13-123478 HexaCDD *	%	106						8160911
C13-123478 HexaCDF **	%	109						8160911
C13-1234789 HeptaCDF **	%	89						8160911
C13-123678 HexaCDD *	%	100						8160911
C13-123678 HexaCDF **	%	108						8160911
C13-12378 PentaCDD *	%	88						8160911
C13-12378 PentaCDF **	%	85						8160911
C13-123789 HexaCDF **	%	90						8160911
C13-234678 HexaCDF **	%	110						8160911
C13-23478 PentaCDF **	%	86						8160911
C13-2378 TetraCDD *	%	73						8160911
C13-2378 TetraCDF **	%	76						8160911
C13-OCDD *	%	73						8160911
D10-N-nitrosodiethylamine	%	82						8157377
D14-N-Nitrosodi-n-propylamine	%	90						8157377
D6-N-Nitrosodimethylamine	%	43						8157377
D8-N-Nitrosomorpholine	%	69						8157377
4-Bromofluorobenzene	%	94						8153358

EDL = Estimated Detection Limit  
RDL = Reportable Detection Limit  
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,  
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.  
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds  
QC Batch = Quality Control Batch  
\* CDD = Chloro Dibenzo-p-Dioxin  
\*\* CDF = Chloro Dibenzo-p-Furan



**OTTAWA SANITARY SEWER BYLAW (2003-514)**

<b>Bureau Veritas ID</b>		TJK869						
<b>Sampling Date</b>		2022/08/04 11:30						
<b>COC Number</b>		891201-01-01			<b>TOXIC EQUIVALENCY</b>		<b># of</b>	
	<b>UNITS</b>	<b>MW22-411S</b>	<b>EDL</b>	<b>RDL</b>	<b>TEF (2005 WHO)</b>	<b>TEQ(DL)</b>	<b>Isomers</b>	<b>QC Batch</b>
D4-1,2-Dichloroethane	%	97						8153358
D8-Toluene	%	89						8153358
4-Bromofluorobenzene	%	95						8156342
D4-1,2-Dichloroethane	%	96						8156342
D8-Toluene	%	92						8156342
EDL = Estimated Detection Limit RDL = Reportable Detection Limit TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient, The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested. WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds QC Batch = Quality Control Batch								



**OTTAWA SANITARY SEWER BYLAW (2003-514)**

Bureau Veritas ID		TJK872						
Sampling Date		2022/08/05 10:30						
COC Number		891201-01-01			TOXIC EQUIVALENCY		# of	
	UNITS	MW22-303	EDL	RDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
<b>Semivolatile Organics</b>								
N-Nitrosodimethylamine	ng/L	<8.00	N/A	8.00				8157377
<b>Calculated Parameters</b>								
Total Animal/Vegetable Oil and Grease	mg/L	<0.50	N/A	0.50				8152799
<b>Inorganics</b>								
Fluoride (F-)	mg/L	0.13	N/A	0.10				8157136
Total Kjeldahl Nitrogen (TKN)	mg/L	0.36	N/A	0.20				8157722
pH	pH	7.83						8157137
Phenols-4AAP	mg/L	<0.0010	N/A	0.0010				8159384
Total Suspended Solids	mg/L	1800	N/A	50				8155123
Dissolved Sulphate (SO4)	mg/L	86	N/A	1.0				8157180
Sulphide	mg/L	<0.020	N/A	0.020				8160434
Total Cyanide (CN)	mg/L	<0.0050	N/A	0.0050				8157419
<b>Petroleum Hydrocarbons</b>								
Total Oil & Grease	mg/L	<0.50	N/A	0.50				8160207
Total Oil & Grease Mineral/Synthetic	mg/L	<0.50	N/A	0.50				8160211
<b>Miscellaneous Parameters</b>								
Nonylphenol Ethoxylate (Total)	mg/L	<0.025	N/A	0.025				8162420
Nonylphenol (Total)	mg/L	<0.001	N/A	0.001				8162407
<b>Metals</b>								
Mercury (Hg)	mg/L	<0.00010	N/A	0.00010				8160143
Total Aluminum (Al)	ug/L	14000	N/A	25				8160171
Total Antimony (Sb)	ug/L	<0.50	N/A	0.50				8160171
Total Arsenic (As)	ug/L	2.1	N/A	1.0				8160171
Total Bismuth (Bi)	ug/L	<1.0	N/A	1.0				8160171
Total Boron (B)	ug/L	32	N/A	10				8160171
Total Cadmium (Cd)	ug/L	<0.090	N/A	0.090				8160171
Total Chromium (Cr)	ug/L	22	N/A	5.0				8160171
Total Cobalt (Co)	ug/L	10	N/A	0.50				8160171
EDL = Estimated Detection Limit RDL = Reportable Detection Limit TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient, The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.  WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds QC Batch = Quality Control Batch N/A = Not Applicable								



BUREAU  
VERITAS

Bureau Veritas Job #: C2M1669  
Report Date: 2022/08/23

Golder Associates Ltd  
Client Project #: 215451149  
Sampler Initials: C.K

**OTTAWA SANITARY SEWER BYLAW (2003-514)**

Bureau Veritas ID		TJK872						
Sampling Date		2022/08/05 10:30						
COC Number		891201-01-01			TOXIC EQUIVALENCY		# of	
	UNITS	MW22-303	EDL	RDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Total Copper (Cu)	ug/L	21	N/A	0.90				8160171
Total Lead (Pb)	ug/L	12	N/A	0.50				8160171
Total Manganese (Mn)	ug/L	680	N/A	2.0				8160171
Total Molybdenum (Mo)	ug/L	2.1	N/A	0.50				8160171
Total Nickel (Ni)	ug/L	28	N/A	1.0				8160171
Total Phosphorus (P)	ug/L	1100	N/A	100				8160171
Total Selenium (Se)	ug/L	<2.0	N/A	2.0				8160171
Total Silver (Ag)	ug/L	0.77	N/A	0.090				8160171
Total Tin (Sn)	ug/L	1.0	N/A	1.0				8160171
Total Titanium (Ti)	ug/L	770	N/A	25				8160171
Total Vanadium (V)	ug/L	32	N/A	0.50				8160171
Total Zinc (Zn)	ug/L	43	N/A	5.0				8160171
<b>Semivolatile Organics</b>								
1-Methylnaphthalene	ug/L	<0.3	N/A	0.3				8160090
2-Methylnaphthalene	ug/L	<0.3	N/A	0.3				8160090
Fluorene	ug/L	<0.3	N/A	0.3				8160090
Naphthalene	ug/L	<0.3	N/A	0.3				8160090
Di-N-butyl phthalate	ug/L	<2	N/A	2				8160090
Bis(2-ethylhexyl)phthalate	ug/L	<2	N/A	2				8160090
Phenanthrene	ug/L	<0.2	N/A	0.2				8160090
Anthracene	ug/L	<0.2	N/A	0.2				8160090
Fluoranthene	ug/L	<0.2	N/A	0.2				8160090
Pyrene	ug/L	<0.2	N/A	0.2				8160090
Benzo(a)anthracene	ug/L	<0.2	N/A	0.2				8160090
Chrysene	ug/L	<0.2	N/A	0.2				8160090
Benzo(b/j)fluoranthene	ug/L	<0.2	N/A	0.2				8160090
Benzo(k)fluoranthene	ug/L	<0.2	N/A	0.2				8160090
Benzo(a)pyrene	ug/L	<0.2	N/A	0.2				8160090
Indeno(1,2,3-cd)pyrene	ug/L	<0.2	N/A	0.2				8160090
EDL = Estimated Detection Limit RDL = Reportable Detection Limit TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient, The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested. WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds QC Batch = Quality Control Batch N/A = Not Applicable								





**OTTAWA SANITARY SEWER BYLAW (2003-514)**

Bureau Veritas ID		TJK872						
Sampling Date		2022/08/05 10:30						
COC Number		891201-01-01			TOXIC EQUIVALENCY		# of	
	UNITS	MW22-303	EDL	RDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Dibenzo(a,h)anthracene	ug/L	<0.2	N/A	0.2				8160090
Benzo(g,h,i)perylene	ug/L	<0.2	N/A	0.2				8160090
Dibenzo(a,i)pyrene	ug/L	<0.2	N/A	0.2				8160090
Benzo(e)pyrene	ug/L	<0.2	N/A	0.2				8160090
Perylene	ug/L	<0.2	N/A	0.2				8160090
Dibenzo(a,j) acridine	ug/L	<0.4	N/A	0.4				8160090
7H-Dibenzo(c,g) Carbazole	ug/L	<0.4	N/A	0.4				8160090
2,4-Dichlorophenol	ug/L	<0.30	N/A	0.30				8165355
Benzyl butyl phthalate	ug/L	<0.50	N/A	0.50				8165355
Bis(2-chloroethoxy)methane	ug/L	<0.50	N/A	0.50				8165355
di-n-octyl phthalate	ug/L	<0.80	N/A	0.80				8165355
Diethyl phthalate	ug/L	<1.0	N/A	1.0				8165355
Indole	ug/L	<1.0	N/A	1.0				8165355
<b>Calculated Parameters</b>								
Total PAHs (18 PAHs)	ug/L	<0.96	N/A	0.96				8153391
<b>Volatile Organics</b>								
Benzene	ug/L	<0.10	N/A	0.10				8153358
Bromodichloromethane	ug/L	<0.10	N/A	0.10				8153358
Bromoform	ug/L	<0.20	N/A	0.20				8153358
Bromomethane	ug/L	<0.50	N/A	0.50				8153358
Carbon Tetrachloride	ug/L	<0.10	N/A	0.10				8153358
Chlorobenzene	ug/L	<0.10	N/A	0.10				8153358
Chloroethane	ug/L	<0.20	N/A	0.20				8153358
Chloroform	ug/L	0.16	N/A	0.10				8153358
Chloromethane	ug/L	<0.50	N/A	0.50				8153358
Dibromochloromethane	ug/L	<0.20	N/A	0.20				8153358
1,2-Dichlorobenzene	ug/L	<0.20	N/A	0.20				8153358
1,3-Dichlorobenzene	ug/L	<0.20	N/A	0.20				8153358
1,4-Dichlorobenzene	ug/L	<0.20	N/A	0.20				8153358
EDL = Estimated Detection Limit RDL = Reportable Detection Limit TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient, The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.  WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds QC Batch = Quality Control Batch N/A = Not Applicable								



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Bureau Veritas Job #: C2M1669  
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Golder Associates Ltd  
Client Project #: 215451149  
Sampler Initials: C.K

### OTTAWA SANITARY SEWER BYLAW (2003-514)

Bureau Veritas ID		TJK872						
Sampling Date		2022/08/05 10:30						
COC Number		891201-01-01			TOXIC EQUIVALENCY		# of	
	UNITS	MW22-303	EDL	RDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
1,1-Dichloroethane	ug/L	<0.10	N/A	0.10				8153358
1,2-Dichloroethane	ug/L	<0.20	N/A	0.20				8153358
1,1-Dichloroethylene	ug/L	<0.10	N/A	0.10				8153358
cis-1,2-Dichloroethylene	ug/L	<0.10	N/A	0.10				8153358
trans-1,2-Dichloroethylene	ug/L	<0.10	N/A	0.10				8153358
1,2-Dichloropropane	ug/L	<0.10	N/A	0.10				8153358
cis-1,3-Dichloropropene	ug/L	<0.20	N/A	0.20				8153358
trans-1,3-Dichloropropene	ug/L	<0.20	N/A	0.20				8153358
Ethylbenzene	ug/L	<0.10	N/A	0.10				8153358
Ethylene Dibromide	ug/L	<0.20	N/A	0.20				8153358
Methylene Chloride(Dichloromethane)	ug/L	<0.50	N/A	0.50				8153358
Styrene	ug/L	<0.20	N/A	0.20				8153358
1,1,2,2-Tetrachloroethane	ug/L	<0.20	N/A	0.20				8153358
Tetrachloroethylene	ug/L	<0.10	N/A	0.10				8153358
1,3,5-Trimethylbenzene	ug/L	<0.20	N/A	0.20				8156342
Toluene	ug/L	<0.20	N/A	0.20				8153358
1,1,1-Trichloroethane	ug/L	<0.10	N/A	0.10				8153358
1,1,2-Trichloroethane	ug/L	<0.20	N/A	0.20				8153358
Trichloroethylene	ug/L	<0.10	N/A	0.10				8153358
Trichlorofluoromethane (FREON 11)	ug/L	<0.20	N/A	0.20				8153358
Vinyl Chloride	ug/L	<0.20	N/A	0.20				8153358
p+m-Xylene	ug/L	<0.10	N/A	0.10				8153358
o-Xylene	ug/L	<0.10	N/A	0.10				8153358
Total Xylenes	ug/L	<0.10	N/A	0.10				8153358
<b>Dioxins &amp; Furans</b>								
2,3,7,8-Tetra CDD *	pg/L	<0.877	0.877	9.62	1.00	0.877		8160911
1,2,3,7,8-Penta CDD *	pg/L	<1.27	1.27	48.1	1.00	1.27		8160911
1,2,3,4,7,8-Hexa CDD *	pg/L	<1.10	1.10	48.1	0.100	0.110		8160911
EDL = Estimated Detection Limit RDL = Reportable Detection Limit TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient, The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested. WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds QC Batch = Quality Control Batch N/A = Not Applicable * CDD = Chloro Dibenzo-p-Dioxin								



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**OTTAWA SANITARY SEWER BYLAW (2003-514)**

Bureau Veritas ID		TJK872						
Sampling Date		2022/08/05 10:30						
COC Number		891201-01-01			TOXIC EQUIVALENCY		# of	
	UNITS	MW22-303	EDL	RDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
1,2,3,6,7,8-Hexa CDD *	pg/L	<1.09	1.09	48.1	0.100	0.109		8160911
1,2,3,7,8,9-Hexa CDD *	pg/L	<1.17	1.17	48.1	0.100	0.117		8160911
1,2,3,4,6,7,8-Hepta CDD *	pg/L	<1.39	1.39	48.1	0.0100	0.0139		8160911
Octa CDD *	pg/L	<1.21	1.21	96.2	0.000300	0.000363		8160911
Total Tetra CDD *	pg/L	<0.877	0.877	9.62			0	8160911
Total Penta CDD *	pg/L	<1.27	1.27	48.1			0	8160911
Total Hexa CDD *	pg/L	<1.17	1.17	48.1			0	8160911
Total Hepta CDD *	pg/L	<1.39	1.39	48.1			0	8160911
2,3,7,8-Tetra CDF **	pg/L	<0.765	0.765	9.62	0.100	0.0765		8160911
1,2,3,7,8-Penta CDF **	pg/L	<1.30	1.30	48.1	0.0300	0.0390		8160911
2,3,4,7,8-Penta CDF **	pg/L	<1.18	1.18	48.1	0.300	0.354		8160911
1,2,3,4,7,8-Hexa CDF **	pg/L	<0.820	0.820	48.1	0.100	0.0820		8160911
1,2,3,6,7,8-Hexa CDF **	pg/L	<0.869	0.869	48.1	0.100	0.0869		8160911
2,3,4,6,7,8-Hexa CDF **	pg/L	<0.798	0.798	48.1	0.100	0.0798		8160911
1,2,3,7,8,9-Hexa CDF **	pg/L	<0.854	0.854	48.1	0.100	0.0854		8160911
1,2,3,4,6,7,8-Hepta CDF **	pg/L	<1.16	1.16	48.1	0.0100	0.0116		8160911
1,2,3,4,7,8,9-Hepta CDF **	pg/L	<1.20	1.20	48.1	0.0100	0.0120		8160911
Octa CDF **	pg/L	<1.48	1.48	96.2	0.000300	0.000444		8160911
Total Tetra CDF **	pg/L	<0.765	0.765	9.62			0	8160911
Total Penta CDF **	pg/L	<1.24	1.24	48.1			0	8160911
Total Hexa CDF **	pg/L	<0.834	0.834	48.1			0	8160911
Total Hepta CDF **	pg/L	<1.18	1.18	48.1			0	8160911
TOTAL TOXIC EQUIVALENCY	pg/L					3.32		
<b>Surrogate Recovery (%)</b>								
2,4,6-Tribromophenol	%	61						8165355
2-Fluorobiphenyl	%	76						8165355
2-Fluorophenol	%	36						8165355
D14-Terphenyl	%	84						8165355
EDL = Estimated Detection Limit RDL = Reportable Detection Limit TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient, The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested. WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds QC Batch = Quality Control Batch * CDD = Chloro Dibenzo-p-Dioxin ** CDF = Chloro Dibenzo-p-Furan								



**OTTAWA SANITARY SEWER BYLAW (2003-514)**

Bureau Veritas ID		TJK872						
Sampling Date		2022/08/05 10:30						
COC Number		891201-01-01			TOXIC EQUIVALENCY		# of	
	UNITS	MW22-303	EDL	RDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
D5-Nitrobenzene	%	84						8165355
D5-Phenol	%	28						8165355
2,4,6-Tribromophenol	%	52						8160090
2-Fluorobiphenyl	%	84						8160090
D14-Terphenyl (FS)	%	81						8160090
D5-Nitrobenzene	%	85						8160090
D8-Acenaphthylene	%	86						8160090
37CL4 2378 Tetra CDD *	%	88						8160911
C13-1234678 HeptaCDD *	%	103						8160911
C13-1234678 HeptaCDF **	%	116						8160911
C13-123478 HexaCDD *	%	111						8160911
C13-123478 HexaCDF **	%	121						8160911
C13-1234789 HeptaCDF **	%	98						8160911
C13-123678 HexaCDD *	%	105						8160911
C13-123678 HexaCDF **	%	108						8160911
C13-12378 PentaCDD *	%	86						8160911
C13-12378 PentaCDF **	%	94						8160911
C13-123789 HexaCDF **	%	100						8160911
C13-234678 HexaCDF **	%	122						8160911
C13-23478 PentaCDF **	%	91						8160911
C13-2378 TetraCDD *	%	83						8160911
C13-2378 TetraCDF **	%	93						8160911
C13-OCDD *	%	81						8160911
D10-N-nitrosodiethylamine	%	81						8157377
D14-N-Nitrosodi-n-propylamine	%	87						8157377
D6-N-Nitrosodimethylamine	%	43						8157377
D8-N-Nitrosomorpholine	%	68						8157377
4-Bromofluorobenzene	%	96						8153358

EDL = Estimated Detection Limit  
RDL = Reportable Detection Limit  
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,  
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.  
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds  
QC Batch = Quality Control Batch  
\* CDD = Chloro Dibenzo-p-Dioxin  
\*\* CDF = Chloro Dibenzo-p-Furan



**OTTAWA SANITARY SEWER BYLAW (2003-514)**

<b>Bureau Veritas ID</b>		TJK872						
<b>Sampling Date</b>		2022/08/05 10:30						
<b>COC Number</b>		891201-01-01			<b>TOXIC EQUIVALENCY</b>		<b># of</b>	
	<b>UNITS</b>	<b>MW22-303</b>	<b>EDL</b>	<b>RDL</b>	<b>TEF (2005 WHO)</b>	<b>TEQ(DL)</b>	<b>Isomers</b>	<b>QC Batch</b>
D4-1,2-Dichloroethane	%	98						8153358
D8-Toluene	%	99						8153358
4-Bromofluorobenzene	%	96						8156342
D4-1,2-Dichloroethane	%	97						8156342
D8-Toluene	%	102						8156342
EDL = Estimated Detection Limit RDL = Reportable Detection Limit TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient, The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested. WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds QC Batch = Quality Control Batch								



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Bureau Veritas Job #: C2M1669  
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Golder Associates Ltd  
Client Project #: 215451149  
Sampler Initials: C.K

### OTTAWA SANITARY SEWER BYLAW (2003-514)

<b>Bureau Veritas ID</b>		TJK872					
<b>Sampling Date</b>		2022/08/05 10:30					
<b>COC Number</b>		891201-01-01		<b>TOXIC EQUIVALENCY</b>		# of	
	<b>UNITS</b>	<b>MW22-303 Lab-Dup</b>	<b>RDL</b>	<b>TEF (2005 WHO)</b>	<b>TEQ(DL)</b>	<b>Isomers</b>	<b>QC Batch</b>

<b>Volatile Organics</b>							
Benzene	ug/L	<0.10	0.10				8153358
Bromodichloromethane	ug/L	<0.10	0.10				8153358
Bromoform	ug/L	<0.20	0.20				8153358
Bromomethane	ug/L	<0.50	0.50				8153358
Carbon Tetrachloride	ug/L	<0.10	0.10				8153358
Chlorobenzene	ug/L	<0.10	0.10				8153358
Chloroethane	ug/L	<0.20	0.20				8153358
Chloroform	ug/L	0.16	0.10				8153358
Chloromethane	ug/L	<0.50	0.50				8153358
Dibromochloromethane	ug/L	<0.20	0.20				8153358
1,2-Dichlorobenzene	ug/L	<0.20	0.20				8153358
1,3-Dichlorobenzene	ug/L	<0.20	0.20				8153358
1,4-Dichlorobenzene	ug/L	<0.20	0.20				8153358
1,1-Dichloroethane	ug/L	<0.10	0.10				8153358
1,2-Dichloroethane	ug/L	<0.20	0.20				8153358
1,1-Dichloroethylene	ug/L	<0.10	0.10				8153358
cis-1,2-Dichloroethylene	ug/L	<0.10	0.10				8153358
trans-1,2-Dichloroethylene	ug/L	<0.10	0.10				8153358
1,2-Dichloropropane	ug/L	<0.10	0.10				8153358
cis-1,3-Dichloropropene	ug/L	<0.20	0.20				8153358
trans-1,3-Dichloropropene	ug/L	<0.20	0.20				8153358

RDL = Reportable Detection Limit  
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,  
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.

WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds  
QC Batch = Quality Control Batch  
Lab-Dup = Laboratory Initiated Duplicate



BUREAU  
VERITAS

Bureau Veritas Job #: C2M1669  
Report Date: 2022/08/23

Golder Associates Ltd  
Client Project #: 215451149  
Sampler Initials: C.K

**OTTAWA SANITARY SEWER BYLAW (2003-514)**

Bureau Veritas ID		TJK872					
Sampling Date		2022/08/05 10:30					
COC Number		891201-01-01	TOXIC EQUIVALENCY			# of	
	UNITS	MW22-303 Lab-Dup	RDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Ethylbenzene	ug/L	<0.10	0.10				8153358
Ethylene Dibromide	ug/L	<0.20	0.20				8153358
Methylene Chloride(Dichloromethane)	ug/L	<0.50	0.50				8153358
Styrene	ug/L	<0.20	0.20				8153358
1,1,2,2-Tetrachloroethane	ug/L	<0.20	0.20				8153358
Tetrachloroethylene	ug/L	<0.10	0.10				8153358
1,3,5-Trimethylbenzene	ug/L	<0.20	0.20				8156342
Toluene	ug/L	<0.20	0.20				8153358
1,1,1-Trichloroethane	ug/L	<0.10	0.10				8153358
1,1,2-Trichloroethane	ug/L	<0.20	0.20				8153358
Trichloroethylene	ug/L	<0.10	0.10				8153358
Trichlorofluoromethane (FREON 11)	ug/L	<0.20	0.20				8153358
Vinyl Chloride	ug/L	<0.20	0.20				8153358
p+m-Xylene	ug/L	<0.10	0.10				8153358
o-Xylene	ug/L	<0.10	0.10				8153358
Total Xylenes	ug/L	<0.10	0.10				8153358
TOTAL TOXIC EQUIVALENCY	pg/L				0		
<b>Surrogate Recovery (%)</b>							
4-Bromofluorobenzene	%	97					8153358
D4-1,2-Dichloroethane	%	97					8153358
D8-Toluene	%	99					8153358
4-Bromofluorobenzene	%	97					8156342
D4-1,2-Dichloroethane	%	96					8156342
D8-Toluene	%	102					8156342
<p>RDL = Reportable Detection Limit  TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,  The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.  WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds  QC Batch = Quality Control Batch  Lab-Dup = Laboratory Initiated Duplicate</p>							



**BUREAU  
VERITAS**

Bureau Veritas Job #: C2M1669  
Report Date: 2022/08/23

Golder Associates Ltd  
Client Project #: 215451149  
Sampler Initials: C.K

**RESULTS OF ANALYSES OF WATER**

<b>Bureau Veritas ID</b>		TJK869		TJK872	TJK872		
<b>Sampling Date</b>		2022/08/04 11:30		2022/08/05 10:30	2022/08/05 10:30		
<b>COC Number</b>		891201-01-01		891201-01-01	891201-01-01		
	<b>UNITS</b>	<b>MW22-411S</b>	<b>RDL</b>	<b>MW22-303</b>	<b>MW22-303 Lab-Dup</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Inorganics</b>							
Total Carbonaceous BOD	mg/L	<6	6	<2	<2	2	8153881
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate							





ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		TJK869		TJK872		
Sampling Date		2022/08/04 11:30		2022/08/05 10:30		
COC Number		891201-01-01		891201-01-01		
	UNITS	MW22-411S	RDL	MW22-303	RDL	QC Batch
<b>Metals</b>						
Dissolved Aluminum (Al)	ug/L	120	4.9	720	4.9	8157085
Dissolved Antimony (Sb)	ug/L	<0.50	0.50	<0.50	0.50	8157085
Dissolved Arsenic (As)	ug/L	3.5	1.0	<1.0	1.0	8157085
Dissolved Barium (Ba)	ug/L	200	2.0	120	2.0	8157085
Dissolved Beryllium (Be)	ug/L	<0.40	0.40	<0.40	0.40	8157085
Dissolved Bismuth (Bi)	ug/L	<1.0	1.0	<1.0	1.0	8157085
Dissolved Boron (B)	ug/L	46	10	27	10	8157085
Dissolved Cadmium (Cd)	ug/L	<0.090	0.090	<0.090	0.090	8157085
Dissolved Calcium (Ca)	ug/L	130000	1000	200000	400	8157085
Dissolved Chromium (Cr)	ug/L	<5.0	5.0	<5.0	5.0	8157085
Dissolved Cobalt (Co)	ug/L	<0.50	0.50	1.9	0.50	8157085
Dissolved Copper (Cu)	ug/L	<0.90	0.90	3.2	0.90	8157085
Dissolved Iron (Fe)	ug/L	270	100	2700	100	8157085
Dissolved Lead (Pb)	ug/L	<0.50	0.50	1.8	0.50	8157085
Dissolved Lithium (Li)	ug/L	15	5.0	10	5.0	8157085
Dissolved Magnesium (Mg)	ug/L	110000	50	94000	50	8157085
Dissolved Manganese (Mn)	ug/L	160	2.0	200	2.0	8157085
Dissolved Molybdenum (Mo)	ug/L	3.1	0.50	1.3	0.50	8157085
Dissolved Nickel (Ni)	ug/L	4.5	1.0	6.8	1.0	8157085
Dissolved Phosphorus (P)	ug/L	<100	100	540	100	8157085
Dissolved Potassium (K)	ug/L	6000	200	3400	200	8157085
Dissolved Selenium (Se)	ug/L	<2.0	2.0	<2.0	2.0	8157085
Dissolved Silicon (Si)	ug/L	14000	50	13000	50	8157085
Dissolved Silver (Ag)	ug/L	<0.090	0.090	<0.090	0.090	8157085
Dissolved Sodium (Na)	ug/L	34000	100	48000	100	8157085
Dissolved Strontium (Sr)	ug/L	60000	5.0	6400	1.0	8157085
Dissolved Tellurium (Te)	ug/L	<1.0	1.0	<1.0	1.0	8157085
Dissolved Thallium (Tl)	ug/L	<0.050	0.050	<0.050	0.050	8157085
Dissolved Tin (Sn)	ug/L	<1.0	1.0	<1.0	1.0	8157085
Dissolved Titanium (Ti)	ug/L	9.6	5.0	68	5.0	8157085
Dissolved Tungsten (W)	ug/L	7.5	1.0	3.0	1.0	8157085
Dissolved Uranium (U)	ug/L	0.60	0.10	1.2	0.10	8157085
Dissolved Vanadium (V)	ug/L	1.1	0.50	2.8	0.50	8157085
Dissolved Zinc (Zn)	ug/L	<5.0	5.0	<5.0	5.0	8157085
Dissolved Zirconium (Zr)	ug/L	<1.0	1.0	<1.0	1.0	8157085
RDL = Reportable Detection Limit						
QC Batch = Quality Control Batch						



**PETROLEUM HYDROCARBONS (CCME)**

<b>Bureau Veritas ID</b>		TJK871	TJK873		
<b>Sampling Date</b>		2022/08/05 09:30	2022/08/05		
<b>COC Number</b>		891201-01-01	891201-01-01		
	<b>UNITS</b>	<b>MW22-405</b>	<b>TRIP BLANK</b>	<b>RDL</b>	<b>QC Batch</b>
<b>BTEX &amp; F1 Hydrocarbons</b>					
Benzene	ug/L	<0.20	<0.20	0.20	8156291
Toluene	ug/L	<0.20	<0.20	0.20	8156291
Ethylbenzene	ug/L	<0.20	<0.20	0.20	8156291
o-Xylene	ug/L	<0.20	<0.20	0.20	8156291
p+m-Xylene	ug/L	<0.40	<0.40	0.40	8156291
Total Xylenes	ug/L	<0.40	<0.40	0.40	8156291
F1 (C6-C10)	ug/L	<25	<25	25	8156291
F1 (C6-C10) - BTEX	ug/L	<25	<25	25	8156291
<b>Surrogate Recovery (%)</b>					
1,4-Difluorobenzene	%	102	101		8156291
4-Bromofluorobenzene	%	97	99		8156291
D10-o-Xylene	%	85	86		8156291
D4-1,2-Dichloroethane	%	97	100		8156291
RDL = Reportable Detection Limit QC Batch = Quality Control Batch					



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Bureau Veritas Job #: C2M1669  
Report Date: 2022/08/23

Golder Associates Ltd  
Client Project #: 215451149  
Sampler Initials: C.K

**O.REG 153 OC PESTICIDES (WATER)**

Bureau Veritas ID		TJK869		TJK872		
Sampling Date		2022/08/04 11:30		2022/08/05 10:30		
COC Number		891201-01-01		891201-01-01		
	UNITS	MW22-411S	QC Batch	MW22-303	RDL	QC Batch
<b>Calculated Parameters</b>						
Aldrin + Dieldrin	ug/L	<0.005	8153388	<0.005	0.005	8153390
Chlordane (Total)	ug/L	<0.005	8153388	<0.005	0.005	8153390
DDT+ Metabolites	ug/L	<0.005	8153388	<0.005	0.005	8153390
Heptachlor + Heptachlor epoxide	ug/L	<0.005	8153388	<0.005	0.005	8153390
o,p-DDD + p,p-DDD	ug/L	<0.005	8153388	<0.005	0.005	8153390
o,p-DDE + p,p-DDE	ug/L	<0.005	8153388	<0.005	0.005	8153390
o,p-DDT + p,p-DDT	ug/L	<0.005	8153388	<0.005	0.005	8153390
Total Endosulfan	ug/L	<0.005	8153388	<0.005	0.005	8153390
Total PCB	ug/L	<0.05	8153388	<0.05	0.05	8153390
Total Trichlorobenzenes	ug/L	<0.5	8153388	<0.5	0.5	8153390
<b>Pesticides &amp; Herbicides</b>						
Aldrin	ug/L	<0.005	8158551	<0.005	0.005	8158551
Dieldrin	ug/L	<0.005	8158551	<0.005	0.005	8158551
a-Chlordane	ug/L	<0.005	8158551	<0.005	0.005	8158551
g-Chlordane	ug/L	<0.005	8158551	<0.005	0.005	8158551
o,p-DDD	ug/L	<0.005	8158551	<0.005	0.005	8158551
p,p-DDD	ug/L	<0.005	8158551	<0.005	0.005	8158551
o,p-DDE	ug/L	<0.005	8158551	<0.005	0.005	8158551
p,p-DDE	ug/L	<0.005	8158551	<0.005	0.005	8158551
o,p-DDT	ug/L	<0.005	8158551	<0.005	0.005	8158551
p,p-DDT	ug/L	<0.005	8158551	<0.005	0.005	8158551
Lindane	ug/L	<0.003	8158551	<0.003	0.003	8158551
Endosulfan I (alpha)	ug/L	<0.005	8158551	<0.005	0.005	8158551
Endosulfan II (beta)	ug/L	<0.005	8158551	<0.005	0.005	8158551
Endrin	ug/L	<0.005	8158551	<0.005	0.005	8158551
Heptachlor	ug/L	<0.005	8158551	<0.005	0.005	8158551
Heptachlor epoxide	ug/L	<0.005	8158551	<0.005	0.005	8158551
Hexachlorobenzene	ug/L	<0.005	8158551	<0.005	0.005	8158551
Methoxychlor	ug/L	<0.01	8158551	<0.01	0.01	8158551
Aroclor 1016	ug/L	<0.05	8158551	<0.05	0.05	8158551
Aroclor 1221	ug/L	<0.05	8158551	<0.05	0.05	8158551
Aroclor 1232	ug/L	<0.05	8158551	<0.05	0.05	8158551
Aroclor 1242	ug/L	<0.05	8158551	<0.05	0.05	8158551
Aroclor 1248	ug/L	<0.05	8158551	<0.05	0.05	8158551
Aroclor 1254	ug/L	<0.05	8158551	<0.05	0.05	8158551
RDL = Reportable Detection Limit QC Batch = Quality Control Batch						



O.REG 153 OC PESTICIDES (WATER)

Bureau Veritas ID		TJK869		TJK872		
Sampling Date		2022/08/04 11:30		2022/08/05 10:30		
COC Number		891201-01-01		891201-01-01		
	UNITS	MW22-411S	QC Batch	MW22-303	RDL	QC Batch
Aroclor 1260	ug/L	<0.05	8158551	<0.05	0.05	8158551
alpha-BHC	ug/L	<0.005	8158551	<0.005	0.005	8158551
beta-BHC	ug/L	<0.005	8158551	<0.005	0.005	8158551
delta-BHC	ug/L	<0.005	8158551	<0.005	0.005	8158551
Endosulfan sulfate	ug/L	<0.005	8158551	<0.005	0.005	8158551
Endrin aldehyde	ug/L	<0.005	8158551	<0.005	0.005	8158551
Endrin ketone	ug/L	<0.005	8158551	<0.005	0.005	8158551
Mirex	ug/L	<0.005	8158551	<0.005	0.005	8158551
Octachlorostyrene	ug/L	<0.005	8158551	<0.005	0.005	8158551
Oxychlorane	ug/L	<0.005	8158551	<0.005	0.005	8158551
Toxaphene	ug/L	<0.2	8158551	<0.2	0.2	8158551
<b>Surrogate Recovery (%)</b>						
2,4,5,6-Tetrachloro-m-xylene	%	62	8158551	62		8158551
Decachlorobiphenyl	%	111	8158551	106		8158551
RDL = Reportable Detection Limit QC Batch = Quality Control Batch						



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Bureau Veritas Job #: C2M1669  
Report Date: 2022/08/23

Golder Associates Ltd  
Client Project #: 215451149  
Sampler Initials: C.K

### O.REG 153 PAHS (WATER)

Bureau Veritas ID		TJK867	TJK868	TJK870		
Sampling Date		2022/08/04 14:30	2022/08/04 13:00	2022/08/04 14:00		
COC Number		891201-01-01	891201-01-01	891201-01-01		
	UNITS	MW22-401	MW22-411D	DUP-1	RDL	QC Batch
<b>Calculated Parameters</b>						
Methylnaphthalene, 2-(1-)	ug/L	<0.071	<0.071	<0.071	0.071	8152707
<b>Polyaromatic Hydrocarbons</b>						
Acenaphthene	ug/L	<0.050	<0.050	<0.050	0.050	8155888
Acenaphthylene	ug/L	<0.050	<0.050	<0.050	0.050	8155888
Anthracene	ug/L	<0.050	<0.050	<0.050	0.050	8155888
Benzo(a)anthracene	ug/L	<0.050	<0.050	<0.050	0.050	8155888
Benzo(a)pyrene	ug/L	<0.0090	<0.0090	<0.0090	0.0090	8155888
Benzo(b,j)fluoranthene	ug/L	<0.050	<0.050	<0.050	0.050	8155888
Benzo(g,h,i)perylene	ug/L	<0.050	<0.050	<0.050	0.050	8155888
Benzo(k)fluoranthene	ug/L	<0.050	<0.050	<0.050	0.050	8155888
Chrysene	ug/L	<0.050	<0.050	<0.050	0.050	8155888
Dibenzo(a,h)anthracene	ug/L	<0.050	<0.050	<0.050	0.050	8155888
Fluoranthene	ug/L	<0.050	<0.050	<0.050	0.050	8155888
Fluorene	ug/L	<0.050	<0.050	<0.050	0.050	8155888
Indeno(1,2,3-cd)pyrene	ug/L	<0.050	<0.050	<0.050	0.050	8155888
1-Methylnaphthalene	ug/L	<0.050	<0.050	<0.050	0.050	8155888
2-Methylnaphthalene	ug/L	<0.050	<0.050	<0.050	0.050	8155888
Naphthalene	ug/L	<0.050	<0.050	<0.050	0.050	8155888
Phenanthrene	ug/L	<0.030	<0.030	<0.030	0.030	8155888
Pyrene	ug/L	<0.050	<0.050	<0.050	0.050	8155888
<b>Surrogate Recovery (%)</b>						
D10-Anthracene	%	66	87	79		8155888
D14-Terphenyl (FS)	%	51	78	70		8155888
D8-Acenaphthylene	%	76	83	75		8155888
RDL = Reportable Detection Limit						
QC Batch = Quality Control Batch						



O.REG 153 PHCS, BTEX/F1-F4 (WATER)

<b>Bureau Veritas ID</b>		TJK867	TJK868			TJK869			TJK870		
<b>Sampling Date</b>		2022/08/04 14:30	2022/08/04 13:00			2022/08/04 11:30			2022/08/04 14:00		
<b>COC Number</b>		891201-01-01	891201-01-01			891201-01-01			891201-01-01		
	<b>UNITS</b>	<b>MW22-401</b>	<b>MW22-411D</b>	<b>RDL</b>	<b>QC Batch</b>	<b>MW22-411S</b>	<b>RDL</b>	<b>QC Batch</b>	<b>DUP-1</b>	<b>RDL</b>	<b>QC Batch</b>

<b>BTEX &amp; F1 Hydrocarbons</b>											
Benzene	ug/L	<0.20	<0.20	0.20	8156291				<0.20	0.20	8156291
Toluene	ug/L	<0.20	<0.20	0.20	8156291				<0.20	0.20	8156291
Ethylbenzene	ug/L	<0.20	<0.20	0.20	8156291				<0.20	0.20	8156291
o-Xylene	ug/L	<0.20	<0.20	0.20	8156291				<0.20	0.20	8156291
p+m-Xylene	ug/L	<0.40	<0.40	0.40	8156291				<0.40	0.40	8156291
Total Xylenes	ug/L	<0.40	<0.40	0.40	8156291				<0.40	0.40	8156291
F1 (C6-C10)	ug/L	<25	<25	25	8156291	<25	25	8156291	<25	25	8156291
F1 (C6-C10) - BTEX	ug/L	<25	<25	25	8156291	<25	25	8156291	<25	25	8156291

<b>F2-F4 Hydrocarbons</b>											
F2 (C10-C16 Hydrocarbons)	ug/L	<100	<100	100	8155894	<100	100	8155894	<100	100	8155894
F3 (C16-C34 Hydrocarbons)	ug/L	<200	<200	200	8155894	<200	200	8155894	<200	200	8155894
F4 (C34-C50 Hydrocarbons)	ug/L	<200	<200	200	8155894	<200	200	8155894	<200	200	8155894
Reached Baseline at C50	ug/L	Yes	Yes		8155894	Yes		8155894	Yes		8155894

<b>Surrogate Recovery (%)</b>											
1,4-Difluorobenzene	%	102	102		8156291	93		8156291	98		8156291
4-Bromofluorobenzene	%	99	101		8156291	103		8156291	99		8156291
D10-o-Xylene	%	86	89		8156291	91		8156291	86		8156291
D4-1,2-Dichloroethane	%	121	94		8156291	94		8156291	100		8156291
o-Terphenyl	%	101	100		8155894	100		8155894	99		8155894

RDL = Reportable Detection Limit  
QC Batch = Quality Control Batch



**O.REG 153 PHCS, BTEX/F1-F4 (WATER)**

<b>Bureau Veritas ID</b>		TJK872		
<b>Sampling Date</b>		2022/08/05 10:30		
<b>COC Number</b>		891201-01-01		
	<b>UNITS</b>	<b>MW22-303</b>	<b>RDL</b>	<b>QC Batch</b>
<b>BTEX &amp; F1 Hydrocarbons</b>				
F1 (C6-C10)	ug/L	<25	25	8156291
F1 (C6-C10) - BTEX	ug/L	<25	25	8156291
<b>F2-F4 Hydrocarbons</b>				
F2 (C10-C16 Hydrocarbons)	ug/L	<100	100	8158735
F3 (C16-C34 Hydrocarbons)	ug/L	<200	200	8158735
F4 (C34-C50 Hydrocarbons)	ug/L	<200	200	8158735
Reached Baseline at C50	ug/L	Yes		8158735
<b>Surrogate Recovery (%)</b>				
1,4-Difluorobenzene	%	101		8156291
4-Bromofluorobenzene	%	98		8156291
D10-o-Xylene	%	86		8156291
D4-1,2-Dichloroethane	%	100		8156291
o-Terphenyl	%	108		8158735
RDL = Reportable Detection Limit QC Batch = Quality Control Batch				



**TEST SUMMARY**

**Bureau Veritas ID:** TJK867  
**Sample ID:** MW22-401  
**Matrix:** Water

**Collected:** 2022/08/04  
**Shipped:**  
**Received:** 2022/08/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	8152707	N/A	2022/08/11	Automated Statchk
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	8156291	N/A	2022/08/10	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	8155894	2022/08/09	2022/08/10	Dennis Ngondou
PAH Compounds in Water by GC/MS (SIM)	GC/MS	8155888	2022/08/09	2022/08/10	Joe Paino

**Bureau Veritas ID:** TJK868  
**Sample ID:** MW22-411D  
**Matrix:** Water

**Collected:** 2022/08/04  
**Shipped:**  
**Received:** 2022/08/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	8152707	N/A	2022/08/11	Automated Statchk
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	8156291	N/A	2022/08/10	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	8155894	2022/08/09	2022/08/10	Dennis Ngondou
PAH Compounds in Water by GC/MS (SIM)	GC/MS	8155888	2022/08/09	2022/08/10	Joe Paino

**Bureau Veritas ID:** TJK869  
**Sample ID:** MW22-411S  
**Matrix:** Water

**Collected:** 2022/08/04  
**Shipped:**  
**Received:** 2022/08/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
ABN Compounds in Water by GC/MS	GC/MS	8165355	2022/08/14	2022/08/15	Anh Lieu
Sewer Use By-Law Semivolatile Organics	GC/MS	8160090	2022/08/11	2022/08/12	Adriana Zurita
Carbonaceous BOD	DO	8153881	2022/08/08	2022/08/13	Gurjot Kaur
Total Cyanide	SKAL/CN	8157419	2022/08/10	2022/08/10	Prgya Panchal
Dioxins/Furans in Water (1613B)	HRMS/MS	8160911	2022/08/09	2022/08/11	Angel Guerrero
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	8156291	N/A	2022/08/10	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	8155894	2022/08/09	2022/08/10	Dennis Ngondou
Fluoride	ISE	8157136	2022/08/09	2022/08/10	Kien Tran
Mercury in Water by CVAA	CV/AA	8160143	2022/08/11	2022/08/11	Japneet Gill
Dissolved Metals by ICPMS	ICP/MS	8157085	N/A	2022/08/10	Prempal Bhatti
Total Metals Analysis by ICPMS	ICP/MS	8160171	N/A	2022/08/11	Daniel Teclu
Nitrosamines in Water	GCTQ/MS	8157377	2022/08/10	2022/08/11	Wenhui (Susie) Shi
Total Nonylphenol in Liquids by HPLC	LC/FLU	8162407	2022/08/12	2022/08/12	Dennis Boodram
Nonylphenol Ethoxylates in Liquids: HPLC	LC/FLU	8162420	2022/08/12	2022/08/12	Dennis Boodram
Animal and Vegetable Oil and Grease	BAL	8152799	N/A	2022/08/11	Automated Statchk
Total Oil and Grease	BAL	8160207	2022/08/11	2022/08/11	Mitul Patel
OC Pesticides (Selected) & PCB	GC/ECD	8158551	2022/08/10	2022/08/11	Li Peng
OC Pesticides Summed Parameters	CALC	8153388	N/A	2022/08/10	Automated Statchk
pH	AT	8157137	2022/08/09	2022/08/10	Kien Tran
Phenols (4AAP)	TECH/PHEN	8159384	N/A	2022/08/10	Mandeep Kaur
Sulphate by Automated Colourimetry	KONE	8157180	N/A	2022/08/10	Samuel Law
Sulphide	ISE/S	8160434	N/A	2022/08/11	Taslina Aktar
Total Kjeldahl Nitrogen in Water	SKAL	8157722	2022/08/10	2022/08/11	Rajni Tyagi
Total PAHs (Hamilton, Ottawa S.U.B.)	CALC	8153391	N/A	2022/08/15	Automated Statchk
Mineral/Synthetic O & G (TPH Heavy Oil)	BAL	8160211	2022/08/11	2022/08/11	Mitul Patel
Total Suspended Solids	BAL	8155123	2022/08/10	2022/08/11	Shaneil Hall





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VERITAS

Bureau Veritas Job #: C2M1669  
Report Date: 2022/08/23

Golder Associates Ltd  
Client Project #: 215451149  
Sampler Initials: C.K

### TEST SUMMARY

**Bureau Veritas ID:** TJK869  
**Sample ID:** MW22-411S  
**Matrix:** Water

**Collected:** 2022/08/04  
**Shipped:**  
**Received:** 2022/08/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Volatile Organic Compounds in Water	P&T/MS	8153358	N/A	2022/08/10	Noel Ramos
Non-Routine Volatile Organic Compounds	P&T/MS	8156342	N/A	2022/08/10	Noel Ramos

**Bureau Veritas ID:** TJK870  
**Sample ID:** DUP-1  
**Matrix:** Water

**Collected:** 2022/08/04  
**Shipped:**  
**Received:** 2022/08/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	8152707	N/A	2022/08/11	Automated Statchk
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	8156291	N/A	2022/08/10	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	8155894	2022/08/09	2022/08/10	Dennis Ngondou
PAH Compounds in Water by GC/MS (SIM)	GC/MS	8155888	2022/08/09	2022/08/10	Joe Paino

**Bureau Veritas ID:** TJK871  
**Sample ID:** MW22-405  
**Matrix:** Water

**Collected:** 2022/08/05  
**Shipped:**  
**Received:** 2022/08/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	8156291	N/A	2022/08/10	Georgeta Rusu

**Bureau Veritas ID:** TJK872  
**Sample ID:** MW22-303  
**Matrix:** Water

**Collected:** 2022/08/05  
**Shipped:**  
**Received:** 2022/08/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
ABN Compounds in Water by GC/MS	GC/MS	8165355	2022/08/14	2022/08/15	Anh Lieu
Sewer Use By-Law Semivolatile Organics	GC/MS	8160090	2022/08/11	2022/08/12	Adriana Zurita
Carbonaceous BOD	DO	8153881	2022/08/08	2022/08/13	Gurjot Kaur
Total Cyanide	SKAL/CN	8157419	2022/08/10	2022/08/10	Prgya Panchal
Dioxins/Furans in Water (1613B)	HRMS/MS	8160911	2022/08/09	2022/08/11	Angel Guerrero
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	8156291	N/A	2022/08/10	Georgeta Rusu
Petroleum Hydrocarbons F2-F4 in Water	GC/FID	8158735	2022/08/10	2022/08/11	Dennis Ngondou
Fluoride	ISE	8157136	2022/08/09	2022/08/10	Kien Tran
Mercury in Water by CVAA	CV/AA	8160143	2022/08/11	2022/08/11	Japneet Gill
Dissolved Metals by ICPMS	ICP/MS	8157085	N/A	2022/08/10	Prempal Bhatti
Total Metals Analysis by ICPMS	ICP/MS	8160171	N/A	2022/08/11	Daniel Teclu
Nitrosamines in Water	GCTQ/MS	8157377	2022/08/10	2022/08/11	Wenhui (Susie) Shi
Total Nonylphenol in Liquids by HPLC	LC/FLU	8162407	2022/08/12	2022/08/12	Dennis Boodram
Nonylphenol Ethoxylates in Liquids: HPLC	LC/FLU	8162420	2022/08/12	2022/08/12	Dennis Boodram
Animal and Vegetable Oil and Grease	BAL	8152799	N/A	2022/08/11	Automated Statchk
Total Oil and Grease	BAL	8160207	2022/08/11	2022/08/11	Mitul Patel
OC Pesticides (Selected) & PCB	GC/ECD	8158551	2022/08/10	2022/08/11	Li Peng
OC Pesticides Summed Parameters	CALC	8153390	N/A	2022/08/10	Automated Statchk
pH	AT	8157137	2022/08/09	2022/08/10	Kien Tran
Phenols (4AAP)	TECH/PHEN	8159384	N/A	2022/08/10	Mandeep Kaur
Sulphate by Automated Colourimetry	KONE	8157180	N/A	2022/08/10	Samuel Law



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VERITAS

Bureau Veritas Job #: C2M1669  
Report Date: 2022/08/23

Golder Associates Ltd  
Client Project #: 215451149  
Sampler Initials: C.K

### TEST SUMMARY

**Bureau Veritas ID:** TJK872  
**Sample ID:** MW22-303  
**Matrix:** Water

**Collected:** 2022/08/05  
**Shipped:**  
**Received:** 2022/08/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Sulphide	ISE/S	8160434	N/A	2022/08/11	Taslima Aktar
Total Kjeldahl Nitrogen in Water	SKAL	8157722	2022/08/10	2022/08/11	Rajni Tyagi
Total PAHs (Hamilton, Ottawa S.U.B.)	CALC	8153391	N/A	2022/08/15	Automated Statchk
Mineral/Synthetic O & G (TPH Heavy Oil)	BAL	8160211	2022/08/11	2022/08/11	Mitul Patel
Total Suspended Solids	BAL	8155123	2022/08/10	2022/08/11	Shaneil Hall
Volatile Organic Compounds in Water	P&T/MS	8153358	N/A	2022/08/10	Noel Ramos
Non-Routine Volatile Organic Compounds	P&T/MS	8156342	N/A	2022/08/10	Noel Ramos

**Bureau Veritas ID:** TJK872 Dup  
**Sample ID:** MW22-303  
**Matrix:** Water

**Collected:** 2022/08/05  
**Shipped:**  
**Received:** 2022/08/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Carbonaceous BOD	DO	8153881	2022/08/08	2022/08/13	Gurjot Kaur
Volatile Organic Compounds in Water	P&T/MS	8153358	N/A	2022/08/10	Noel Ramos
Non-Routine Volatile Organic Compounds	P&T/MS	8156342	N/A	2022/08/10	Noel Ramos

**Bureau Veritas ID:** TJK873  
**Sample ID:** TRIP BLANK  
**Matrix:** Water

**Collected:** 2022/08/05  
**Shipped:**  
**Received:** 2022/08/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Water	HSGC/MSFD	8156291	N/A	2022/08/10	Georgeta Rusu



### GENERAL COMMENTS

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

Package 1	14.3°C
Package 2	14.7°C
Package 3	13.0°C
Package 4	15.3°C

Sample TJK869 [MW22-411S] : Carbonaceous Biochemical Oxygen Demand (C.BOD) Analysis: Elevated DL reported using the lowest dilution of sample

NDMA Analysis: Due to the nature of the sample matrix, a smaller portion of the sample was extracted. Detection limit was adjusted accordingly.

Sample TJK872 [MW22-303] : NDMA Analysis: Due to the nature of the sample matrix, a smaller portion of the sample was extracted. Detection limit was adjusted accordingly.

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



BUREAU  
VERITAS

Bureau Veritas Job #: C2M1669

Report Date: 2022/08/23

### QUALITY ASSURANCE REPORT

Golder Associates Ltd

Client Project #: 215451149

Sampler Initials: C.K

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8153358	4-Bromofluorobenzene	2022/08/10	91	70 - 130	98	70 - 130	98	%				
8153358	D4-1,2-Dichloroethane	2022/08/10	96	70 - 130	96	70 - 130	106	%				
8153358	D8-Toluene	2022/08/10	99	70 - 130	102	70 - 130	97	%				
8155888	D10-Anthracene	2022/08/10	61	50 - 130	89	50 - 130	88	%				
8155888	D14-Terphenyl (FS)	2022/08/10	65	50 - 130	84	50 - 130	79	%				
8155888	D8-Acenaphthylene	2022/08/10	73	50 - 130	86	50 - 130	83	%				
8155894	o-Terphenyl	2022/08/10	102	60 - 130	103	60 - 130	102	%				
8156291	1,4-Difluorobenzene	2022/08/10	98	70 - 130	99	70 - 130	100	%				
8156291	4-Bromofluorobenzene	2022/08/10	102	70 - 130	100	70 - 130	97	%				
8156291	D10-o-Xylene	2022/08/10	103	70 - 130	99	70 - 130	95	%				
8156291	D4-1,2-Dichloroethane	2022/08/10	120	70 - 130	96	70 - 130	103	%				
8156342	4-Bromofluorobenzene	2022/08/10	99	70 - 130	99	70 - 130	98	%				
8156342	D4-1,2-Dichloroethane	2022/08/10	91	70 - 130	91	70 - 130	105	%				
8156342	D8-Toluene	2022/08/10	105	70 - 130	105	70 - 130	99	%				
8157377	D10-N-nitrosodiethylamine	2022/08/11			85	10 - 150	84	%				
8157377	D14-N-Nitrosodi-n-propylamine	2022/08/11			88	10 - 150	85	%				
8157377	D6-N-Nitrosodimethylamine	2022/08/11			46	10 - 80	44	%				
8157377	D8-N-Nitrosomorpholine	2022/08/11			73	10 - 150	70	%				
8158551	2,4,5,6-Tetrachloro-m-xylene	2022/08/11	32 (1)	50 - 130	62	50 - 130	63	%				
8158551	Decachlorobiphenyl	2022/08/11	68	50 - 130	114	50 - 130	114	%				
8158735	o-Terphenyl	2022/08/11	109	60 - 130	110	60 - 130	106	%				
8160090	2,4,6-Tribromophenol	2022/08/11	100	10 - 130	85	10 - 130	73	%				
8160090	2-Fluorobiphenyl	2022/08/11	65	30 - 130	70	30 - 130	71	%				
8160090	D14-Terphenyl (FS)	2022/08/11	92	30 - 130	92	30 - 130	95	%				
8160090	D5-Nitrobenzene	2022/08/11	72	30 - 130	79	30 - 130	77	%				
8160090	D8-Acenaphthylene	2022/08/11	67	30 - 130	72	30 - 130	69	%				
8160911	37CL4 2378 Tetra CDD	2022/08/11			75	35 - 197	84	%				
8160911	C13-1234678 HeptaCDD	2022/08/11			101	23 - 140	109	%				
8160911	C13-1234678 HeptaCDF	2022/08/11			111	28 - 143	119	%				
8160911	C13-123478 HexaCDD	2022/08/11			111	32 - 141	120	%				
8160911	C13-123478 HexaCDF	2022/08/11			116	26 - 152	128	%				
8160911	C13-1234789 HeptaCDF	2022/08/11			92	28 - 138	98	%				



BUREAU  
VERITAS

Bureau Veritas Job #: C2M1669

Report Date: 2022/08/23

### QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd

Client Project #: 215451149

Sampler Initials: C.K

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8160911	C13-123678 HexaCDD	2022/08/11			109	28 - 130	117	%				
8160911	C13-123678 HexaCDF	2022/08/11			116	26 - 123	119	%				
8160911	C13-12378 PentaCDD	2022/08/11			103	25 - 181	99	%				
8160911	C13-12378 PentaCDF	2022/08/11			100	24 - 185	99	%				
8160911	C13-123789 HexaCDF	2022/08/11			95	29 - 147	105	%				
8160911	C13-234678 HexaCDF	2022/08/11			120	28 - 136	131	%				
8160911	C13-23478 PentaCDF	2022/08/11			110	21 - 178	99	%				
8160911	C13-2378 TetraCDD	2022/08/11			80	25 - 164	89	%				
8160911	C13-2378 TetraCDF	2022/08/11			82	24 - 169	98	%				
8160911	C13-OCDD	2022/08/11			82	17 - 157	80	%				
8165355	2,4,6-Tribromophenol	2022/08/15	90	10 - 130	90	10 - 130	45	%				
8165355	2-Fluorobiphenyl	2022/08/15	73	30 - 130	74	30 - 130	86	%				
8165355	2-Fluorophenol	2022/08/15	46	10 - 130	49	10 - 130	29	%				
8165355	D14-Terphenyl	2022/08/15	91	30 - 130	94	30 - 130	93	%				
8165355	D5-Nitrobenzene	2022/08/15	80	30 - 130	90	30 - 130	90	%				
8165355	D5-Phenol	2022/08/15	31	10 - 130	32	10 - 130	27	%				
8153358	1,1,1-Trichloroethane	2022/08/10	108	70 - 130	100	70 - 130	<0.10	ug/L	NC	30		
8153358	1,1,2,2-Tetrachloroethane	2022/08/10	81	70 - 130	87	70 - 130	<0.20	ug/L	NC	30		
8153358	1,1,2-Trichloroethane	2022/08/10	91	70 - 130	95	70 - 130	<0.20	ug/L	NC	30		
8153358	1,1-Dichloroethane	2022/08/10	93	70 - 130	91	70 - 130	<0.10	ug/L	NC	30		
8153358	1,1-Dichloroethylene	2022/08/10	97	70 - 130	94	70 - 130	<0.10	ug/L	NC	30		
8153358	1,2-Dichlorobenzene	2022/08/10	94	70 - 130	94	70 - 130	<0.20	ug/L	NC	30		
8153358	1,2-Dichloroethane	2022/08/10	90	70 - 130	88	70 - 130	<0.20	ug/L	NC	30		
8153358	1,2-Dichloropropane	2022/08/10	97	70 - 130	93	70 - 130	<0.10	ug/L	NC	30		
8153358	1,3-Dichlorobenzene	2022/08/10	99	70 - 130	97	70 - 130	<0.20	ug/L	NC	30		
8153358	1,4-Dichlorobenzene	2022/08/10	116	70 - 130	113	70 - 130	<0.20	ug/L	NC	30		
8153358	Benzene	2022/08/10	94	70 - 130	92	70 - 130	<0.10	ug/L	NC	30		
8153358	Bromodichloromethane	2022/08/10	103	70 - 130	99	70 - 130	<0.10	ug/L	NC	30		
8153358	Bromoform	2022/08/10	93	70 - 130	95	70 - 130	<0.20	ug/L	NC	30		
8153358	Bromomethane	2022/08/10	99	60 - 140	103	60 - 140	<0.50	ug/L	NC	30		
8153358	Carbon Tetrachloride	2022/08/10	107	70 - 130	97	70 - 130	<0.10	ug/L	NC	30		
8153358	Chlorobenzene	2022/08/10	100	70 - 130	97	70 - 130	<0.10	ug/L	NC	30		



BUREAU VERITAS

Bureau Veritas Job #: C2M1669

Report Date: 2022/08/23

### QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd

Client Project #: 215451149

Sampler Initials: C.K

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8153358	Chloroethane	2022/08/10	106	70 - 130	94	70 - 130	<0.20	ug/L	NC	30		
8153358	Chloroform	2022/08/10	97	70 - 130	94	70 - 130	<0.10	ug/L	3.0	30		
8153358	Chloromethane	2022/08/10	99	60 - 140	84	60 - 140	<0.50	ug/L	NC	30		
8153358	cis-1,2-Dichloroethylene	2022/08/10	101	70 - 130	99	70 - 130	<0.10	ug/L	NC	30		
8153358	cis-1,3-Dichloropropene	2022/08/10	99	70 - 130	96	70 - 130	<0.20	ug/L	NC	30		
8153358	Dibromochloromethane	2022/08/10	95	70 - 130	94	70 - 130	<0.20	ug/L	NC	30		
8153358	Ethylbenzene	2022/08/10	103	70 - 130	95	70 - 130	<0.10	ug/L	NC	30		
8153358	Ethylene Dibromide	2022/08/10	94	70 - 130	92	70 - 130	<0.20	ug/L	NC	30		
8153358	Methylene Chloride(Dichloromethane)	2022/08/10	93	70 - 130	94	70 - 130	<0.50	ug/L	NC	30		
8153358	o-Xylene	2022/08/10	101	70 - 130	96	70 - 130	<0.10	ug/L	NC	30		
8153358	p+m-Xylene	2022/08/10	107	70 - 130	100	70 - 130	<0.10	ug/L	NC	30		
8153358	Styrene	2022/08/10	109	70 - 130	106	70 - 130	<0.20	ug/L	NC	30		
8153358	Tetrachloroethylene	2022/08/10	101	70 - 130	94	70 - 130	<0.10	ug/L	NC	30		
8153358	Toluene	2022/08/10	96	70 - 130	95	70 - 130	<0.20	ug/L	NC	30		
8153358	Total Xylenes	2022/08/10					<0.10	ug/L	NC	30		
8153358	trans-1,2-Dichloroethylene	2022/08/10	102	70 - 130	97	70 - 130	<0.10	ug/L	NC	30		
8153358	trans-1,3-Dichloropropene	2022/08/10	97	70 - 130	99	70 - 130	<0.20	ug/L	NC	30		
8153358	Trichloroethylene	2022/08/10	116	70 - 130	104	70 - 130	<0.10	ug/L	NC	30		
8153358	Trichlorofluoromethane (FREON 11)	2022/08/10	110	70 - 130	93	70 - 130	<0.20	ug/L	NC	30		
8153358	Vinyl Chloride	2022/08/10	94	70 - 130	79	70 - 130	<0.20	ug/L	NC	30		
8153881	Total Carbonaceous BOD	2022/08/13					<2	mg/L	NC	30	93	85 - 115
8155123	Total Suspended Solids	2022/08/11					<10	mg/L	0	25	96	85 - 115
8155888	1-Methylnaphthalene	2022/08/10	74	50 - 130	70	50 - 130	<0.050	ug/L	NC	30		
8155888	2-Methylnaphthalene	2022/08/10	70	50 - 130	66	50 - 130	<0.050	ug/L	NC	30		
8155888	Acenaphthene	2022/08/10	83	50 - 130	77	50 - 130	<0.050	ug/L	NC	30		
8155888	Acenaphthylene	2022/08/10	76	50 - 130	78	50 - 130	<0.050	ug/L	NC	30		
8155888	Anthracene	2022/08/10	81	50 - 130	83	50 - 130	<0.050	ug/L	NC	30		
8155888	Benzo(a)anthracene	2022/08/10	91	50 - 130	89	50 - 130	<0.050	ug/L	NC	30		
8155888	Benzo(a)pyrene	2022/08/10	78	50 - 130	76	50 - 130	<0.0090	ug/L	NC	30		
8155888	Benzo(b/j)fluoranthene	2022/08/10	88	50 - 130	87	50 - 130	<0.050	ug/L	NC	30		
8155888	Benzo(g,h,i)perylene	2022/08/10	92	50 - 130	92	50 - 130	<0.050	ug/L	NC	30		
8155888	Benzo(k)fluoranthene	2022/08/10	89	50 - 130	86	50 - 130	<0.050	ug/L	NC	30		



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QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8155888	Chrysene	2022/08/10	90	50 - 130	88	50 - 130	<0.050	ug/L	NC	30		
8155888	Dibenzo(a,h)anthracene	2022/08/10	84	50 - 130	84	50 - 130	<0.050	ug/L	NC	30		
8155888	Fluoranthene	2022/08/10	95	50 - 130	91	50 - 130	<0.050	ug/L	NC	30		
8155888	Fluorene	2022/08/10	85	50 - 130	80	50 - 130	<0.050	ug/L	NC	30		
8155888	Indeno(1,2,3-cd)pyrene	2022/08/10	92	50 - 130	90	50 - 130	<0.050	ug/L	NC	30		
8155888	Naphthalene	2022/08/10	70	50 - 130	66	50 - 130	<0.050	ug/L	NC	30		
8155888	Phenanthrene	2022/08/10	89	50 - 130	86	50 - 130	<0.030	ug/L	NC	30		
8155888	Pyrene	2022/08/10	93	50 - 130	89	50 - 130	<0.050	ug/L	NC	30		
8155894	F2 (C10-C16 Hydrocarbons)	2022/08/10	92	60 - 130	93	60 - 130	<100	ug/L	NC	30		
8155894	F3 (C16-C34 Hydrocarbons)	2022/08/10	97	60 - 130	99	60 - 130	<200	ug/L	NC	30		
8155894	F4 (C34-C50 Hydrocarbons)	2022/08/10	101	60 - 130	102	60 - 130	<200	ug/L	NC	30		
8156291	Benzene	2022/08/10	112	50 - 140	95	50 - 140	<0.20	ug/L	NC	30		
8156291	Ethylbenzene	2022/08/10	109	50 - 140	102	50 - 140	<0.20	ug/L	NC	30		
8156291	F1 (C6-C10) - BTEX	2022/08/10					<25	ug/L	NC	30		
8156291	F1 (C6-C10)	2022/08/10	101	60 - 140	98	60 - 140	<25	ug/L	NC	30		
8156291	o-Xylene	2022/08/10	104	50 - 140	97	50 - 140	<0.20	ug/L	3.4	30		
8156291	p+m-Xylene	2022/08/10	114	50 - 140	109	50 - 140	<0.40	ug/L	NC	30		
8156291	Toluene	2022/08/10	102	50 - 140	95	50 - 140	<0.20	ug/L	4.8	30		
8156291	Total Xylenes	2022/08/10					<0.40	ug/L	3.4	30		
8156342	1,3,5-Trimethylbenzene	2022/08/10	99	60 - 140	109	60 - 140	<0.20	ug/L	NC	30		
8157085	Dissolved Aluminum (Al)	2022/08/10	101	80 - 120	108	80 - 120	<4.9	ug/L	0.83	20		
8157085	Dissolved Antimony (Sb)	2022/08/10	105	80 - 120	102	80 - 120	<0.50	ug/L	NC	20		
8157085	Dissolved Arsenic (As)	2022/08/10	104	80 - 120	103	80 - 120	<1.0	ug/L	NC	20		
8157085	Dissolved Barium (Ba)	2022/08/10	100	80 - 120	101	80 - 120	<2.0	ug/L	3.3	20		
8157085	Dissolved Beryllium (Be)	2022/08/10	98	80 - 120	100	80 - 120	<0.40	ug/L	NC	20		
8157085	Dissolved Bismuth (Bi)	2022/08/10	99	80 - 120	102	80 - 120	<1.0	ug/L	NC	20		
8157085	Dissolved Boron (B)	2022/08/10	98	80 - 120	99	80 - 120	<10	ug/L	0.49	20		
8157085	Dissolved Cadmium (Cd)	2022/08/10	102	80 - 120	101	80 - 120	<0.090	ug/L	NC	20		
8157085	Dissolved Calcium (Ca)	2022/08/10	NC	80 - 120	100	80 - 120	<200	ug/L	0.46	20		
8157085	Dissolved Chromium (Cr)	2022/08/10	101	80 - 120	101	80 - 120	<5.0	ug/L	NC	20		
8157085	Dissolved Cobalt (Co)	2022/08/10	101	80 - 120	103	80 - 120	<0.50	ug/L	NC	20		
8157085	Dissolved Copper (Cu)	2022/08/10	99	80 - 120	99	80 - 120	<0.90	ug/L	NC	20		



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			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8157085	Dissolved Iron (Fe)	2022/08/10	103	80 - 120	105	80 - 120	<100	ug/L	NC	20		
8157085	Dissolved Lead (Pb)	2022/08/10	96	80 - 120	100	80 - 120	<0.50	ug/L	NC	20		
8157085	Dissolved Lithium (Li)	2022/08/10	104	80 - 120	107	80 - 120	<5.0	ug/L	NC	20		
8157085	Dissolved Magnesium (Mg)	2022/08/10	103	80 - 120	108	80 - 120	<50	ug/L	0.46	20		
8157085	Dissolved Manganese (Mn)	2022/08/10	102	80 - 120	104	80 - 120	<2.0	ug/L	3.0	20		
8157085	Dissolved Molybdenum (Mo)	2022/08/10	108	80 - 120	103	80 - 120	<0.50	ug/L	2.1	20		
8157085	Dissolved Nickel (Ni)	2022/08/10	98	80 - 120	101	80 - 120	<1.0	ug/L	1.5	20		
8157085	Dissolved Phosphorus (P)	2022/08/10	104	80 - 120	123 (1)	80 - 120	<100	ug/L	NC	20		
8157085	Dissolved Potassium (K)	2022/08/10	105	80 - 120	105	80 - 120	<200	ug/L	0.34	20		
8157085	Dissolved Selenium (Se)	2022/08/10	102	80 - 120	101	80 - 120	<2.0	ug/L	NC	20		
8157085	Dissolved Silicon (Si)	2022/08/10	102	80 - 120	100	80 - 120	<50	ug/L	0.49	20		
8157085	Dissolved Silver (Ag)	2022/08/10	99	80 - 120	101	80 - 120	<0.090	ug/L	NC	20		
8157085	Dissolved Sodium (Na)	2022/08/10	NC	80 - 120	106	80 - 120	<100	ug/L	0.61	20		
8157085	Dissolved Strontium (Sr)	2022/08/10	NC	80 - 120	101	80 - 120	<1.0	ug/L	0.78	20		
8157085	Dissolved Tellurium (Te)	2022/08/10	100	80 - 120	97	80 - 120	<1.0	ug/L	NC	20		
8157085	Dissolved Thallium (Tl)	2022/08/10	96	80 - 120	101	80 - 120	<0.050	ug/L	NC	20		
8157085	Dissolved Tin (Sn)	2022/08/10	106	80 - 120	101	80 - 120	<1.0	ug/L	NC	20		
8157085	Dissolved Titanium (Ti)	2022/08/10	101	80 - 120	98	80 - 120	<5.0	ug/L	NC	20		
8157085	Dissolved Tungsten (W)	2022/08/10	104	80 - 120	100	80 - 120	<1.0	ug/L	NC	20		
8157085	Dissolved Uranium (U)	2022/08/10	105	80 - 120	104	80 - 120	<0.10	ug/L	NC	20		
8157085	Dissolved Vanadium (V)	2022/08/10	103	80 - 120	102	80 - 120	<0.50	ug/L	NC	20		
8157085	Dissolved Zinc (Zn)	2022/08/10	99	80 - 120	102	80 - 120	<5.0	ug/L	NC	20		
8157085	Dissolved Zirconium (Zr)	2022/08/10	108	80 - 120	103	80 - 120	<1.0	ug/L	NC	20		
8157136	Fluoride (F-)	2022/08/10	105	80 - 120	106	80 - 120	<0.10	mg/L	1.4	20		
8157137	pH	2022/08/10			102	98 - 103			0.074	N/A		
8157180	Dissolved Sulphate (SO4)	2022/08/10	NC	75 - 125	97	80 - 120	<1.0	mg/L	0.70	20		
8157377	N-Nitrosodimethylamine	2022/08/11			98	65 - 135	<2.00	ng/L	1.7	25		
8157419	Total Cyanide (CN)	2022/08/10	95	80 - 120	93	80 - 120	<0.0050	mg/L	NC	20		
8157722	Total Kjeldahl Nitrogen (TKN)	2022/08/11	NC	80 - 120	97	80 - 120	<0.10	mg/L	0.54	20	97	80 - 120
8158551	a-Chlordane	2022/08/11	44 (2)	50 - 130	100	50 - 130	<0.005	ug/L	9.1	30		
8158551	Aldrin	2022/08/11	38 (2)	50 - 130	84	50 - 130	<0.005	ug/L	3.4	30		
8158551	alpha-BHC	2022/08/11	55	30 - 130	90	30 - 130	<0.005	ug/L	8.2	40		





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			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8158551	Aroclor 1016	2022/08/11					<0.05	ug/L				
8158551	Aroclor 1221	2022/08/11					<0.05	ug/L				
8158551	Aroclor 1232	2022/08/11					<0.05	ug/L				
8158551	Aroclor 1242	2022/08/11					<0.05	ug/L				
8158551	Aroclor 1248	2022/08/11					<0.05	ug/L				
8158551	Aroclor 1254	2022/08/11					<0.05	ug/L				
8158551	Aroclor 1260	2022/08/11					<0.05	ug/L				
8158551	beta-BHC	2022/08/11	44	30 - 130	86	30 - 130	<0.005	ug/L	8.2	40		
8158551	delta-BHC	2022/08/11	38	30 - 130	85	30 - 130	<0.005	ug/L	17	40		
8158551	Dieldrin	2022/08/11	74	50 - 130	112	50 - 130	<0.005	ug/L	9.3	30		
8158551	Endosulfan I (alpha)	2022/08/11	56	50 - 130	92	50 - 130	<0.005	ug/L	16	30		
8158551	Endosulfan II (beta)	2022/08/11	56	50 - 130	99	50 - 130	<0.005	ug/L	14	30		
8158551	Endosulfan sulfate	2022/08/11	64	30 - 130	116	30 - 130	<0.005	ug/L	0.35	40		
8158551	Endrin aldehyde	2022/08/11	48	30 - 130	89	30 - 130	<0.005	ug/L	7.9	40		
8158551	Endrin ketone	2022/08/11	65	30 - 130	110	30 - 130	<0.005	ug/L	12	40		
8158551	Endrin	2022/08/11	69	50 - 130	104	50 - 130	<0.005	ug/L	9.8	30		
8158551	g-Chlordane	2022/08/11	35 (2)	50 - 130	98	50 - 130	<0.005	ug/L	8.1	30		
8158551	Heptachlor epoxide	2022/08/11	72	50 - 130	108	50 - 130	<0.005	ug/L	8.2	30		
8158551	Heptachlor	2022/08/11	48 (2)	50 - 130	85	50 - 130	<0.005	ug/L	6.6	30		
8158551	Hexachlorobenzene	2022/08/11	28 (2)	50 - 130	102	50 - 130	<0.005	ug/L	10	30		
8158551	Lindane	2022/08/11	55	50 - 130	87	50 - 130	<0.003	ug/L	7.6	30		
8158551	Methoxychlor	2022/08/11	30 (2)	50 - 130	102	50 - 130	<0.01	ug/L	14	30		
8158551	Mirex	2022/08/11	31	30 - 130	104	30 - 130	<0.005	ug/L	11	40		
8158551	o,p-DDD	2022/08/11	33 (2)	50 - 130	106	50 - 130	<0.005	ug/L	8.8	30		
8158551	o,p-DDE	2022/08/11	29 (2)	50 - 130	100	50 - 130	<0.005	ug/L	6.7	30		
8158551	o,p-DDT	2022/08/11	23 (2)	50 - 130	94	50 - 130	<0.005	ug/L	NC	30		
8158551	Octachlorostyrene	2022/08/11	28 (3)	30 - 130	88	30 - 130	<0.005	ug/L	0.56	40		
8158551	Oxychlordane	2022/08/11	54	30 - 130	95	30 - 130	<0.005	ug/L	6.7	30		
8158551	p,p-DDD	2022/08/11	28 (2)	50 - 130	107	50 - 130	<0.005	ug/L	9.8	30		
8158551	p,p-DDE	2022/08/11	26 (2)	50 - 130	107	50 - 130	<0.005	ug/L	14	30		
8158551	p,p-DDT	2022/08/11	24 (2)	50 - 130	95	50 - 130	<0.005	ug/L	NC	30		
8158551	Toxaphene	2022/08/11					<0.2	ug/L				



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			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8158735	F2 (C10-C16 Hydrocarbons)	2022/08/11	110	60 - 130	116	60 - 130	<100	ug/L	NC	30		
8158735	F3 (C16-C34 Hydrocarbons)	2022/08/11	108	60 - 130	116	60 - 130	<200	ug/L	NC	30		
8158735	F4 (C34-C50 Hydrocarbons)	2022/08/11	106	60 - 130	113	60 - 130	<200	ug/L	NC	30		
8159384	Phenols-4AAP	2022/08/10	102	80 - 120	98	80 - 120	<0.0010	mg/L	NC	20		
8160090	1-Methylnaphthalene	2022/08/11	68	30 - 130	73	30 - 130	<0.3	ug/L				
8160090	2-Methylnaphthalene	2022/08/11	71	30 - 130	75	30 - 130	<0.3	ug/L				
8160090	7H-Dibenzo(c,g) Carbazole	2022/08/11	124	30 - 130	122	30 - 130	<0.4	ug/L	NC	40		
8160090	Anthracene	2022/08/11	94	30 - 130	94	30 - 130	<0.2	ug/L	NC	40		
8160090	Benzo(a)anthracene	2022/08/11	106	30 - 130	102	30 - 130	<0.2	ug/L	NC	40		
8160090	Benzo(a)pyrene	2022/08/11	104	30 - 130	104	30 - 130	<0.2	ug/L	NC	40		
8160090	Benzo(b/j)fluoranthene	2022/08/11	101	30 - 130	104	30 - 130	<0.2	ug/L	NC	40		
8160090	Benzo(e)pyrene	2022/08/11	104	30 - 130	104	30 - 130	<0.2	ug/L	NC	40		
8160090	Benzo(g,h,i)perylene	2022/08/11	100	30 - 130	100	30 - 130	<0.2	ug/L	NC	40		
8160090	Benzo(k)fluoranthene	2022/08/11	93	30 - 130	106	30 - 130	<0.2	ug/L	NC	40		
8160090	Bis(2-ethylhexyl)phthalate	2022/08/11	93	30 - 130	86	30 - 130	<2	ug/L	NC	40		
8160090	Chrysene	2022/08/11	99	30 - 130	100	30 - 130	<0.2	ug/L	NC	40		
8160090	Dibenzo(a,h)anthracene	2022/08/11	98	30 - 130	98	30 - 130	<0.2	ug/L	NC	40		
8160090	Dibenzo(a,i)pyrene	2022/08/11	78	30 - 130	82	30 - 130	<0.2	ug/L	NC	40		
8160090	Dibenzo(a,j) acridine	2022/08/11	129	30 - 130	127	30 - 130	<0.4	ug/L	NC	40		
8160090	Di-N-butyl phthalate	2022/08/11	105	30 - 130	99	30 - 130	<2	ug/L	NC	40		
8160090	Fluoranthene	2022/08/11	107	30 - 130	104	30 - 130	<0.2	ug/L	NC	40		
8160090	Fluorene	2022/08/11	86	30 - 130	95	30 - 130	<0.3	ug/L				
8160090	Indeno(1,2,3-cd)pyrene	2022/08/11	100	30 - 130	99	30 - 130	<0.2	ug/L	NC	40		
8160090	Naphthalene	2022/08/11	66	30 - 130	69	30 - 130	<0.3	ug/L				
8160090	Perylene	2022/08/11	96	30 - 130	96	30 - 130	<0.2	ug/L	NC	40		
8160090	Phenanthrene	2022/08/11	94	30 - 130	94	30 - 130	<0.2	ug/L	NC	40		
8160090	Pyrene	2022/08/11	109	30 - 130	105	30 - 130	<0.2	ug/L	NC	40		
8160143	Mercury (Hg)	2022/08/11	83	75 - 125	100	80 - 120	<0.00010	mg/L	NC	20		
8160171	Total Aluminum (Al)	2022/08/11	101	80 - 120	101	80 - 120	<4.9	ug/L	0.52	20		
8160171	Total Antimony (Sb)	2022/08/11	108	80 - 120	107	80 - 120	<0.50	ug/L	NC	20		
8160171	Total Arsenic (As)	2022/08/11	102	80 - 120	99	80 - 120	<1.0	ug/L	NC	20		
8160171	Total Bismuth (Bi)	2022/08/11	96	80 - 120	94	80 - 120	<1.0	ug/L	NC	20		



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			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8160171	Total Boron (B)	2022/08/11	97	80 - 120	92	80 - 120	<10	ug/L	3.2	20		
8160171	Total Cadmium (Cd)	2022/08/11	100	80 - 120	101	80 - 120	<0.090	ug/L	NC	20		
8160171	Total Chromium (Cr)	2022/08/11	96	80 - 120	94	80 - 120	<5.0	ug/L	NC	20		
8160171	Total Cobalt (Co)	2022/08/11	100	80 - 120	99	80 - 120	<0.50	ug/L	NC	20		
8160171	Total Copper (Cu)	2022/08/11	97	80 - 120	98	80 - 120	<0.90	ug/L	4.2	20		
8160171	Total Lead (Pb)	2022/08/11	94	80 - 120	98	80 - 120	<0.50	ug/L	NC	20		
8160171	Total Manganese (Mn)	2022/08/11	100	80 - 120	98	80 - 120	<2.0	ug/L	3.6	20		
8160171	Total Molybdenum (Mo)	2022/08/11	104	80 - 120	96	80 - 120	<0.50	ug/L	1.2	20		
8160171	Total Nickel (Ni)	2022/08/11	100	80 - 120	100	80 - 120	<1.0	ug/L	3.2	20		
8160171	Total Phosphorus (P)	2022/08/11	103	80 - 120	110	80 - 120	<100	ug/L	NC	20		
8160171	Total Selenium (Se)	2022/08/11	101	80 - 120	101	80 - 120	<2.0	ug/L	NC	20		
8160171	Total Silver (Ag)	2022/08/11	95	80 - 120	97	80 - 120	<0.090	ug/L	NC	20		
8160171	Total Tin (Sn)	2022/08/11	103	80 - 120	100	80 - 120	<1.0	ug/L	NC	20		
8160171	Total Titanium (Ti)	2022/08/11	98	80 - 120	97	80 - 120	<5.0	ug/L	NC	20		
8160171	Total Vanadium (V)	2022/08/11	102	80 - 120	98	80 - 120	<0.50	ug/L	6.8	20		
8160171	Total Zinc (Zn)	2022/08/11	100	80 - 120	101	80 - 120	<5.0	ug/L	NC	20		
8160207	Total Oil & Grease	2022/08/11			100	85 - 115	<0.50	mg/L	1.3	25		
8160211	Total Oil & Grease Mineral/Synthetic	2022/08/11			97	85 - 115	<0.50	mg/L	1.6	25		
8160434	Sulphide	2022/08/11	97	80 - 120	97	80 - 120	<0.020	mg/L	NC	20		
8160911	1,2,3,4,6,7,8-Hepta CDD	2022/08/11			99	70 - 140	<1.08, EDL=1.08	pg/L	2.0	25		
8160911	1,2,3,4,6,7,8-Hepta CDF	2022/08/11			101	82 - 122	<1.17, EDL=1.17	pg/L	3.9	25		
8160911	1,2,3,4,7,8,9-Hepta CDF	2022/08/11			109	78 - 138	<1.21, EDL=1.21	pg/L	5.7	25		
8160911	1,2,3,4,7,8-Hexa CDD	2022/08/11			97	70 - 164	<1.13, EDL=1.13	pg/L	7.0	25		
8160911	1,2,3,4,7,8-Hexa CDF	2022/08/11			99	72 - 134	<1.42, EDL=1.42	pg/L	2.0	25		
8160911	1,2,3,6,7,8-Hexa CDD	2022/08/11			100	76 - 134	<1.11, EDL=1.11	pg/L	0	25		
8160911	1,2,3,6,7,8-Hexa CDF	2022/08/11			98	84 - 130	<1.51, EDL=1.51	pg/L	8.8	25		



BUREAU  
VERITAS

Bureau Veritas Job #: C2M1669

Report Date: 2022/08/23

### QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd

Client Project #: 215451149

Sampler Initials: C.K

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8160911	1,2,3,7,8,9-Hexa CDD	2022/08/11			100	64 - 162	<1.20, EDL=1.20	pg/L	0	25		
8160911	1,2,3,7,8,9-Hexa CDF	2022/08/11			103	78 - 130	<1.48, EDL=1.48	pg/L	8.4	25		
8160911	1,2,3,7,8-Penta CDD	2022/08/11			100	25 - 181	<1.03, EDL=1.03	pg/L	4.1	25		
8160911	1,2,3,7,8-Penta CDF	2022/08/11			97	80 - 134	<1.12, EDL=1.12	pg/L	2.0	25		
8160911	2,3,4,6,7,8-Hexa CDF	2022/08/11			95	70 - 156	<1.39, EDL=1.39	pg/L	5.1	25		
8160911	2,3,4,7,8-Penta CDF	2022/08/11			97	68 - 160	<1.02, EDL=1.02	pg/L	0	25		
8160911	2,3,7,8-Tetra CDD	2022/08/11			100	67 - 158	<1.02, EDL=1.02	pg/L	6.8	25		
8160911	2,3,7,8-Tetra CDF	2022/08/11			94	75 - 158	<0.750, EDL=0.750	pg/L	4.2	25		
8160911	Octa CDD	2022/08/11			102	78 - 144	<1.30, EDL=1.30	pg/L	0.98	25		
8160911	Octa CDF	2022/08/11			99	63 - 170	<1.29, EDL=1.29	pg/L	11	25		
8160911	Total Hepta CDD	2022/08/11					<1.08, EDL=1.08	pg/L				
8160911	Total Hepta CDF	2022/08/11					<1.19, EDL=1.19	pg/L				
8160911	Total Hexa CDD	2022/08/11					<1.19, EDL=1.19	pg/L				
8160911	Total Hexa CDF	2022/08/11					<1.45, EDL=1.45	pg/L				
8160911	Total Penta CDD	2022/08/11					<1.03, EDL=1.03	pg/L				
8160911	Total Penta CDF	2022/08/11					<1.07, EDL=1.07	pg/L				
8160911	Total Tetra CDD	2022/08/11					<1.02, EDL=1.02	pg/L				



BUREAU  
VERITAS

Bureau Veritas Job #: C2M1669

Report Date: 2022/08/23

### QUALITY ASSURANCE REPORT(CONT'D)

Golder Associates Ltd

Client Project #: 215451149

Sampler Initials: C.K

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8160911	Total Tetra CDF	2022/08/11					<0.750, EDL=0.750	pg/L				
8162407	Nonylphenol (Total)	2022/08/13	117	50 - 130	109	50 - 130	<0.001	mg/L	NC	40		
8162420	Nonylphenol Ethoxylate (Total)	2022/08/13	86	50 - 130	93	50 - 130	<0.025	mg/L	NC	40		
8165355	2,4-Dichlorophenol	2022/08/15	78	10 - 130	85	10 - 130	<0.30	ug/L				
8165355	Benzyl butyl phthalate	2022/08/15	100	30 - 130	104	30 - 130	<0.50	ug/L				
8165355	Bis(2-chloroethoxy)methane	2022/08/15	71	30 - 130	80	30 - 130	<0.50	ug/L				
8165355	Diethyl phthalate	2022/08/15	101	30 - 130	102	30 - 130	<1.0	ug/L				
8165355	di-n-octyl phthalate	2022/08/15	104	30 - 130	106	30 - 130	<0.80	ug/L				
8165355	Indole	2022/08/15	41	30 - 130	68	30 - 130	<1.0	ug/L				

N/A = Not Applicable

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

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

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

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

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

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

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

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

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

(2) Matrix spike exceeds acceptance limits, probable matrix interference.

(3) The recovery was below the lower control limit. This may represent a low bias in some results for flagged analytes.



BUREAU  
VERITAS

Bureau Veritas Job #: C2M1669  
Report Date: 2022/08/23

Golder Associates Ltd  
Client Project #: 215451149  
Sampler Initials: C.K

### VALIDATION SIGNATURE PAGE

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

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Angel Guerrero, Supervisor, Ultra Trace Analysis, HRMS

---

Anastassia Hamanov, Scientific Specialist

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Cristina Carriere, Senior Scientific Specialist

---

Melissa DiGrazia, Operations Manager, HRMS Department

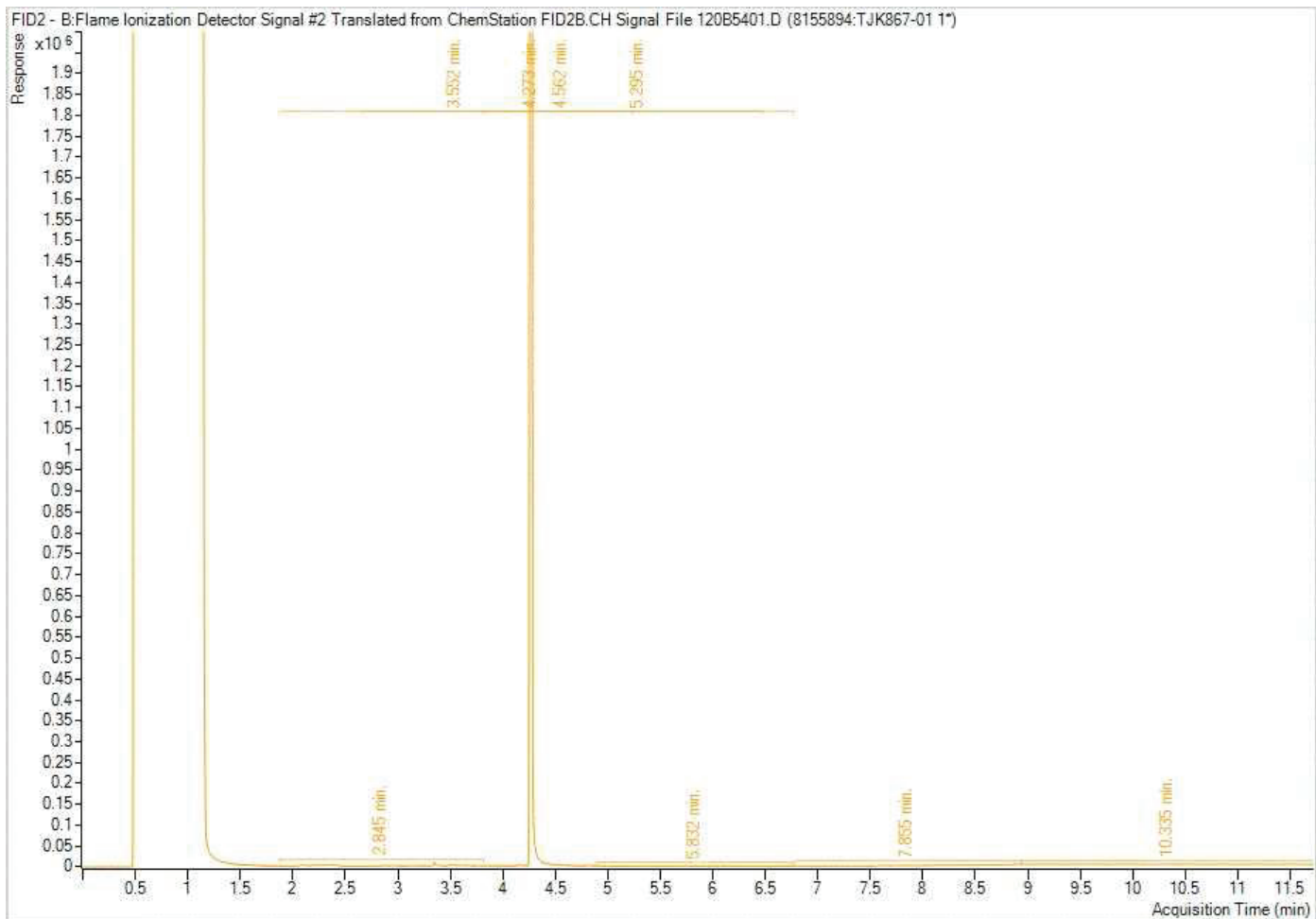
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Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



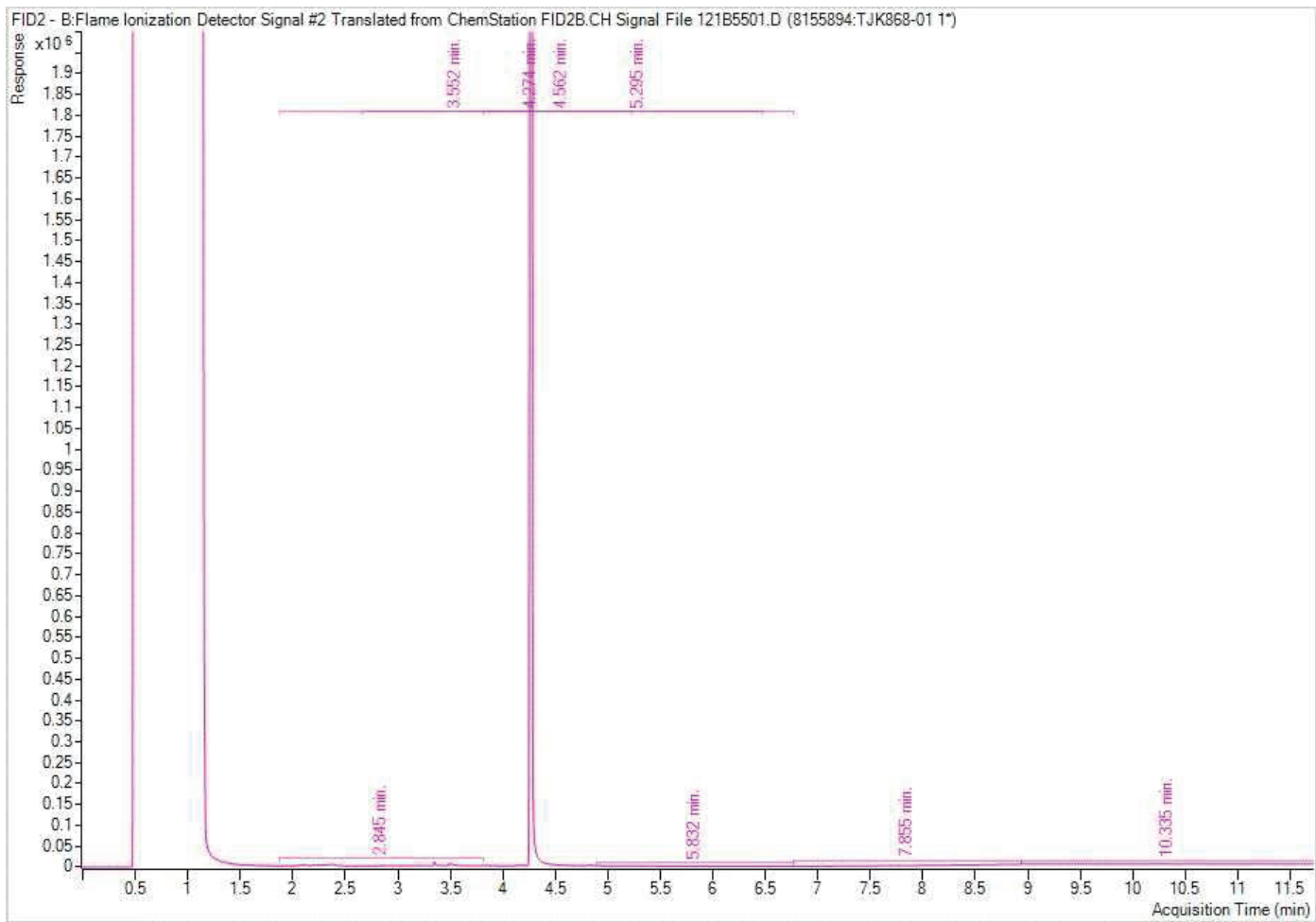
Petroleum Hydrocarbons F2-F4 in Water Chromatogram



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

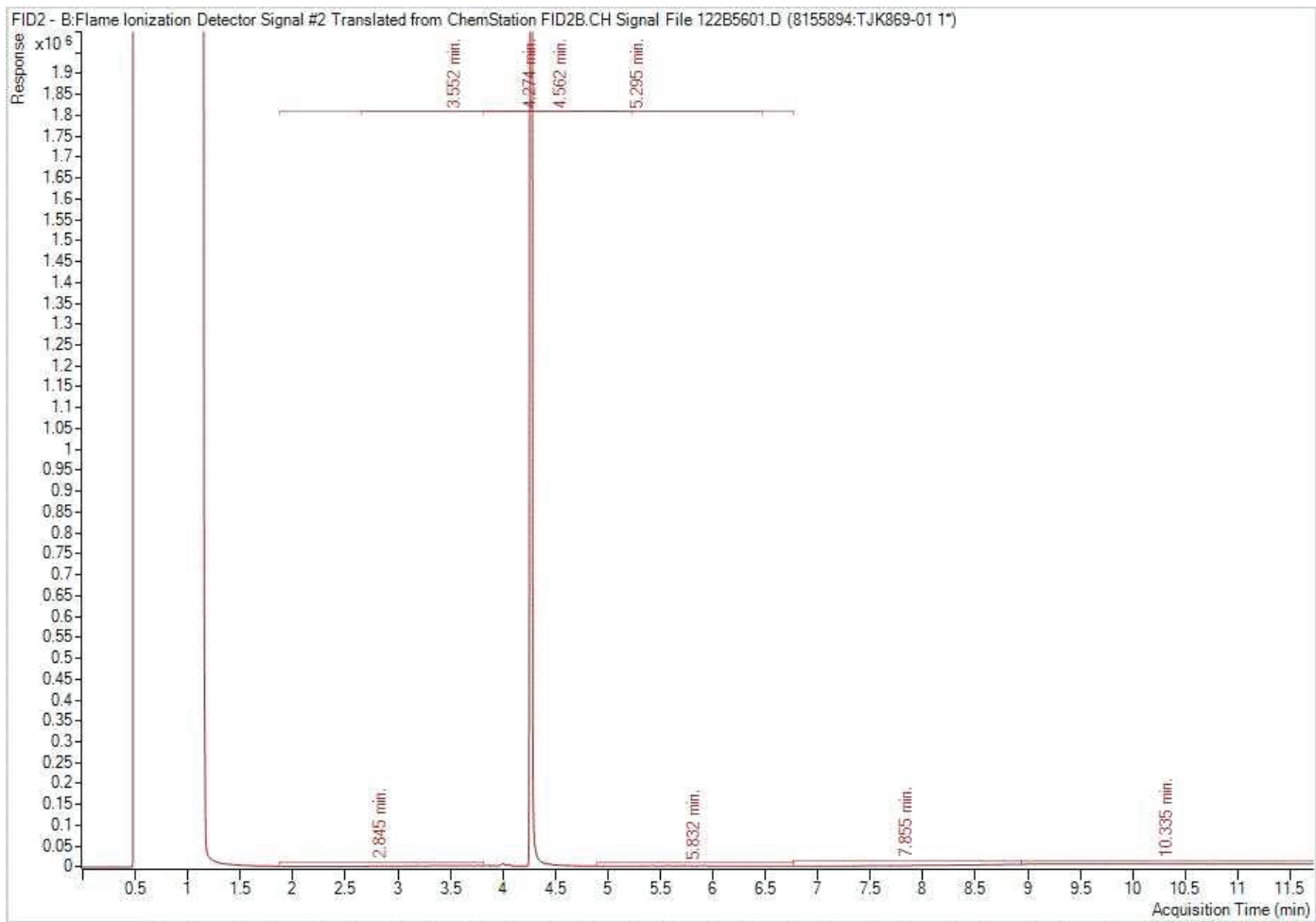


Petroleum Hydrocarbons F2-F4 in Water Chromatogram



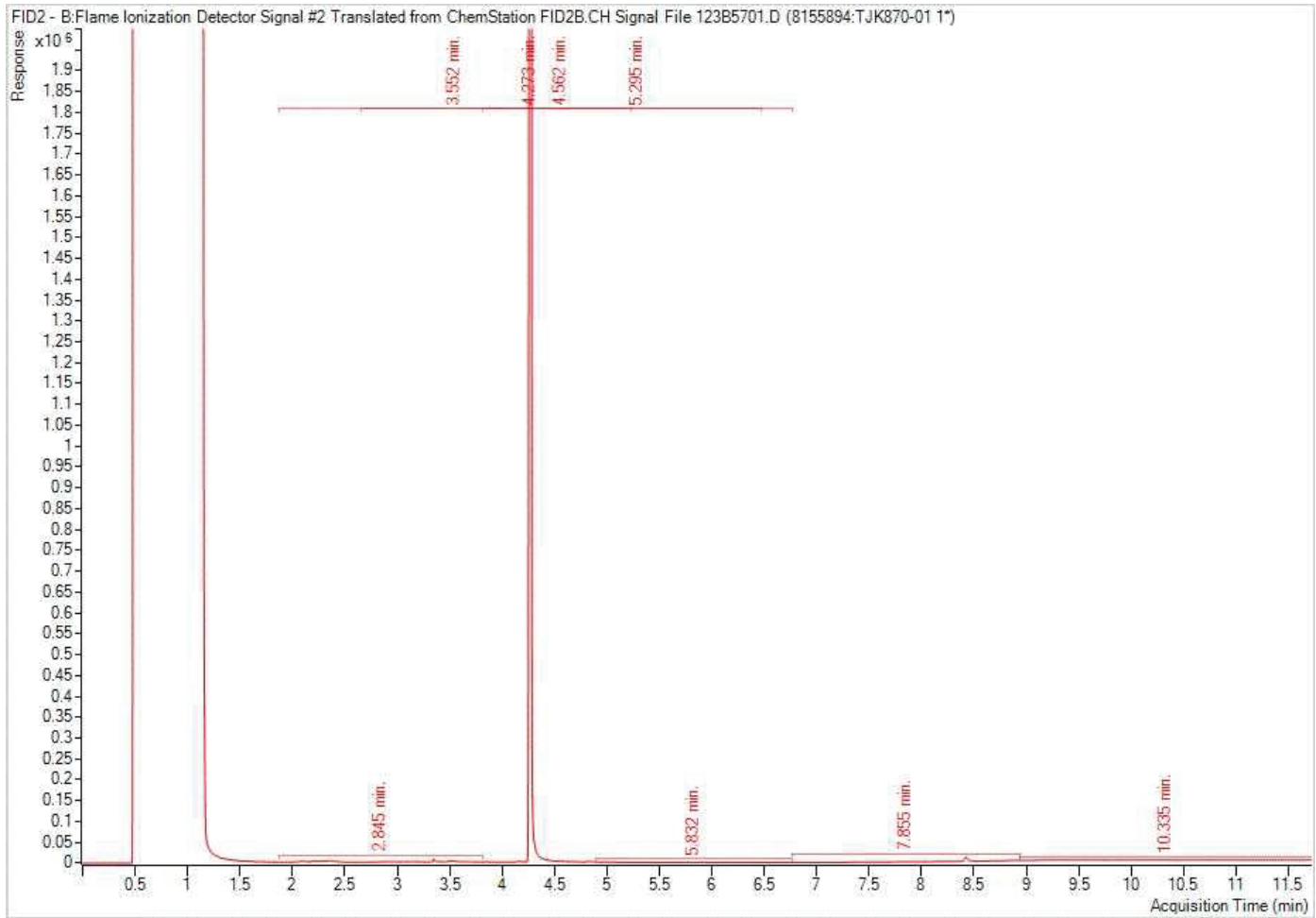
**Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.**

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



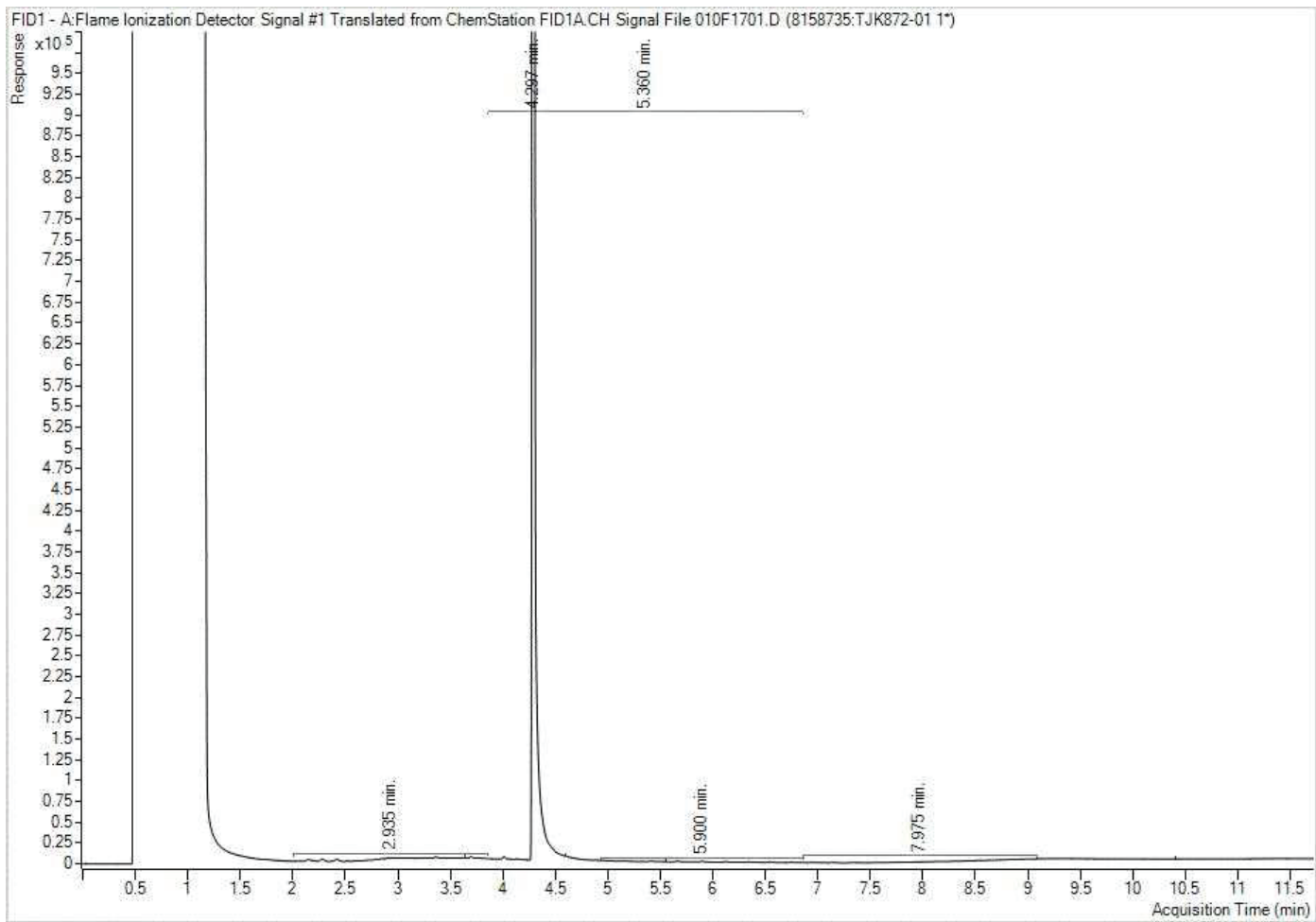
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



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

Petroleum Hydrocarbons F2-F4 in Water Chromatogram



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



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

ATTENTION TO: Jennette Baker

PROJECT: 1145 1149 Phase 6000

AGAT WORK ORDER: 22Z938333

TRACE ORGANICS REVIEWED BY: Neli Popnikolova, Senior Chemist

WATER ANALYSIS REVIEWED BY: Yris Verastegui, Report Reviewer

DATE REPORTED: Aug 31, 2022

PAGES (INCLUDING COVER): 9

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.
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- The test results reported herewith relate only to the samples as received by the laboratory.
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- All reportable information as specified by ISO/IEC 17025:2017 is available from AGAT Laboratories upon request.



## Certificate of Analysis

AGAT WORK ORDER: 22Z938333

PROJECT: 1145 1149 Phase 6000

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

ATTENTION TO: Jennette Baker

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2022-08-26

DATE REPORTED: 2022-08-31

Parameter	Unit	G / S	SAMPLE DESCRIPTION:		
			RDL	MW-22-405	MW-22-401
				4255836	4255841
				14:20	15:15
				2022-08-26	2022-08-26
				Water	Water
				0.20	<0.20
				<0.20	<0.20
				<0.20	<0.20
				<0.20	<0.20
				<0.10	<0.10
				<0.10	<0.10
				<0.20	<0.20
				<0.20	<0.20
				<0.20	<0.20
				<0.20	<0.20
				<0.10	<0.10
				<0.10	<0.10
				<0.10	<0.10
				<0.01	<0.01
				<0.20	<0.20
				<0.20	<0.20
				<0.20	<0.20
				<0.20	<0.20
				NA	NA
				NA	NA
Surrogate	Unit	Acceptable Limits			
Naphthalene-d8	%	50-140	77	98	
Acridine-d9	%	50-140	96	102	
Terphenyl-d14	%	50-140	92	88	

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

4255836-4255841 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:



## Certificate of Analysis

AGAT WORK ORDER: 22Z938333

PROJECT: 1145 1149 Phase 6000

5835 COOPERS AVENUE  
MISSISSAUGA, ONTARIO  
CANADA L4Z 1Y2  
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<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Jennette Baker

SAMPLING SITE:

SAMPLED BY:

### O. Reg. 153(511) - PHCs F1/BTEX (Water)

DATE RECEIVED: 2022-08-26

DATE REPORTED: 2022-08-31

Parameter	Unit	G / S	SAMPLE DESCRIPTION:		
			RDL	MW-22-405	MW-22-401
				4255836	4255841
				14:20	15:15
				2022-08-26	2022-08-26
				Water	Water
				Water	Water
Benzene	µg/L		0.20	<0.20	<0.20
Toluene	µg/L		0.20	<0.20	<0.20
Ethylbenzene	µg/L		0.10	<0.10	<0.10
m & p-Xylene	µg/L		0.20	<0.20	<0.20
o-Xylene	µg/L		0.10	<0.10	<0.10
Xylenes (Total)	µg/L		0.20	<0.20	<0.20
F1 (C6-C10)	µg/L		25	<25	<25
F1 (C6 to C10) minus BTEX	µg/L		25	<25	<25
Surrogate	Unit	Acceptable Limits			
Toluene-d8	% Recovery	60-140		99	98

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

4255836-4255841 The C6-C10 fraction is calculated using Toluene response factor.

Total C6-C10 results are corrected for BTEX contributions.

Xylenes total is a calculated parameter. The calculated value is the sum of m&p-Xylene and o-Xylene.

C6-C10 (F1 minus BTEX) is a calculated parameter. The calculated value is F1 minus BTEX.

The calculated parameters are non-accredited. The parameters that are components of the calculation are accredited.

This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.

nC6 and nC10 response factors are within 30% of Toluene response factor.

Extraction and holding times were met for this sample.

NA = Not Applicable

Analysis performed at AGAT Toronto (unless marked by \*)

Certified By:



## Certificate of Analysis

AGAT WORK ORDER: 22Z938333

PROJECT: 1145 1149 Phase 6000

5835 COOPERS AVENUE  
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<http://www.agatlabs.com>

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Jennette Baker

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2022-08-26

DATE REPORTED: 2022-08-31

Parameter	Unit	SAMPLE DESCRIPTION:		MW-22-405	MW-22-401
		G / S	RDL	4255836	4255841
Dissolved Antimony	µg/L		1.0	<1.0	<1.0
Dissolved Arsenic	µg/L		1.0	<1.0	1.8
Dissolved Barium	µg/L		2.0	237	126
Dissolved Beryllium	µg/L		0.50	<0.50	<0.50
Dissolved Boron	µg/L		10.0	217	29.8
Dissolved Cadmium	µg/L		0.20	<0.20	<0.20
Dissolved Chromium	µg/L		2.0	<2.0	<2.0
Dissolved Cobalt	µg/L		0.50	1.30	0.69
Dissolved Copper	µg/L		1.0	5.6	1.9
Dissolved Lead	µg/L		0.50	<0.50	<0.50
Dissolved Molybdenum	µg/L		0.50	2.08	0.63
Dissolved Nickel	µg/L		1.0	5.0	2.2
Dissolved Selenium	µg/L		1.0	<1.0	<1.0
Dissolved Silver	µg/L		0.20	<0.20	<0.20
Dissolved Thallium	µg/L		0.30	<0.30	<0.30
Dissolved Uranium	µg/L		0.50	2.52	0.68
Dissolved Vanadium	µg/L		0.40	1.07	<0.40
Dissolved Zinc	µg/L		5.0	8.8	<5.0

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

4255836-4255841 Metals analysis completed on a filtered sample.

Analysis performed at AGAT Toronto (unless marked by \*)

Certified By:

*Jris Vera'stegui*



## Quality Assurance

 CLIENT NAME: GOLDER ASSOCIATES LTD  
 PROJECT: 1145 1149 Phase 6000  
 SAMPLING SITE:

 AGAT WORK ORDER: 22Z938333  
 ATTENTION TO: Jennette Baker  
 SAMPLED BY:

### Trace Organics Analysis

RPT Date: Aug 31, 2022			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - PAHs (Water)															
Naphthalene	4247234		< 0.20	< 0.20	NA	< 0.20	88%	50%	140%	97%	50%	140%	84%	50%	140%
Acenaphthylene	4247234		< 0.20	< 0.20	NA	< 0.20	78%	50%	140%	78%	50%	140%	102%	50%	140%
Acenaphthene	4247234		< 0.20	< 0.20	NA	< 0.20	96%	50%	140%	96%	50%	140%	96%	50%	140%
Fluorene	4247234		< 0.20	< 0.20	NA	< 0.20	95%	50%	140%	95%	50%	140%	100%	50%	140%
Phenanthrene	4247234		< 0.10	< 0.10	NA	< 0.10	108%	50%	140%	92%	50%	140%	97%	50%	140%
Anthracene	4247234		< 0.10	< 0.10	NA	< 0.10	88%	50%	140%	78%	50%	140%	77%	50%	140%
Fluoranthene	4247234		< 0.20	< 0.20	NA	< 0.20	91%	50%	140%	99%	50%	140%	96%	50%	140%
Pyrene	4247234		< 0.20	< 0.20	NA	< 0.20	83%	50%	140%	94%	50%	140%	97%	50%	140%
Benzo(a)anthracene	4247234		< 0.20	< 0.20	NA	< 0.20	67%	50%	140%	88%	50%	140%	96%	50%	140%
Chrysene	4247234		< 0.10	< 0.10	NA	< 0.10	61%	50%	140%	74%	50%	140%	90%	50%	140%
Benzo(b)fluoranthene	4247234		< 0.10	< 0.10	NA	< 0.10	108%	50%	140%	96%	50%	140%	67%	50%	140%
Benzo(k)fluoranthene	4247234		< 0.10	< 0.10	NA	< 0.10	109%	50%	140%	93%	50%	140%	94%	50%	140%
Benzo(a)pyrene	4247234		0.33	< 0.01	NA	< 0.01	91%	50%	140%	97%	50%	140%	98%	50%	140%
Indeno(1,2,3-cd)pyrene	4247234		< 0.20	< 0.20	NA	< 0.20	72%	50%	140%	76%	50%	140%	74%	50%	140%
Dibenz(a,h)anthracene	4247234		< 0.20	< 0.20	NA	< 0.20	72%	50%	140%	98%	50%	140%	93%	50%	140%
Benzo(g,h,i)perylene	4247234		< 0.20	< 0.20	NA	< 0.20	77%	50%	140%	90%	50%	140%	87%	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:



## Quality Assurance

 CLIENT NAME: GOLDER ASSOCIATES LTD  
 PROJECT: 1145 1149 Phase 6000  
 SAMPLING SITE:

 AGAT WORK ORDER: 22Z938333  
 ATTENTION TO: Jennette Baker  
 SAMPLED BY:

Water Analysis															
RPT Date: Aug 31, 2022			DUPLICATE				Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE		MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Measured Value		Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

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

Dissolved Antimony	4255836	4255836	<1.0	<1.0	NA	< 1.0	103%	70%	130%	102%	80%	120%	107%	70%	130%
Dissolved Arsenic	4255836	4255836	<1.0	<1.0	NA	< 1.0	93%	70%	130%	93%	80%	120%	103%	70%	130%
Dissolved Barium	4255836	4255836	237	231	2.6%	< 2.0	100%	70%	130%	102%	80%	120%	105%	70%	130%
Dissolved Beryllium	4255836	4255836	<0.50	<0.50	NA	< 0.50	88%	70%	130%	91%	80%	120%	105%	70%	130%
Dissolved Boron	4255836	4255836	217	202	7.2%	< 10.0	101%	70%	130%	104%	80%	120%	98%	70%	130%
Dissolved Cadmium	4255836	4255836	<0.20	<0.20	NA	< 0.20	100%	70%	130%	100%	80%	120%	101%	70%	130%
Dissolved Chromium	4255836	4255836	<2.0	<2.0	NA	< 2.0	102%	70%	130%	101%	80%	120%	114%	70%	130%
Dissolved Cobalt	4255836	4255836	1.30	2.12	NA	< 0.50	99%	70%	130%	104%	80%	120%	114%	70%	130%
Dissolved Copper	4255836	4255836	5.6	6.3	11.8%	< 1.0	100%	70%	130%	100%	80%	120%	108%	70%	130%
Dissolved Lead	4255836	4255836	<0.50	<0.50	NA	< 0.50	97%	70%	130%	101%	80%	120%	102%	70%	130%
Dissolved Molybdenum	4255836	4255836	2.08	2.18	NA	< 0.50	99%	70%	130%	109%	80%	120%	117%	70%	130%
Dissolved Nickel	4255836	4255836	5.0	5.2	3.9%	< 1.0	102%	70%	130%	107%	80%	120%	113%	70%	130%
Dissolved Selenium	4255836	4255836	<1.0	<1.0	NA	< 1.0	98%	70%	130%	95%	80%	120%	104%	70%	130%
Dissolved Silver	4255836	4255836	<0.20	<0.20	NA	< 0.20	95%	70%	130%	99%	80%	120%	109%	70%	130%
Dissolved Thallium	4255836	4255836	<0.30	<0.30	NA	< 0.30	101%	70%	130%	105%	80%	120%	103%	70%	130%
Dissolved Uranium	4255836	4255836	2.52	2.41	NA	< 0.50	99%	70%	130%	108%	80%	120%	108%	70%	130%
Dissolved Vanadium	4255836	4255836	1.07	1.48	NA	< 0.40	94%	70%	130%	104%	80%	120%	115%	70%	130%
Dissolved Zinc	4255836	4255836	8.8	14.4	NA	< 5.0	101%	70%	130%	96%	80%	120%	107%	70%	130%

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

Certified By:



## Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 22Z938333

PROJECT: 1145 1149 Phase 6000

ATTENTION TO: Jennette Baker

SAMPLING SITE:

SAMPLED BY:

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
Benzene	VOL-91-5010	modified from EPA SW-846 5030C & 8260D	(P&T)GC/MS
Toluene	VOL-91-5010	modified from EPA SW-846 5030C & 8260D	(P&T)GC/MS
Ethylbenzene	VOL-91-5010	modified from EPA SW-846 5030C & 8260D	(P&T)GC/MS
m & p-Xylene	VOL-91-5010	modified from EPA SW-846 5030C & 8260D	(P&T)GC/MS
o-Xylene	VOL-91-5010	modified from EPA SW-846 5030C & 8260D	(P&T)GC/MS
Xylenes (Total)	VOL-91-5010	modified from EPA SW-846 5030C & 8260D	(P&T)GC/MS
F1 (C6-C10)	VOL-91-5010	modified from MOE E3421	(P&T)GC/FID
F1 (C6 to C10) minus BTEX	VOL-91-5010	modified from MOE E3421	(P&T)GC/FID



## Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD  
 PROJECT: 1145 1149 Phase 6000  
 SAMPLING SITE:

AGAT WORK ORDER: 22Z938333  
 ATTENTION TO: Jennette Baker  
 SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Toluene-d8 Water Analysis	VOL-91-5010	modified from MOE PHC-E3421	(P&T)GC/MS
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



## Chain of Custody Record

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

### Report Information:

Company: Golden - WSP  
 Contact: Jennette Baker  
 Address: 1931 Robertson Rd. Nepean, ON, K2H 5B7  
 Phone: (613) 592-9600 Fax: \_\_\_\_\_  
 Reports to be sent to:  
 1. Email: jennette.baker@wsp.com  
 2. Email: \_\_\_\_\_

### Regulatory Requirements:

(Please check all applicable boxes)

Regulation 153/04  Excess Soils R406  Sewer Use  
 Sanitary  Storm  
 Table Indicate One Table Indicate One Region \_\_\_\_\_  
 Ind/Corn  Res/Park  Agriculture  Regulation 558  Prov. Water Quality Objectives (PWQO)  
 Soil Texture (Check One)  CCME  Other  
 Coarse  Fine  \_\_\_\_\_  
 Indicate One

### Project Information:

Project: 1145 1149 Phase 6000  
 Site Location: Ryan Francis  
 Sampled By: \_\_\_\_\_  
 AGAT Quote #: \_\_\_\_\_ PO: \_\_\_\_\_  
 Please note: If quotation number is not provided, client will be billed full price for analysis.

### Is this submission for a Record of Site Condition?

Yes  No

### Report Guideline on Certificate of Analysis

Yes  No

### Invoice Information:

Company: Golden - WSP Bill To Same: Yes  No   
 Contact: Jennette Baker  
 Address: 1931 Robertson Rd. Nepean, ON  
 Email: jennette.baker@wsp.com

### Sample Matrix Legend

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

### Laboratory Use Only

Work Order #: 227938333  
 Cooler Quantity: 1 medium one - loose ice  
 Arrival Temperatures: 18.5 | 18.4 | 18.5  
L-T → 2.7 | 3.1 | 4.8  
 Custody Seal Intact:  Yes  No  N/A  
 Notes: Bagged Ice

### Turnaround Time (TAT) Required:

**Regular TAT**  5 to 7 Business Days  
**Rush TAT (Rush Surcharges Apply)**  
 3 Business Days  2 Business Days  Next Business Day  
**OR Date Required (Rush Surcharges May Apply):** \_\_\_\_\_

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

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

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Y/N	Field Filtered - Metals, Hg, CrVI, DOC	Metals & Inorganics	O. Reg 153	O. Reg 55B	O. Reg 406	Potentially Hazardous or High Concentration (Y/N)
MW-22-405	08/24/22	2:20 PM	6	GW		Y		Metals <input checked="" type="checkbox"/> CrVI, <input type="checkbox"/> Hg, <input type="checkbox"/> HWSB				
MW-22-401	08/24/22	3:15 PM	6	GW		Y		BTEX, F1-F4, PHCS Analyze F4G, if required <input type="checkbox"/> Yes <input type="checkbox"/> No				
								PAHs				
								PCBs				
								VOC				
								Landfill Disposal Characterization TOLP: TCLP: <input type="checkbox"/> MM&I <input type="checkbox"/> VOCs <input type="checkbox"/> ABNS <input type="checkbox"/> BIA/P <input type="checkbox"/> PCBs				
								Excess Soils SPLP Rainwater Leach SPLP: <input type="checkbox"/> Metals <input type="checkbox"/> VOCs <input type="checkbox"/> SVOCs				
								Excess Soils Characterization Package pH, ICPMS Metals, BTEX, F1-F4				
								Salt - EC/SAR				

Samples Relinquished By (Print Name and Sign): <u>Ryan Francis</u>	Date: <u>08/26/22</u>	Time: <u>4:45</u>	Samples Received By (Print Name and Sign): <u>C. Griffiths</u>	Date: <u>AUG 26 2022</u>	Time: <u>16h50</u>
Samples Relinquished By (Print Name and Sign): <u>CC to Puro</u>	Date: <u>AUG 29 2022</u>	Time: <u>16h00</u>	Samples Received By (Print Name and Sign): <u>Anthony Dasilva</u>	Date:	Time:
Samples Relinquished By (Print Name and Sign):	Date:	Time:	Samples Received By (Print Name and Sign):	Date:	Time:



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