



Phase Two Environmental Site Assessment

20 Rose Street, Barrie, Ontario

Submitted to:

Simcoe County Housing Corporation
1110 Highway 26,
Midhurst, Ontario L9X 1N6

Submitted by:

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Executive Summary

GEI Consultants Canada Ltd. (GEI) was retained by the Simcoe County Housing Corporation (County of Simcoe/ the “Client”), to complete a Phase Two Environmental Site Assessment (ESA) of a property located at 20 Rose Street, Barrie, Ontario (hereinafter referred to as the “Site”).

It is understood that the County of Simcoe is proposing to redevelop the former the Ontario Provincial Police (OPP) facility at 20 Rose Street into a social housing complex. A change in property use from a less stringent use (commercial) to a more stringent (residential) will require the filing of a Record of Site Condition (RSC) in the Ontario Ministry of the Environment, Conservation and Parks (MECP) Registry. To support the filing of an RSC and to satisfy development requirements for the City of Barrie, this Phase Two ESA is prepared in accordance with the MECP Regulation 153/04 as amended (O.Reg.153/04).

The objective of the Phase Two ESA was to assess the areas of potential environmental concern (APECs) identified in the Phase One ESA completed by GEI in June 2024; and, to obtain soil and groundwater data to characterize the Site to support the filing of an RSC on the Ontario MECP Registry.

The findings of the Phase Two ESA conducted at the Site are summarized as follows:

1. The Phase Two ESA drilling program was carried out in conjunction with hydrogeological investigations and comprised of fourteen (14) boreholes (BH201 to BH214) up to a maximum depth of 12.8 m bgs, and seven (7) test pits (TP1 to TP7). Monitoring wells were installed in selected boreholes, BH207 and BH208 to facilitate groundwater sample collection and long-term groundwater monitoring. Previously existing on-site monitoring wells (MW6, MW26 and MW27) which were installed by Peto MacCallum Ltd. during the environmental investigation in 2021 (PML 2021), and previously existing monitoring wells (MW101 to MW105) installed by GEI in 2023 were also utilized for groundwater sampling and monitoring as required.
2. The general stratigraphy at the Site, as revealed in the borehole logs, consists of surficial topsoil and/or asphalt underlain by fill materials over native deposits predominantly comprised silty sand glacial till. Bedrock was not encountered at the Site.
3. As per the grain size analysis and soil description in the borehole logs, coarse textured standards were applied.
4. The groundwater depths across the entire Site ranged between approximately 2.04 m bgs and 8.39 m bgs on May 13, 2024.
5. For assessment purposes, GEI selected the MECP Table 2: Background Site Condition Standards in a Potable Groundwater Condition for Residential/ Parkland/ Institutional (RPI) Property Use (Table 2 SCS) for coarse textured soils.
6. The analytical test results of the soil samples submitted for the analysis of one or more parameters including metals, hydride- forming metals, pH, EC, SAR, petroleum hydrocarbons (PHCs), benzene, toluene, ethylbenzene and xylenes (BTEX), volatile



organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyl (PCBs), Organochlorine Pesticides (OCPs) and Other Regulated Parameters (ORPs) met the selected MECP Table 2 SCS for RPI property use with exception of SAR results. Elevated levels of SAR in the soil samples BH202-SS1, BH203-SS2, BH205-SS2 and BH205D-SS2 were recorded as exceeding the selected Table 2 SCS which are considered to be the result of winter de-icing salt application on pavement surfaces. As per Section 49.1 of O.Reg. 153/04 (as amended), if a substance has been applied to surfaces for the safety of vehicular or pedestrian traffic under the conditions of snow or ice or both (i.e., application of de-icing salts), its related parameters are not deemed to consider as exceedance. Elevated levels of SAR in soil samples BH202-SS1, BH203-SS2, BH205-SS2 and BH205D-SS2 are thereby considered to have met the Table 2 SCS.

7. No contaminants of concern (COC) in soil were identified based on the completed soil analytical testing program.
8. The groundwater analytical results from the samples collected and submitted by GEI for the analysis of metals, hydride-forming metals, Na, Cl, PHCs, BTEX, VOCs and PAHs, met the selected Table 2 SCS, with exception of Na and Cl concentration in the groundwater sample from monitoring well MW102. The concentration of Na and/or Cl in the groundwater sample from monitoring well MW102 were recorded as exceeding the selected Table 2 SCS which are considered to be the result of winter de-icing salt application on pavement surfaces. As per Section 49.1 of O.Reg. 153/04 (as amended), if a substance has been applied to surfaces for the safety of vehicular or pedestrian traffic under the conditions of snow or ice or both (i.e., application of de-icing salts), its related parameters are not deemed to consider as exceedance. Therefore, the concentration of Na and/or Cl in the groundwater sample from monitoring well MW102 are thereby considered to have met the Table 2 SCS.
9. No COC in groundwater were identified based on the completed groundwater analytical testing program.

Conclusions and Recommendations

As no soil or groundwater COCs were identified at the Site, no further environmental investigation is required for the Site. The Site is considered suitable for the intended residential use.



1. Introduction

GEI Consultants Ltd. (GEI) was retained by the Simcoe County Housing Corporation (County of Simcoe / the “Client”), to complete a Phase Two Environmental Site Assessment (ESA) of a property located at 20 Rose Street, Barrie, Ontario (hereinafter referred to as the “Site”).

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Contact information for the Client is provided in Section 1.2.

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1.1 Site Description

The Site is located south adjacent to Highway 400, east of Bayfield Street, and north of Rose Street in Barrie, Ontario, as shown on Figure 1. The Site is irregular in shape and measures approximately 4.7 acres (1.9 hectares) in size. At the time of this assessment, the majority of the site was vacant, except for a modular structure erected in 2023 in the middle portion of the site. This temporary structure, managed by the Simcoe County Housing Corporation, provides emergency shelter for homeless individuals.

The Site is bounded by residential dwellings to the east, Rose Street followed by residential dwellings to the south and is bordered by Highway 400 and/or its adjacent ramp area to the north and west. The surrounding properties are shown on Figure 3.

1.2 Legal Description and Property Ownership

Refer to the table below for the Site identification information.

Site Details	
Municipal Addresses	20 Rose Street, Barrie, Ontario
Current Owner	Simcoe County Housing Corporation
Owner Address	1110 Highway 26, Midhurst, Ontario L9X 1N6
Owner Contact Person	Rachelle Hamelin RPP, MCIP Email rachelle.hamelin@simcoe.ca



Site Details	
Legal Description	Part of Lots 7 & 8 North Side of Rose Street Plan 114 Barrie Part 1 51R42272; City of Barrie
Property Identification Number (PIN)	58810-0278 (LT)
Property Size	4.6 acres (1.87 hectares)
Approximate Universal Transverse Mercator (UTM) coordinates	Zone: 17 Easting: 603897 m Northing: 4917266 m (1m, NAD83, ArcGIS)

1.3 Current and Proposed Future Uses

At the time of the Phase Two ESA investigation, the majority of the site was vacant, except for a modular structure erected in 2023 in the middle portion of the site. This temporary structure, managed by the Simcoe County Housing Corporation, provides emergency shelter for homeless individuals. The former property use of the Site was commercial use, developed as OPP facility in the mid to late 1950's.

The proposed future use of the Site is residential.

1.4 Applicable Site Condition Standards

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

Tables 1 to 9 of MECP are summarized as follows:

- Table 1 - applicable to sites where background concentrations must be met (full depth), such as sensitive sites where site-specific criteria have not been derived;
- Table 2 - applicable to sites with potable groundwater and full depth restoration;
- Table 3 - applicable to sites with non-potable groundwater and full depth restoration;
- Table 4 - applicable to sites with potable groundwater and stratified restoration;
- Table 5 - applicable to sites with non-potable groundwater and stratified restoration;
- Table 6 - applicable to sites with potable groundwater and shallow soils;



- g) Table 7 - applicable to sites with non-potable groundwater and shallow soils;
- h) Table 8 - applicable to sites with potable groundwater and that are within 30 m of a water body; and,
- i) Table 9 - applicable to sites with non-potable groundwater and that are within 30 m of a water body.

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

For assessment purposes, GEI selected the MECP Table 2: Full Depth Generic Site Condition Standards (SCS) in a Potable Groundwater for Residential/Parkland/Institutional Land Use and coarse textured soil (Table 2 SCS). The selection of this category was based on the following factors:

- a) More than two-thirds of the Site has an overburden thickness greater than 2 m.
- b) The Site is not located within 30 m of a surface water body or an area of natural significance.
- c) The soil at the Site has a pH value between 5 and 9 for surficial soils; and, between 5 and 11 for subsurface soils.
- d) The property is not within an area of natural significance; does not include, nor is it adjacent to an area of natural significance, nor is it part of such an area; and it does not include land that is within 30 m of an area of natural significance, nor is it part of such an area.
- e) The Site is considered as potable.
- f) The future land use of the Site will be Residential.
- g) The predominant soil type on the Site was considered to be coarse textured as per grain size analysis and soil description in the borehole logs.
- h) There was no intention to carry out a stratified restoration at the Site.



2. Background Information

2.1 Physical Setting

The following physiographic, geological and soil maps were reviewed as part of this Phase Two ESA:

- a) Atlas of Canada – Toporama Topographic Map (Toporama).
- b) Ontario Base Map (OBM).
- c) Ontario Ministry of Energy, Northern Development and Mines (MENDM) website, Bedrock Geology of Ontario, 2011 – MRD 126; and Paleozoic Geology of Southern Ontario, 2007 – MRD 219 (KML format);
- d) Ontario MENDM website, Surficial Geology of Southern Ontario, 2010. (KML format); and,
- e) Ontario MENDM website, Physiography of Southern Ontario 2007.

The following information was obtained from these maps:

- a) The Site has an approximate elevation range from 267 to 274 m asl, with an approximate elevation differential of 7 m sloping from the western portion of the Site toward the eastern portion of the Site. Properties to the north, and south are generally at a similar elevation to the Site, properties to the west are generally at a higher elevation and properties to the east are generally at a lower elevation than the Site;
- b) No waterbodies are located at the Phase One Property. Kidds Creek is located approximately 410 m west and Sophia Creek is located approximately 580 m east of the Site, both tributaries leading to Kempenfelt Bay as part of Lake Simcoe. Kempenfelt Bay is located approximately 1.5 km south of the Site;
- c) The bedrock in the general area consists of limestone, dolostone, shale, arkose, and sandstone of the Ottawa Group, Simcoe Group, and Shadow Lake Formation;
- d) The surficial geology of the Site is described as till consisting of moderately stoney to stoney silty sand to sand till;
- e) The physiography of the Site is within the Simcoe Uplands and is characterized as Till Plains (drumlinized).

2.2 Past Environmental Investigations

Following previous environmental reports were provided to GEI:

- a) PML (2021a) Phase Two Environmental Site Assessment, Proposed Simcoe County Facility, 20 Rose Street, Barrie, Ontario. Peto MacCallum Ltd. May 5, 2021. This report included a Phase One ESA report completed by Limited (GHD).
- b) PML (2021b) Geotechnical Investigation, Proposed Simcoe County Housing Facility, 20 Rose Street, Barrie, Ontario. Peto MacCallum Ltd. May 6, 2021.



A brief summary of the investigations is included below:

PML (2021a) Phase Two Environmental Site Assessment	
Objective	Investigate soil and groundwater quality at the Site for due diligence purposes based on a Phase One ESA conducted by GHD in 2019.
Phase One ESA Findings (GHD 2019)	GHD Phase One Report was included in Appendix A of the PML Phase Two report and identified following APECs: a) APEC #1 – Fuel Storage Tanks (Off-Site): Based on a review of ERIS, multiple records indicated the properties located at 309, 311 and 315 Bayfield Street, approximately 230 m west, were historically used as gasoline and service stations, with identified PHC, VOC, PAH impacts in soil and VOC, Na and Cl impacts in groundwater. b) APEC #2 – Historical Pesticide Use (On-Site): Based on a review of aerial photographs, Site appeared to be utilized for agricultural purposes (specifically as an orchard) between 1946 and 1957. c) APEC #3 – Vehicle Servicing Garage (On-Site): Based on correspondence with a Site representative, a garage building existed on-Site that was utilized for oil changes, painting and cleaning of OPP vehicles. d) APEC #4 – Fuel Storage Tank (On-Site): Based on Site reconnaissance, a standby diesel generator was identified within the garage building. e) APEC #5 – Transformer Use (on-Site): Based on Site reconnaissance, a pad mounted transformer was identified at the southern portion of the Site.
PML Phase Two ESA Program	a) Advancement of twenty-six (26) boreholes (BH1 to BH10, BH12 to BH18, BH20, BH21, BH24 to BH30) up to a maximum depth of approximately 12.8 m below ground surface (bgs). b) Installation of six (6) monitoring wells (MW6, MW9, MW17, MW18, MW24 and MW27). c) Soil samples submitted for the analysis of petroleum hydrocarbons (PHCs), Benzene, Ethylbenzene, Toluene and Xylenes (BTEX), Volatile Organic Compounds (VOCs), Polycyclic Aromatic Hydrocarbons (PAHs), Polychlorinated Biphenyls (PCBs), Organochlorine (OC) Pesticides, Metals and Other Regulated Parameters (ORPs). d) Groundwater sample submitted for the analysis of PHCs, VOCs, PAHs, PCBs, and Metals.
Site Condition Standards	MECP (2011) Table 3: Full Depth Background Site Condition Standards (SCS) for Residential/Parkland/Institutional (RPI) property uses in a Non-Potable Ground Water Condition and coarse textured soils.
Soil	a) The stratigraphy at the Site comprised of topsoil and/or pavement followed by silty sand to sandy silt fill underlain by native silty sand glacial till. b) Bedrock was not encountered at the Site
Groundwater	a) Groundwater elevations range from 261.5 to 263.4 m (April 30, 2021) b) Regional groundwater flow is expected towards west, southwest.
Soil Conditions	The reported concentrations of PHCs, BTEX, VOCs, PAHs, PCBs, OC Pesticides, Metals and ORPs were detected below the selected Table 3 SCS



PML (2021a) Phase Two Environmental Site Assessment	
	except SAR in one sample BH/MW9 SS3 recorded at 6.25 which exceeded the selected SCS.
Groundwater Conditions	The reported concentrations of PHCs, VOCs, PAHs, PCBs, and Metals were reported below the applicable regulatory criteria. However, one marginal exceedance for Benzo (a) pyrene in the duplicate sample collected from MW18 was noted upon review of the analytical testing.

PML (2021b) Geotechnical Investigation	
Objective	Establish local geological settings and assess soil and groundwater conditions at the Site.
Program	a) Advancement of twenty-six (26) boreholes (BH1 to BH10, BH12 to BH18, BH20, BH21, BH24 to BH30) up to a maximum depth of approximately 12.8 m bgs in support of the subsurface assessment. b) Installation of six (6) monitoring wells (MW6, MW9, MW17, MW18, MW24 and MW27).
Soil	a) The stratigraphy at the Site is comprised of topsoil and/or pavement followed by silty sand to sandy silt fill underlain by native silty sand glacial till to a maximum depth of 12.8 m bgs. b) Fill material was identified in all boreholes to a maximum depth of 2.9 m bgs. c) Bedrock was not encountered at the Site.
Groundwater	a) Groundwater elevations range from 261.5 to 263.4 m (April 30, 2021).



3. Scope of Investigation

3.1 Overview of Site Investigation

The objective of the Phase Two ESA was to assess the APECs identified in GEI's Phase One ESA; and, to obtain soil and groundwater data to characterize the Site to support the filing of an RSC on the MECP's Registry.

3.1.1 Scope of Work

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

- a) Request public utility locating companies (e.g., cable, telephone, gas, hydro, water, sewer and storm water) to mark any underground utilities present at the Site;
- b) Advance a total of fourteen (14) boreholes (BH201 to BH214) up to a maximum depth of 12.8 m bgs;
- c) Instrument two (2) boreholes as monitoring wells (MW7 and MW8);
- d) Advance seven (7) hand excavated test pits (TP1 to TP7) up to a maximum depth of 0.3 m bgs;
- e) Develop the newly and previously installed groundwater monitoring wells (MW101 to MW105, MW6, MW26 and MW27);
- f) Based on the contaminants of potential environmental concern identified in the Phase One ESA, collect representative soil and groundwater samples for laboratory chemical analysis of one or more parameters including metals, hydride-forming metals, pH, EC, SAR, petroleum hydrocarbons (PHCs), benzene, toluene, ethylbenzene and xylenes (BTEX), volatile organic compounds (VOCs) and polycyclic aromatic hydrocarbons (PAHs) polychlorinated biphenyl (PCBs), Organochlorine Pesticides (OCPs) and Other Regulated Parameters (ORPs);
- g) Collect groundwater levels from the monitoring wells;
- h) Complete an elevation survey of newly installed monitoring wells to determine the groundwater flow direction at the Site;
- i) Analyze the data and prepare a report of the findings.

3.2 Media Investigated

The focus of the Phase Two ESA was on the environmental conditions of the soil and groundwater beneath the Site. As there was no surface water body on the Site, no sediment sampling was required.

A copy of the Site Sampling and Analysis Plan (SSAP) prepared for the Site is provided in Appendix A.



3.3 Phase One Conceptual Site Model

This section presents the Phase One Conceptual Site Model (P1CSM) providing a narrative, graphical and tabulated description integrating information related to the Site geologic and hydrogeologic conditions, areas of potential environmental concern/potential contaminating activities, and the presence and distribution of potential contaminants of concern. These components are discussed in the following sections.

The Site is located south adjacent to Highway 400 and east of Bayfield Street, on north side Rose Street in Barrie, Ontario, as shown on Figure 1. The Site is irregular in shape and measures approximately 4.7 acres (1.9 hectares) in size. At the time of this assessment, the majority of the site was vacant, except for a modular structure erected in 2023 in the middle portion of the site. This temporary structure, managed by the Simcoe County Housing Corporation, provides emergency shelter for homeless individuals.

Based on our review of the available historical records and previously completed reports, the Site was originally under agricultural use (occupied by an orchard) until the mid to late 1950s when it was developed as OPP facility with two (2) buildings – the first used as an office /OPP detachment and the second as a repair garage building. The OPP buildings were surrounded by paved surfaces including driveways and a parking lot. An area within the northeast corner of the Site was also paved and utilized for parking. Apart from the buildings and paved surfaces, remainder of the Site was comprised of grass and landscaping.

The legal description of Site is “Part of Lots 7 & 8 North Side of Rose Street Plan 114 Barrie Part 1 51R42272; City of Barrie” and the Property Identification Number (PIN) is 58810-0279 (LT). A legal survey plan is provided in Appendix E.

The approximate Universal Transverse Mercator (UTM) coordinates for the Site centroid was NAD83 17- 4917266 m N, 603897m E. The UTM coordinates are based on measurements obtained from ArcGIS. The accuracy of the centroid is estimated to be 1 m.

Potentially Contaminating Activities

The Phase One ESA conducted by GEI in 2024 identified the following PCAs:

PCA Identifier	Address	PCA	PCA Location	Contributing to APEC at the Site?	Rationale
PCA 1	20 Rose Street	#30 – Importation of Fill Material of Unknown Quality	On-Site	yes	On-Site PCA
PCA 2		#Other – Application of De-Icing Salts		yes	On-Site PCA
PCA 3		#52 – Storage, maintenance, fuelling and repair of equipment, vehicles, and material used to		yes	On-Site PCA

PCA Identifier	Address	PCA	PCA Location	Contributing to APEC at the Site?	Rationale
		maintain transportation systems			
PCA 4		#28 – Gasoline and Associated Products Storage in Fixed Tanks		yes	On-Site PCA
PCA 5		#40 – Pesticides (including Herbicides, Fungicides and Anti-Fouling Agents) Manufacturing, Processing, Bulk Storage and Large-Scale Applications		yes	On-Site PCA
PCA 6		#55 – Transformer Manufacturing, Processing and Use		yes	On-Site PCA
PCA 7		#Other – Staining		yes	On-Site PCA
PCA 8		#Other – previous marginal groundwater exceedance		yes	On-Site PCA
PCA 9	92 Davidson Street	#58 – Waste Disposal and Waste Management. Including thermal treatment, landfilling and transfer of waste, other than use of biosoils as soil conditioners	Off-Site (120 m Northeast)	No	Due to significant distance of separation
PCA 10	267 Bayfield Street	#52 – Storage, maintenance, fuelling and repair of equipment, vehicles,	Off-Site (200 m southwest)	No	Inferred Trans-gradient

PCA Identifier	Address	PCA	PCA Location	Contributing to APEC at the Site?	Rationale
		and material used to maintain transportation systems			
PCA 11		#28 – Gasoline and Associated Products Storage in Fixed Tanks		No	
PCA 12		#28 – Gasoline and Associated Products Storage in Fixed Tanks		No	
PCA 13	307 Bayfield Street	#52 – Storage, maintenance, fuelling and repair of equipment, vehicles, and material used to maintain transportation systems	Off-Site (240 m west)	No	Inferred Trans-gradient
PCA 14		#Other - Previously Identified VOC and Na and Cl impacts in Groundwater		No	
PCA 15	309, 311 and 315 Bayfield Street	#52 – Storage, maintenance, fuelling and repair of equipment, vehicles, and material used to maintain transportation systems	Off-Site (245 m west)	No	Inferred Trans-gradient
PCA 16		#28 – Gasoline and Associated Products Storage in Fixed Tanks		No	

PCA Identifier	Address	PCA	PCA Location	Contributing to APEC at the Site?	Rationale
PCA 17		#10 – Commercial Autobody Shops		No	

1) *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.*

The identification of the PCAs both on-Site and off-Site within the Phase One Study Area are shown on Figure 3. Based on the rationale provided, it is the opinion of the Qualified Person (QP) that eight (8) PCAs are considered APECs at the Site. Further discussion is provided below.

Areas of Potential Environmental Concern

Based on the evaluation of the PCAs located on- and off-Site, eight (8) APECs were identified, as presented below:

APEC	Location of APEC on Phase One Property	PCA	Location of PCA (On Site or Off-Site)	Contaminants of Potential Concern	Media Potentially Impacted (Ground Water, soil and/or sediment)
APEC 1: Potential presence of fill material of unknown quality associated with the site development in the mid to late 1950s	Entire Phase One Property	#30 – Importation of Fill Material of Unknown Quality (PCA 1)	On-Site	PAHs, Metals, As, Sb, Se, Cr (VI), Hg, B-HWS, CN-	Soil
APEC 2: Application of De-icing salts within former paved surfaces – parking lot and driveways	Paved Surfaces of Phase One Property	#Other – Application of De-Icing Salts (PCA 2)	On-Site	EC and SAR	Soil
APEC 3: Former OPP garage building utilized for repair and	South portion of the Phase One Property	#52 – Storage, maintenance, fuelling and repair of equipment,	On-Site	PAHs, VOCs, PHCs, Metals	Soil, Groundwater



APEC	Location of APEC on Phase One Property	PCA	Location of PCA (On Site or Off-Site)	Contaminants of Potential Concern	Media Potentially Impacted (Ground Water, soil and/or sediment)
maintenance of OPP vehicles.		vehicles, and material used to maintain transportation systems (PCA 3)			
APEC 4: Former emergency diesel generator inside the former OPP garage building	South portion of the Phase One Property	#28 – Gasoline and Associated Products Storage in Fixed Tanks (PCA 4)	On-Site	BTEX, PHCs	Soil
APEC 5: Potential pesticide use associated with former orchard identified on Site in the 1940s - 1950's	Entire Phase One Property	#40 – Pesticides (including Herbicides, Fungicides and Anti-Fouling Agents) Manufacturing, Processing, Bulk Storage and Large-Scale Applications (PCA 5)	On-Site	OCs, Metals, Hydride-forming Metals, Mercury	Soil
APEC 6: Former pad-mounted transformer located within south portion of the site	South portion of the Phase One Property	#55 – Transformer Manufacturing, Processing and Use (PCA 6)	On-Site	PCBs, BTEX, PHC	Soil
APEC 7: Minor staining at the previous location of a	Central portion of the Phase One Property	#Other – Staining (PCA 7)	On-Site	BTEX, PHC	Soil



APEC	Location of APEC on Phase One Property	PCA	Location of PCA (On Site or Off-Site)	Contaminants of Potential Concern	Media Potentially Impacted (Ground Water, soil and/or sediment)
mobile diesel generator					
APEC 8: Marginal groundwater exceedance of Benzo (a) reported previously by others	Eastern portion of the Phase One Property	#Other – previous exceedance (PCA 8)	On-Site	PAHs	Groundwater

- 1) *Areas 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 in, on 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.*

PHCs = petroleum hydrocarbons; BTEX = benzene, toluene, ethylbenzene and toluene; VOCs = volatile organic compounds; PAHs = polycyclic aromatic hydrocarbons; PCBs = polychlorinated biphenyls, As = arsenic, Sb = antimony, Se = selenium; Cr (VI) = chromium hexavalent; Hg = mercury; B-HWS = boron hot water soluble; CN- = cyanide; SAR = sodium adsorption ratio; Na = sodium; Cl- = chloride

The physiography of the Site is within the Simcoe Uplands and is characterized as Till Plains (drumlinized). The surficial geology of the Site is described as till consisting of moderately stoney to stoney silty sand to sand till. The bedrock in the general area consists of limestone, dolostone, shale, arkose, and sandstone of the Ottawa Group, Simcoe Group, and Shadow Lake Formation.

Based on the review of the OBM and Toporama map, the Site has an approximate elevation range from 267 to 274 m asl, with an approximate elevation differential of 7 m sloping from the western portion of the Site toward the eastern portion of the Site. Properties to the north, and south are generally at a similar elevation to the Site, properties to the west are generally at a higher elevation and properties to the east are generally at a lower elevation than the Site.

No waterbodies are located at the Phase One Property. Kidds Creek is located approximately 410 m west and Sophia Creek is located approximately 580 m east of the Site, both tributaries leading to Kempenfelt Bay as part of Lake Simcoe. Kempenfelt Bay is located approximately 1.5 km south of the Site. The inferred groundwater flow is anticipated to flow south toward Kempenfelt Bay.



Based on the review of available resources from the Ministry of Natural Resources and Forestry (MNRF) on December 7, 2023, no areas of natural significance were identified at the Site or within the Phase One Study Area. Additionally, no Provincially Significant wetlands or unevaluated wetlands are present within the Phase One Study Area.

The Site utilities and services were identified at the Site based on the relevant utility infrastructure observed during the Site reconnaissance and are summarized in the table below. It is noted that the precise underground location of the utilities cannot be determined without professional locate services.

Utility	Source	Location	Site Entry
Electricity	On-Site generator	On-Site	Temporary electrical lines were observed at the Site from the temporary generator located at the central portion of the Site to the temporary light posts and temporary mobile housing.
Natural Gas	Enbridge	On- Site	A Natural gas main and associated lines were observed running along the southeastern portion of the Site, parallel with Rose Street.
Water	City of Barrie	On-Site	A water supply line is assumed to enter the southern portion of the Site and connect to the fire hydrant located at the southern portion of the Site.
Storm and Sanitary Sewer	City of Barrie	On-Site	A sanitary line is assumed to enter/exit the Site at the southern portion of the Site. Two (2) manholes were identified at the southeastern and eastern portions of the Site.
Communications	Bell	On-Site	Communications lines were not observed during Site reconnaissance.

3.4 Deviation from Sampling and Analysis Plan

The field investigative and sampling program was carried out following the requirements of the SSAP, shown in Appendix A. No deviations from the SSAP were reported with respect to the sampling and data quality objectives for the Site.

3.5 Impediments

The Site was accessible at the time of the investigation and no impediments were encountered to follow the SSAP.



4. Investigation Method

4.1 General

The Phase Two ESA drilling program was carried out in conjunction with hydrogeological investigations and comprised advancement of fourteen (14) boreholes (designated as BH201 to BH214) and seven (7) test pits (designated as TP1 to TP7) to facilitate the collection of soil samples for geologic characterization and chemical analysis. Boreholes were drilled to a maximum depth of 12.8 m below existing grade and all test pits were advanced to a depth of 0.3 m bgs. Two (2) monitoring wells were installed in selected boreholes (BH7 and BH8) for hydrogeologic property characterization, to facilitate groundwater sample collection and for long-term groundwater monitoring.

Previously existing on-site monitoring wells (MW6, MW26 and MW27) which were installed by Peto MacCallum Ltd. during the environmental investigation in 2021 (PML 2021), and previously existing monitoring wells (MW101 to MW105) installed by GEI in 2023 were also utilized for groundwater sampling and monitoring as required.

Boreholes were advanced in the surficial fill and overburden soils by a licensed drilling company under the full-time supervision of GEI staff. The drilling equipment used to advance the boreholes is described below. Test pits were advanced by a member of GEI staff by hand with a shovel. No petroleum-based greases or solvents were used during drilling or test pitting activities. Monitoring wells were installed in the boreholes by a MECP licensed well contractor in accordance with Ontario Regulation 903/90, as amended (O.Reg.903) using manufactured well components (i.e., riser pipes and screens) and materials (i.e., sand pack and grout) from documented sources.

4.2 Borehole Drilling and Test Pitting

Prior to the commencement of drilling and test pitting activities, the locations of underground utilities including cable, telephone, natural gas, electrical lines, as well as water, sewer, storm water and sanitary lateral conduits were marked out by public locating companies. In addition, a private utility locating service was also retained to clear the individual borehole/ test pit locations.

The fieldwork for the Phase Two ESA was carried out between April 24 to May 9, 2024 in conjunction with hydrogeological investigations.

The boreholes were advanced by Ontario Soil Drilling under full-time supervision of GEI staff using a truck-mount power probe to a maximum depth of 12.8 m bgs and test pits were advanced by a member of GEI staff by hand to sufficiently assess the APECs identified in the Phase One ESA. The approximate locations of the boreholes, test pits, and monitoring wells are shown on Figure 5.

GEI continuously monitored the drilling activities to record the physical characteristics of the soil, depth of soil sample collection and total depth of boreholes. Field observations are summarized



on the borehole logs provided in Appendix C. Representative soil samples were recovered at regular intervals using a stainless-steel split spoon sampler in all boreholes.

4.3 Soil Sampling

Soil samples for geologic characterization and chemical analysis were collected on a discrete basis in the overburden materials using 5 cm diameter, 60 cm long, split spoon samples advanced in to the subsurface using a truck mounted power probe. The soil cores were extruded from the samplers upon retrieval by drilling personnel. Geologic details of the recovered cores were logged by GEI field staff and samples were collected from selected cores for chemical analysis. Field observations are summarized on the borehole logs prepared from the field logs and provided in Appendix C.

Surficial soil samples for chemical analysis were collected by GEI staff from test pits TP1 to TP7 to a maximum depth of 0.3 m below grade, using hand sampling techniques.

Measures were taken in the field and during transport to preserve sample integrity prior to chemical analysis. Recommended volumes of soil samples selected for chemical analysis were collected from the recovered cores into pre-cleaned, laboratory-supplied glass sample jars/vials identified for the specified analytical test group. All soil samples were placed in clean coolers containing ice prior to and during transportation to the subcontract laboratory, Eurofins Environmental Testing Canada, Inc. (Eurofins). The samples were transported/submitted within the acceptable holding time to Eurofins following Chain of Custody protocols for chemical analysis.

Decontamination and other protocols were followed during sample collection and handling to minimize the potential for sample cross-contamination. New disposable nitrile gloves were used for the handling and sampling of each retrieved soil core. Two (2) selected boreholes were installed with monitoring wells (MW207 and MW208).

Soil samples submitted for specific chemical analysis were selected on the basis of visual inspection of the recovered cores, sample location and depth interval.

Geologic details of the soil cores recovered from the boreholes advanced at the Site are provided in boreholes logs presented in Appendix C.

Four (4) duplicate soil samples were collected for QA/QC purposes as summarized below.

Borehole	Duplicate Sample Identification	Analytical Test Group
BH205-SS2	BH205D-SS2	EC, SAR
BH209-SS1	BH209D-SS1	PHCs, BTEX, VOCs, Metals and Inorganics
TP1	TP101	OCPs, Metals and Inorganics
TP7	TP107	PBCs

4.4 Field Screening Measurements

A portion of each soil core was placed in a sealed “Ziploc®” plastic bag and allowed to reach ambient temperature prior to field screening using a RKI Instruments Eagle 2, calibrated with isobutylene gas. The measurements were made by inserting the instrument’s probe into the plastic bag while manipulating the sample to ensure volatilization of the soil gases. These readings provide a real-time indication of the relative concentration of combustible vapours encountered in the subsurface during drilling and are used to aid in the assessment of the vertical and horizontal extent of contamination and the selection of soil samples for analysis.

Each sample was additionally examined for visual, textural, and olfactory classification at the time of sampling.

4.5 Groundwater: Monitoring Well Installation

Two (2) boreholes were instrumented with groundwater monitoring wells at the Site (MW207 and MW208). The monitoring wells were installed in general accordance with the Ontario Water Resources Act - R.R.O. 1990, Regulation 903/90 - amended to O.Reg.128/03 and were installed by a licensed well contractor.

All monitoring wells consisted of a 3 m length, 50 mm diameter PVC screen, and an appropriate length of PVC riser pipe. All pipe connections were factory machined threaded flush couplings. The annular space around the wells was backfilled with sand to an average height of 0.3 m above the top of the screen. A bentonite seal was added from the top of the sand pack to approximately 0.3 m below ground surface.

When the monitoring wells are no longer required, they must be decommissioned in accordance with the procedure outlined in the Ontario Water Resources Act - R.R.O. 1990, Regulation 903 - amended to O.Reg.128/03. Monitoring well completion details are summarized in Table 3.

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

- a) The use of well pipe components (e.g., riser pipe and well screens) with factory machine threaded flush coupling joints;
- b) Construction of wells without the use of glues or adhesives;
- c) Removing the protective plastic wraps from well components at the time of borehole insertion to prevent contact with the ground and other surfaces; and,
- d) Cleaning of augers between sampling locations.

4.6 Monitoring Well Development

Upon completion of monitoring well installation, the new monitoring wells as well as previously existing monitoring wells (MW101 to MW105 installed by GEI, and MW6, MW26 and MW27 installed by PML) were developed to remove fine sediment particles from the sand pack and enhance hydraulic communication with the surrounding formation waters. The monitoring wells



were developed on May 13, 2024, using dedicated Waterra and a monsoon pump to disturb the water column and recover groundwater containing dislodged sediment particles.

4.7 Groundwater Monitoring

Groundwater monitoring activities, which consisted of measuring the depths to groundwater in each monitoring well, were conducted on newly and previously installed monitoring wells so that groundwater flow and direction below the Site could be assessed and groundwater samples can be collected. Water levels were measured with respect to the top of casing by means of an electronic water level meter. The water level measurements were recorded on water level log sheets or in a bound field notebook. The water level meter probe was decontaminated between monitoring well locations.

4.8 Monitoring Well Purging

Monitoring wells MW207 and MW208 were purged prior to groundwater sample collection. Previously existing monitoring wells MW101, M102, and MW105 installed by GEI in 2023 and MW6, MW26 and MW27 installed by PML in 2021 were also purged prior to groundwater sample collection. Approximately three (3) wetted well volumes of water, or until dry, were purged from each well to remove standing water and draw in fresh formation water. Water levels and wetted well volumes were determined by means of an electronic water level meter.

Well purging was monitored by taking field measurements of turbidity, redox, pH, specific conductance and temperature and water level for every standing well (i.e., wetted casing) volume removed. Well purging continued until the purged water had chemically stabilized as indicated by field parameter measurements, and the water was of sufficient clarity as indicated by turbidity measurements. The groundwater was considered to be chemically stable when the pH measurements of three (3) successive purge well volumes agreed to within ± 1 pH units, the specific conductance within $\pm 10\%$, and turbidity $\pm 10\%$ of the average value of the three readings with the temperature within $\pm 3\%$. Field parameters including pH, conductivity and temperature were monitored during monitoring well purging using a Horiba U-52 WQA multiparameter water quality meter.

Equipment used during groundwater monitoring were thoroughly cleaned and decontaminated between wells. Well purging details were documented on a log sheet.

4.9 Field Measurements of Water Quality Parameters

Field parameters including pH, conductivity, and temperature were monitored during well development using a Horiba U-52 WQA multiparameter water quality meter.



4.10 Groundwater Sampling

Upon completion of purging, the newly installed monitoring wells MW207 and MW208 and three (3) previously installed monitoring wells MW101, MW102 and MW105 (GEI 2023), were sampled on May 13, 2024.

Recommended groundwater sample volumes were collected into laboratory-supplied vials or bottles provided with analytical test group specific preservatives, as required. The samples were placed in an insulated cooler pre-chilled with ice immediately upon collection. The groundwater samples were transported to Eurofins Laboratory under Chain of Custody protocols, within 24 hours of sample collection or approved holding times.

4.11 Sediment Sampling

As no water body was present at the Site, sediment sampling was not part of the Phase Two ESA.

4.12 Analytical Testing

All analytical testing was performed by Eurofins, which is an accredited laboratory. Eurofins is accredited under the Standards Council of Canada/Canadian Association of Environmental Analytical Laboratories (Accredited Laboratory No. 852) in accordance with ISO/IEC 17025:2017 - "General Requirements for the Competence of Testing and Calibration Laboratories".

4.13 Soil Sampling

Selected soil samples from boreholes as well as from the two test pits were selected, were selected for laboratory analysis based on field screening results, sample location and depth interval. The requested laboratory analysis was based on the identified contaminants of concern. The representative soil samples selected for laboratory analysis, the rationale for each sample and the requested analyses are summarized below.

Table 2: Summary of Soil Samples Submitted for Chemical Analyses

Soil Sample ID	Rationale	Requested Analyses	Consultant
BH201-SS2	APECs 1, 2	PAHs, Metals and Inorganics	GEI (2024)
BH202-SS1	APECs 1, 2	EC, SAR	GEI (2024)
BH203-SS2	APECs 1, 2	EC, SAR	GEI (2024)
BH204-SS2	APECs 1, 2	Metals and Inorganics	GEI (2024)
BH205-SS2	APECs 1, 2	EC, SAR	GEI (2024)
BH205D-SS2 (Duplicate of BH205-SS2)			
BH206-SS2	APEC 1	Metals and Inorganics	GEI (2024)



Soil Sample ID	Rationale	Requested Analyses	Consultant
BH207-SS3	APECs 1, 3	PHCs, BTEX, VOCs, PAHs, Metals and Inorganics	GEI (2024)
BH208-SS2	APEC 1	Metals and Inorganics	GEI (2024)
BH209-SS1	APECs 1, 3	PHCs, BTEX, VOCs, Metals and Inorganics	GEI (2024)
BH209D-SS1 (Duplicate of BH209D-SS1)			
BH210-SS1	APECs 1, 3, 4	PHCs, BTEX, Metals	GEI (2024)
BH211-SS2	APEC 1	Metals and Inorganics	GEI (2024)
BH212-SS4	APEC 1	PHCs, BTEX, PAHs, Metals and Inorganics	GEI (2024)
BH213-SS3	APEC 1	Metals and Inorganics	GEI (2024)
BH214-SS1	APECs 1, 7	PHCs, BTEX	GEI (2024)
TP1	APEC 5	OCPs, PCBs, Metals and Inorganics	GEI (2024)
TP101 (Duplicate of TP1)		OCPs, Metals and Inorganics	
TP2	APEC 5	OCPs, Metals and Inorganics	GEI (2024)
TP3	APEC 5	OCPs, Metals and Inorganics	GEI (2024)
TP4	APEC 5	OCPs, PCBs, Metals and Inorganics	GEI (2024)
TP5	APEC 5	OCPs, Metals and Inorganics	GEI (2024)
TP6	APEC 5	OCPs, PCBs, Metals and Inorganics	GEI (2024)
TP7	APEC 6	PHCs, BTEX, PCBs	GEI (2024)
TP107 (Duplicate of TP7)		PBCs	

4.13.1 Groundwater Sampling

Representative groundwater samples were submitted for specific chemical analysis based on the identified contaminants of potential concern.

The representative groundwater samples selected for lab analysis, the rationale for each sample, and the required analyses are summarized below.

Table 3: Summary of Groundwater Samples Submitted for Chemical Analyses



Monitoring Well ID	Rationale	Requested Analyses	Consultant
MW101	Site Characterization	PHCs, VOCs, Metals	GEI (2023)
MW102	APEC 2 (due diligence)	Na, Cl	GEI (2023)
MW105	APECs 3, 4	PHCs, VOCs, PAHs, Metals	GEI (2023)
MW105 DUP (Duplicate of MW105)			
MW207	APEC 3	PHCs, VOCs, Metals	GEI (2024)
MW208	APEC 8	PAHs	GEI (2024)

4.14 Elevation Survey

An elevation survey was conducted to obtain vertical control of the newly installed borehole and monitoring well locations. The ground surface elevations of each borehole, test pit, and previous/newly installed monitoring well location were surveyed using a Topcon HiPer SR GPS Survey unit and referred to the reference station located in Barrie, Ontario (44.4113, -79.6678). A summary of groundwater levels and elevations is provided below.

Table 4: Summary of Ground Surface Elevation and Groundwater Elevations

Borehole/ Monitoring Well ID	Ground Surface Elevation	Top of Well Screen (m bgs)	Bottom of Well Screen (m bgs)	Groundwater Level (m bgs)	Groundwater Elevation (m asl)	Groundwater Monitoring Date
BH/MW101	271.57	10.7	12.2	6.85	264.72	May 13, 2024
BH/MW102	270.97	11.0	12.5	5.88	265.09	May 13, 2024
BH/MW103	270.09	10.7	12.2	5.43	264.66	May 13, 2024
BH/MW104	271.41	10.7	12.2	8.39	263.02	May 13, 2024
BH/MW105	270.28	10.7	12.2	5.98	264.30	May 13, 2024
BH201	270.06	-	-	-	-	-
BH202	270.97	-	-	-	-	-
BH203	270.45	-	-	-	-	-
BH204	271.48	-	-	-	-	-
BH205	270.08	-	-	-	-	-
BH206	270.75	-	-	-	-	-
BH/MW207	270.70	7.6	10.7	5.45	265.25	May 13, 2024
BH/MW208	270.36	9.1	12.2	5.64	264.72	May 13, 2024
BH209	270.63	-	-	-	-	-
BH210	270.49	-	-	-	-	-
BH211	271.07	-	-	-	-	-
BH212	271.15	-	-	-	-	-



Borehole/ Monitoring Well ID	Ground Surface Elevation	Top of Well Screen (m bgs)	Bottom of Well Screen (m bgs)	Groundwater Level (m bgs)	Groundwater Elevation (m asl)	Groundwater Monitoring Date
BH213	271.02	-	-	-	-	-
BH214	270.54	-	-	-	-	-
TP1	270.19	-	-	-	-	-
TP3	267.90	-	-	-	-	-
TP4	266.57	-	-	-	-	-
TP5	271.66	-	-	-	-	-
TP6	271.52	-	-	-	-	-
TP7	269.44	-	-	-	-	-

The elevation survey was completed using a Topcon HiPer SR GPS Survey Unit. The survey equipment was calibrated by GEI personnel prior to use.

4.15 Quality Assurance and Quality Control Measures

Quality Assurance/Quality Control (QA/QC) measures, as set out in the Sampling and Analysis Plan, were implemented during sample collection, storage and transport to provide accurate data representative of conditions in the surficial fill and upper overburden soils and the water table aquifer. The QA/QC measures included decontamination procedures to minimize the potential for sample cross contamination, the execution of standard operating procedures to collect representative and unbiased samples, the collection of quality control samples to evaluate sample precision and accuracy, and the implementation of measures to preserve sample integrity.

Decontamination protocols were followed during sample collection and handling to minimize the potential for cross-contamination. During the collection of soil samples, split-spoon samplers were scraped and decontaminated between sampling intervals by washing with a potable water/phosphate-free detergent solution followed by a rinse with potable water. New disposable nitrile gloves were used for the handling and collection of samples from each soil core and for sample collection from each borehole.

Soil samples selected for chemical analyses were collected from the retrieved soil cores and placed directly into pre-cleaned, laboratory-supplied glass jars or vials. Sample volumes were consistent with analytical test group requirements as specified by the receiving laboratory.

Groundwater samples were collected into pre-clean laboratory-supplied vials or bottles provided with analytical test group specific preservatives, as required. Recommended analytical test group specific sample volumes were collected as specified by the contractual laboratory. Sample vials for analysis of PHCs, BTEX, and VOCs were inspected for the presence of gas bubbles and the presence of head space, where volatiles may partition into.

Measures were followed to preserve sample integrity between collection and receipt by the contractual laboratory. All samples, both soil and groundwater, immediately upon collection were placed in insulated coolers pre-chilled with ice for storage and transport to the contractual

laboratory. Samples were received by the contractual laboratory within specific analytical test group holding time requirements.

Documentation procedures were followed to confirm sample identification and tracked sample movement. Each sample was assigned a unique identification ID number, which was recorded along with the date, time of sampling and requested analyses on labels affixed to the sampling containers, and in a bound field notebook. Chain of Custody protocols were followed to track sample handling and movement until receipt by the contractual laboratory.

Field QA/QC samples were collected during the soil and groundwater sampling. Duplicate samples were collected to evaluate sampling precision and trip blanks were included to evaluate the potential for sample cross-contamination during handling and transport.

Four (4) duplicate soil samples were collected for QA/QC purposes as summarized below.

Borehole	Duplicate Sample Identification	Analytical Test Group
BH205-SS2	BH205D-SS2	EC, SAR
BH209-SS1	BH209D-SS1	PHCs, BTEX, VOCs, Metals and Inorganics
TP1	TP101	OCPs, Metals and Inorganics
TP7	TP107	PBCs

One (1) duplicate groundwater sample was collected for QA/QC purposes as summarized below.

Monitoring Well	Duplicate Sample Identification	Analytical Test Group
MW105	MW105 DUP	PHCs, VOCs, PAHs, Metals

There were no significant deviations from the SSAP.

5. Review and Evaluation

5.1 Geology

The soil investigation conducted at the Site consisted of the advancement of fourteen (14) boreholes into the surficial topsoil and/or asphalt/ fill, and the underlying native materials to a maximum depth of 12.8 m bgs. Borehole logs describing geologic details of the soil cores recovered during the Site drilling activities are presented in Appendix C. Boundaries of soil indicated on the log sheets are intended to reflect transition zones for the purpose of environmental assessment and should not be interpreted as exact planes of geological change.

Previously, PML conducted a Phase Two Environmental Assessment and Geotechnical Investigation in 2021. The programs indicated that the stratigraphy at the Site is comprised of topsoil and/or pavement followed by silty sand to sandy silt fill, underlain by native silty sand glacial till to a maximum depth of 12.8 m bgs. Fill material was identified in all boreholes to a maximum depth of 2.9 m bgs. Bedrock was not encountered at the Site. Details from this investigation are included with the more recent subsurface investigation as described below.

A brief description of the soil stratigraphy at the Site, in order of depth, is summarized in the following sections. The interpreted Site geology is shown on the enclosed cross sections (Figures 7 and 8).

5.1.1 Surficial Material

Topsoil was identified by PML (2021) at ground surface in eleven (11) boreholes (BHs 1 to 3, 6 to 8, 16, 20, 26 to 29). The topsoil ranged in thickness from 150 mm to 250 mm.

An asphalt layer ranging from 30 mm to 130 mm thick was encountered in thirteen (13) boreholes (BHs 4, 5, 9, 10, 12 to 15, 17, 18, 21, 25, and 30) during the PML (2021) investigation within paved areas. The asphalt layer was underlain by a granular layer ranging from 250 mm to 530 mm in thickness.

Granular material/gravel was identified at ground surface in four (3) boreholes (BHs 201, 203, 204 and 214) during the soil investigation as part of this Phase Two ESA. The material ranged in thickness from 150 mm to 600 mm.

5.1.2 Fill Material

Exposed fill material was encountered at the surface in borehole BH202, and boreholes BH205 to BH213 and beneath the granular material in boreholes BH203 and BH204. The fill consisted of silty sand to sand, with trace gravel, and extended to a maximum depth of 3.2 m below grade.

Previously, PML (2021) identified a fill layer beneath the topsoil or pavement in twenty-six (26) boreholes (BH1 to BH10, BH12 to BH18, BH20, BH21, and BH24 to BH30) to a maximum depth of 2.9 m bgs, consisting of silty sand to sandy silt.



5.1.3 Native Material

Native material predominantly comprised of silty sand to sandy silt and silty sand glacial till deposits.

A layer of silty sand was encountered below fill material in boreholes BH201 to BH203 and BH214. PML (2021) previously identified sand and silty sand beneath fill at boreholes BH5 and BH9, respectively.

The deposit of silty sand glacial till was identified beneath fill in boreholes BH207 to BH213. The glacial till deposits comprised varying amounts of silty sand with trace gravel and inferred cobbles and boulders. PML (2021) previously identified sandy silt to silt and sand glacial till to the maximum depth of 12.8 m bgs. The material was comprised of varying amounts of sand and silt, trace gravel and clay, and cobbles and boulders were noted during augering. Previous GEI boreholes (BH101 to BH105) also identified sand and silt glacial till with trace gravel and clay to a maximum depth of 14.2 m bgs.

5.1.4 Bedrock

Bedrock was not encountered in any of the borehole drilled at the Site. The depth to bedrock was estimated from the Bedrock Topography Series Map P.979 for Barrie Area, prepared by Ontario Division of Mines, issued in 1974 and is estimated to be approximately 145-150 m below existing grade (approximate 123.0 m above mean sea level).

Refer to the geological cross sections in Figures 7 and 8 for an overview of the Site stratigraphy.

5.2 Groundwater Elevations and Flow Direction

The monitoring well network advanced at the Site consists of five (5) monitoring wells previously advanced by GEI (2023), six (6) monitoring wells previously advanced by PML (2021), of which three have been destroyed, and two (2) monitoring wells advanced as part of this Phase Two investigation, screened within the overburden. The 1.5 m or 3 m long screens were installed within the native silty sand glacial till to intercept the overburden groundwater aquifer.

Based on the topography and the distance of the Site to Kempenfelt Bay, the inferred groundwater flow direction was considered to be to the south in the Phase One ESA. Groundwater levels, especially near the surface, are expected to show seasonal fluctuations and vary in response to prevailing climate conditions. Long term groundwater levels monitoring is ongoing at the site. This long-term monitoring, upon completion, will provide input on the seasonal high groundwater table.

Based on water levels gathered from available monitoring wells at the Site, taken on May 13, 2024, the local groundwater flow appears to be directed south towards Lake Simcoe, as shown in Figure 6.

5.2.1 Groundwater: Hydraulic Gradients

The horizontal hydraulic gradient, between each monitoring well pair, is calculated using the following equation:



$$i = Ah/As$$

Where,

i = horizontal hydraulic gradient;

Ah (m) = groundwater elevation difference; and,

As (m) = separation distance.

The horizontal hydraulic gradient in groundwater, based on groundwater measurements collected on March 13, 2024, was 0.068 between MW207 and MW208, and 0.114 between MW26 and MW23, with a geometric mean of 0.088 m/m.

It is noted that vertical hydraulic gradients were not evaluated for this Site as a second water bearing unit was not identified at the depths investigated at the Site.

5.2.2 Groundwater: Hydraulic Conductivity

Hydraulic conductivity testing was completed in the hydrogeological investigation conducted by GEI. Single Well Response Test (SWRT) analysis was conducted at selected monitoring wells (BH/MW101, BH/MW102, BH/MW103, and BH/MW105) on January 2 and 10, 2024. The hydraulic conductivity values for each of the tested wells were calculated from the SWRT data using Aqtesolv Software and the Hvorslev solution for unconfined conditions. The hydraulic conductivity (K) was 1.3×10^{-6} m/s at BH/MW101, 1.0×10^{-6} at BH/MW102, 4.9×10^{-6} at BH/MW103, and 3.2×10^{-6} at BH/MW105.

5.3 Soil Texture

The native materials encountered are comprised generally of varying amounts of silty sand/ silt and sand glacial till. Based on the grain size analysis and textural description of these materials as inferred from borehole observations, coarse textured standards were applied as part of this Phase Two ESA.

5.4 Soil Field Screening

All soil samples were submitted for chemical analyses based on field observations, PID readings, location, and depth.

5.5 Soil Quality

In accordance with the scope of work, chemical analyses were performed on selected soil samples recovered from the boreholes. The selection of representative “worst case” soil samples was based on field screening, visual and/or olfactory evidence of impacts, and the presence of potential water bearing zones. Copies of the laboratory Certificates of Analysis for the analyzed soil samples are provided in Appendix F.



5.5.1 PHCs and BTEX

The soil samples submitted for PHC and BTEX analysis indicated that all parameters were detected below the applicable MECP Table 2 SCS; and all laboratory RDLs were below the applicable SCS.

Analytical results are provided in Appendix B, Certificates of Analysis are provided in Appendix F, and sampling locations are shown on Figure 11.

5.5.2 VOCs

The soil samples submitted for VOC analysis indicated that all parameters were detected below the applicable MECP Table 2 SCS; and all laboratory RDLs were below the applicable SCS.

Analytical results are provided in Appendix B, Certificates of Analysis are provided in Appendix F, and sampling locations are shown on Figure 12.

5.5.3 PCBs

The soil samples submitted for PCBs analysis indicated that all parameters were detected below the applicable MECP Table 2 SCS; and all laboratory RDLs were below the applicable SCS.

Analytical results are provided in Appendix B, Certificates of Analysis are provided in Appendix F, and sampling locations are shown on Figure 15.

5.5.4 PAHs

The soil samples submitted for PAHs analysis indicated that all parameters were detected below the applicable MECP Table 2 SCS; and all laboratory RDLs were below the applicable SCS.

Analytical results are provided in Appendix B, Certificates of Analysis are provided in Appendix F, and sampling locations are shown on Figure 13.

5.5.5 OC Pesticides

The soil samples submitted for OC Pesticides analysis indicated that all parameters were detected below the applicable MECP Table 2 SCS; and all laboratory RDLs were below the applicable SCS.

Analytical results are provided in Appendix B, Certificates of Analysis are provided in Appendix F, and sampling locations are shown on Figure 14.

5.5.6 Metals and hydride-forming metals

The soil samples submitted for analysis of metals and hydride-forming metals indicated that all parameters were detected below the applicable MECP Table 2 SCS; and all laboratory RDLs were below the applicable SCS.

Analytical results are provided in Appendix B, Certificates of Analysis are provided in Appendix F, and sampling locations are shown on Figure 9.

5.5.7 Other Regulated Parameters (ORPs)

All soil samples submitted for ORPs including Cr (VI), Hg, CN, pH, EC and SAR analysis indicated that all parameters were detected below the applicable MECP Table 2 SCS; and all laboratory RDLs were below the applicable SCS with exception of SAR.

Elevated levels of SAR in the soil samples BH202-SS1, BH203-SS2, BH205-SS2 and BH205D-SS2 were recorded which exceed the selected Table 2 SCS. The elevated levels of SAR are considered to be the result of winter de-icing salt application on pavement surfaces. As per Section 49.1 of O.Reg. 153/04 (as amended), if a substance has been applied to surfaces for the safety of vehicular or pedestrian traffic under the conditions of snow or ice or both (i.e., application of de-icing salts), its related parameters are not deemed to consider as exceedance. Elevated levels of SAR in soil samples BH202-SS1, BH203-SS2, BH205-SS2 and BH205D-SS2 are thereby considered to have met the Table 2 SCS.

As de-icing salts were used at the Site, SAR is not considered as a contaminant of concern.

The remaining inorganic parameters were all detected below the applicable MECP Table 2 SCS and all laboratory RDLs were below the applicable SCS.

Analytical results are provided in Appendix B, Certificates of Analysis are provided in Appendix F, and sampling locations are shown on Figure 10.

5.5.8 Chemical Transformation and Soil Contaminant Sources

No parameters were identified in soil at concentrations in exceedance of the applicable MECP Table 2 SCS with the exception of EC/SAR. Therefore, it is not expected that any chemical transformation (i.e., presence of parent compounds and daughter products) has occurred on the property.

5.5.9 Evidence of Non-Aqueous Phase Liquid

Inspection of the soil cores retrieved from the boreholes did not indicate the presence of non-aqueous phase liquid (NAPL), sheen, or staining.

5.6 Groundwater Quality

Representative groundwater samples were collected from the newly and previously installed monitoring wells to assess groundwater quality at the Site. Inspection of the purged groundwater retrieved from the monitoring wells did not indicate the presence of NAPL, staining, or sheen.

Analytical results summary tables are provided in Appendix B and copies of the laboratory Certificates of Analysis for the analyzed groundwater samples are provided in Appendix F.



5.6.1 PHCs and BTEX

Groundwater samples submitted for PHC and BTEX analysis indicated that all parameters were detected below the applicable MECP Table 2 SCS; and all laboratory RDLs were below the applicable SCS.

Analytical results are provided in Appendix B, Certificates of Analysis are provided in Appendix F, and sampling locations are shown on Figure 18.

5.6.2 VOCs

Groundwater samples submitted for VOCs analysis indicated that all parameters were detected below the applicable MECP Table 2 SCS; and all laboratory RDLs were below the applicable SCS.

Analytical results are provided in Appendix B, Certificates of Analysis are provided in Appendix F, and sampling locations are shown on Figure 19.

5.6.3 PAHs

Groundwater samples submitted for PAHs analysis indicated that all parameters were detected below the applicable MECP Table 2 SCS; and all laboratory RDLs were below the applicable SCS.

Analytical results are provided in Appendix B, Certificates of Analysis are provided in Appendix F, and sampling locations are shown on Figure 20.

5.6.4 Metals and hydride-forming Metals

All groundwater samples submitted for metals and hydride-forming metals analysis indicated that all parameters were detected below the applicable MECP Table 2 SCS; and all laboratory RDLs were below the applicable SCS.

Analytical results are provided in Appendix B, Certificates of Analysis are provided in Appendix F, and sampling locations are shown on Figure 16.

5.6.5 Other Regulated Parameters (ORPs) Incl. Sodium and Chloride

All groundwater samples submitted for ORPs including Cr(VI), Hg, CN, Na and Cl analysis indicated that all parameters were detected below the applicable MECP Table 2 SCS; and all laboratory RDLs were below the applicable SCS with exception of Na and Cl concentration in the groundwater sample from monitoring wells MW102.

The concentration of Na and/or Cl in the groundwater samples from monitoring well MW102 were recorded as exceeding the selected Table 2 SCS which are considered to be the result of winter de-icing salt application on pavement surfaces. As per Section 49.1 of O.Reg. 153/04 (as amended), if a substance has been applied to surfaces for the safety of vehicular or pedestrian traffic under the conditions of snow or ice or both (i.e., application of de-icing salts), its related

parameters are not deemed to consider as exceedance. Therefore, concentration of Na and Cl in groundwater sample from monitoring wells MW102 is thereby considered to have met the Table 23 SCS.

Analytical results are provided in Appendix B, Certificates of Analysis are provided in Appendix F, and sampling locations are shown on Figure 17.

5.6.6 Chemical Transformation and Contaminant Sources

The only parameters that were identified in groundwater at concentrations in exceedance of the applicable MECP Table 2 SCS were Na and Cl. However, given the nature of these parameters, no chemical transformation (i.e., presence of parent compounds and daughter products) is expected. No further assessment would be required.

5.6.7 Evidence of Non-Aqueous Phase Liquid

Inspection of the purged groundwater retrieved from the monitoring wells did not indicate the presence of NAPL, staining, or sheen.

5.7 Sediment Quality

As no surface water body was located on-Site, the Phase Two ESA did not include sediment sampling.

5.8 Quality Assurance and Quality Control Measures

QA/QC measures were taken during the field activities to meet the objectives of the sampling and QA plan to collect unbiased and representative samples to characterize existing conditions in the fill/upper overburden materials and water table aquifer unit at the Site. QA/QC measures included:

- a) The collection of soil and groundwater samples following standard operating procedures;
- b) The implementation of decontamination procedures to minimize the potential for sample cross contamination;
- c) The collection of recommended analytical test group specific volumes into pre-cleaned laboratory supplied containers provided with necessary preservatives as required;
- d) Sample preservation in insulated coolers pre-chilled with ice and meeting holding time requirements;
- e) Sample documentation including Chain of Custody protocols; and
- f) The collection of QC samples.

Review of field activity documentation indicated that recommended sample volumes were collected from soil and groundwater for each analytical test group into appropriate containers and preserved with proper chemical reagents in accordance with the protocols set out in the "Protocol for Analytical Methods used in the Assessment of Properties under Part XV.1 of the *Environmental Protection Act*", dated March 9, 2004, amended as of July 1, 2011 (MECP 2011b). Samples were preserved at the required temperatures in pre-chilled insulated coolers and met applicable holding time requirements, when relinquished to the receiving laboratory.



Field QA/QC samples were collected during the soil and groundwater sampling. Duplicate samples were collected to evaluate sampling precision.

Four (4) duplicate soil samples were collected for QA/QC purposes as summarized below.

Borehole	Duplicate Sample Identification	Analytical Test Group
BH205-SS2	BH205D-SS2	EC, SAR
BH209-SS1	BH209D-SS1	PHCs, BTEX, VOCs, Metals and Inorganics
TP1	TP101	OCPs, Metals and Inorganics
TP7	TP107	PBCs

One (1) duplicate groundwater sample was collected for QA/QC purposes as summarized below.

Monitoring Well	Duplicate Sample Identification	Analytical Test Group
MW105	MW105 DUP	PHCs, VOCs, PAHs, Metals

There were no significant deviations from the SSAP.

The field duplicate sample results were quantitatively evaluated by calculating the relative percent difference (RPD). Assessment of the duplicate soil and groundwater samples, where quantifiable, showed that the results met analytical test group specific acceptance criteria, as specified in the "Protocol for Analytical Methods used in the Assessment of Properties under Part XV.1 of the *Environmental Protection Act*", dated March 9, 2004, amended as of July 1, 2011 (MECP, 2011b).

The subcontract laboratory used during this investigation, Eurofins, is accredited by the Standards Council of Canada/Canadian Association of Environmental Analytical Laboratories (Accredited Laboratory No. 852) in accordance with ISO/IEC 17025:2017 - "General Requirements for the Competence of Testing and Calibration Laboratories".

Certificates of Analysis were received from Eurofins reporting the results of all the chemical analyses performed on the submitted soil and groundwater samples. Copies of the Eurofins Certificates of Analysis are provided in Appendix F. Review of the Certificates of Analysis prepared by Eurofins indicates that they were in compliance with the requirements set out under subsection 47(3) of O.Reg.153/04.

The analytical program conducted by Eurofins included analytical test group specific QA/QC measures to evaluate the accuracy and precision of the analytical results and the efficiency of analyte recovery during solute extraction procedures. The laboratory QA/QC program consisted of the preparation and analysis of laboratory duplicate samples to assess precision and sample homogeneity, method blanks to assess analytical bias, spiked blanks and QC standards to evaluate analyte recovery, matrix spikes to evaluate matrix interferences, and surrogate compound recoveries (VOCs only) to evaluate extraction efficiency. The laboratory QA/QC results are presented in the Quality Assurance Report provided in the Certificate of Analysis prepared by Eurofins. The QA/QC results are reported as percent recoveries for matrix spikes, spike blanks and QC standards, RPDs for laboratory duplicates, and analyte concentrations for method blanks.

The Eurofin QA/QC results were assessed against test group control limits in the case of spiked blanks, matrix spikes and surrogate recoveries, and alert criteria in the case of method blanks



and laboratory duplicates. Review of the laboratory QA/QC results reported by Eurofins indicated that they were within acceptable control limits or below applicable alert criteria for the sampled media and analytical test groups. Based on the assessment of the QA/QC, the analytical results reported by Eurofins are of acceptable quality and data qualifications are not required.

5.9 Phase Two Conceptual Site Model

This section presents a Phase Two Environmental Site Assessment (ESA) Conceptual Site Model (CSM), providing a narrative, graphical and tabulated description integrating information related to the Site geologic and hydrogeologic conditions, areas of potential environmental concern (APECs)/potentially contaminating activities (PCAs), presence and distribution of potential contaminants of concern, contaminant fate and transport and potential exposure pathways. The Phase Two CSM was completed in accordance with Ontario Regulation (O.Reg.) 153/04, as amended, and defined by the Ministry of Environment, Conservation and Parks (MECP).

Refer to Appendix A for the Phase Two Conceptual Site Model.



6. Summary of Findings

The findings of the Phase Two ESA conducted at the Site are summarized as follows:

1. The Phase Two ESA drilling program was carried out in conjunction with hydrogeological investigations and comprised of fourteen (14) boreholes (BH201 to BH214) up to a maximum depth of 12.8 m bgs, and seven (7) test pits (TP1 to TP7). Monitoring wells were installed in selected boreholes, BH207 and BH208 to facilitate groundwater sample collection and long-term groundwater monitoring. Previously existing on-site monitoring wells (MW6, MW26 and MW27) which were installed by Peto MacCallum Ltd. during the environmental investigation in 2021 (PML 2021), and previously existing monitoring wells (MW101 to MW105) installed by GEI in 2023 were also utilized for groundwater sampling and monitoring as required.
2. The general stratigraphy at the Site, as revealed in the borehole logs, consists of surficial topsoil and/or asphalt underlain by fill materials over native deposits predominantly comprised silty sand glacial till. Bedrock was not encountered at the Site.
3. As per the grain size analysis and soil description in the borehole logs, coarse textured standards were applied.
4. The groundwater depths across the entire Site ranged between approximately 2.04 m bgs and 8.39 m bgs on May 13, 2024.
5. For assessment purposes, GEI selected the MECP Table 2: Background Site Condition Standards in a Potable Groundwater Condition for Residential/ Parkland/ Institutional (RPI) Property Use (Table 2 SCS) for coarse textured soils.
6. The analytical test results of the soil samples submitted for the analysis of one or more parameters including metals, hydride-forming metals, pH, EC, SAR, petroleum hydrocarbons (PHCs), benzene, toluene, ethylbenzene and xylenes (BTEX), volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyl (PCBs), Organochlorine Pesticides (OCPs) and Other Regulated Parameters (ORPs) met the selected MECP Table 2 SCS for RPI property use with exception of SAR results. Elevated levels of SAR in the soil samples BH202-SS1, BH203-SS2, BH205-SS2 and BH205D-SS2 were recorded as exceeding the selected Table 2 SCS which are considered to be the result of winter de-icing salt application on pavement surfaces. As per Section 49.1 of O.Reg. 153/04 (as amended), if a substance has been applied to surfaces for the safety of vehicular or pedestrian traffic under the conditions of snow or ice or both (i.e., application of de-icing salts), its related parameters are not deemed to consider as exceedance. Elevated levels of SAR in soil samples BH202-SS1, BH203-SS2, BH205-SS2 and BH205D-SS2 are thereby considered to have met the Table 2 SCS.
7. No contaminants of concern (COC) in soil were identified based on the completed soil analytical testing program.



8. The groundwater analytical results from the samples collected and submitted by GEI for the analysis of metals, hydride- forming metals, Na, Cl, PHCs, BTEX, VOCs and PAHs, met the selected Table 2 SCS, with exception of Na and Cl concentration in the groundwater sample from monitoring well MW102. The concentration of Na and/or Cl in the groundwater sample from monitoring well MW102 were recorded as exceeding the selected Table 2 SCS which are considered to be the result of winter de-icing salt application on pavement surfaces. As per Section 49.1 of O.Reg. 153/04 (as amended), if a substance has been applied to surfaces for the safety of vehicular or pedestrian traffic under the conditions of snow or ice or both (i.e., application of de-icing salts), its related parameters are not deemed to consider as exceedance. Therefore, the concentration of Na and/or Cl in the groundwater sample from monitoring well MW102 are thereby considered to have met the Table 2 SCS.
9. No COC in groundwater were identified based on the completed groundwater analytical testing program.

Conclusions and Recommendations

As no soil or groundwater COCs were identified at the Site, no further environmental investigation is required for the Site. The Site is considered suitable for the intended residential use.



7. General Limitations

The information presented in this report is based on a limited investigation designed to provide information to support an assessment of the current environmental conditions within the subject property. The conclusions and recommendations presented in this report reflect Site conditions existing at the time of the investigation.

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Yours Truly,

GEI Consultants Canada Ltd.

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8. References

1. GEI (2024) Phase One Environmental Site Assessment, 20 Rose Street, Barrie, Ontario. GEI Consultants Ltd. June 20, 2024.
2. MECP (2011a) "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the *Environmental Protection Act*". PIBS 7382e01;
3. MECP (2011b) *Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act*. PIBS 4696e01;
4. MECP (2020); *Well Records Map*. Retrieved from <https://www.ontario.ca/environment-and-energy/map-well-records>
5. NHIC (2020); *Make a Natural Heritage Map*. Retrieved from http://www.gisapplication.lrc.gov.on.ca/mamnh/Index.html?site=MNR_NHLUPS_NaturalHeritage&viewer=NaturalHeritage&locale=en-US
6. Toporama. Retrieved from <http://www.atlas.gc.ca/toporama/en/index.html>

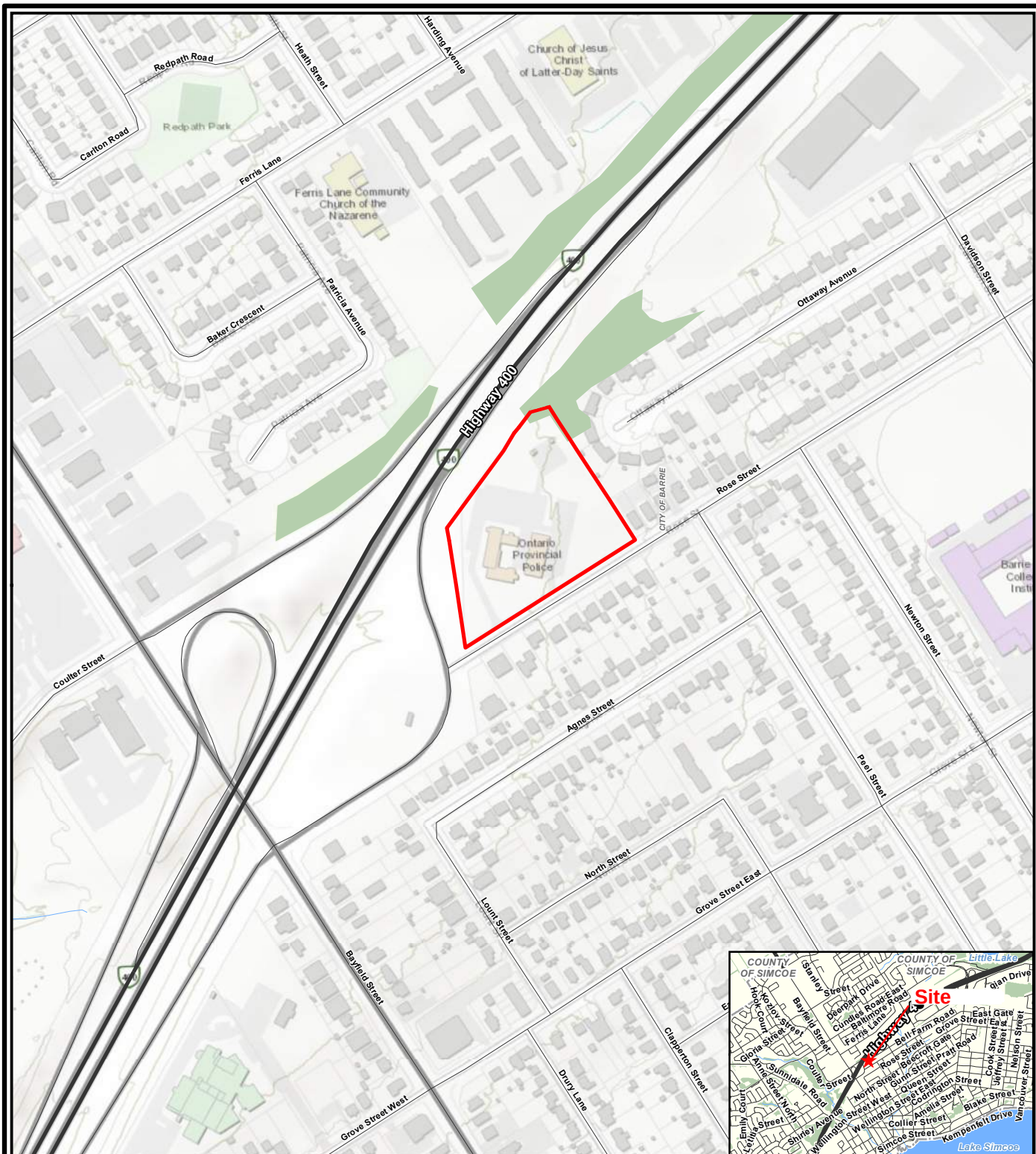
The following is a list of the environmental investigations reviewed in support of this report:

- a) PML (2021a) Phase Two Environmental Site Assessment, Proposed Simcoe County Facility, 20 Rose Street, Barrie, Ontario. Peto MacCallum Ltd. May 5, 2021. This report included a Phase One ESA report completed by Limited (GHD)
- b) PML (2021b) Geotechnical Investigation, Proposed Simcoe County Housing Facility, 20 Rose Street, Barrie, Ontario. Peto MacCallum Ltd. May 6, 2021.



Figures





NOTES:

1. Coordinate System: NAD 1983 UTM Zone 17N.
2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2024.
3. Image source: ESRI topographic basemap.

Legend

- Site Boundary
- Highway
- Road
- Watercourse
- Waterbody
- Wooded Area



0 75 150
m
1:5,000

Phase Two ESA
20 Rose Street, Barrie,
Ontario

Simcoe County Housing Corporation



Project 2305493

SITE LOCATION PLAN

June 2024

Fig. 1

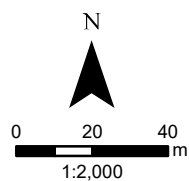


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Legend

- Site Boundary
- Highway
- Road
- Assessment Parcel
- Former Building Footprint
- Former Paved area
- Existing Temporary Modular Structure



Phase Two ESA
20 Rose Street, Barrie,
Ontario

Simcoe County Housing Corporation

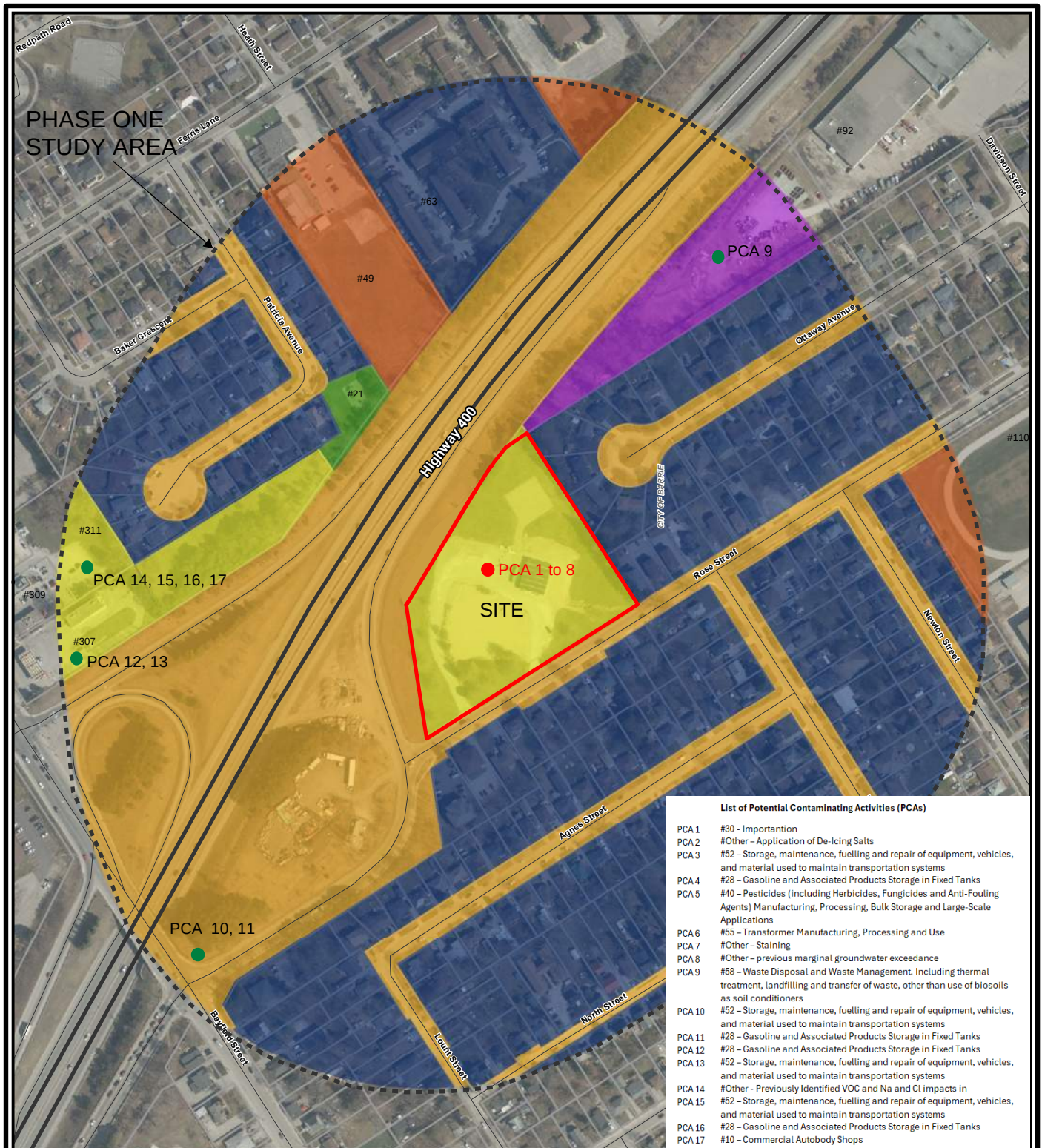


Project 2305493

SITE PLAN

June 2024

Fig. 2



List of Potential Contaminating Activities (PCAs)	
PCA 1	#30 - Importation
PCA 2	#Other - Application of De-Icing Salts
PCA 3	#52 - Storage, maintenance, fuelling and repair of equipment, vehicles, and material used to maintain transportation systems
PCA 4	#28 - Gasoline and Associated Products Storage in Fixed Tanks
PCA 5	#40 - Pesticides (including Herbicides, Fungicides and Anti-Fouling Agents) Manufacturing, Processing, Bulk Storage and Large-Scale Applications
PCA 6	#55 - Transformer Manufacturing, Processing and Use
PCA 7	#Other - Staining
PCA 8	#Other - previous marginal groundwater exceedance
PCA 9	#58 - Waste Disposal and Waste Management. Including thermal treatment, landfilling and transfer of waste, other than use of biosoils as soil conditioners
PCA 10	#52 - Storage, maintenance, fuelling and repair of equipment, vehicles, and material used to maintain transportation systems
PCA 11	#28 - Gasoline and Associated Products Storage in Fixed Tanks
PCA 12	#28 - Gasoline and Associated Products Storage in Fixed Tanks
PCA 13	#52 - Storage, maintenance, fuelling and repair of equipment, vehicles, and material used to maintain transportation systems
PCA 14	#Other - Previously Identified VOC and Na and Cl impacts in
PCA 15	#52 - Storage, maintenance, fuelling and repair of equipment, vehicles, and material used to maintain transportation systems
PCA 16	#28 - Gasoline and Associated Products Storage in Fixed Tanks
PCA 17	#10 - Commercial Autobody Shops

NOTES:

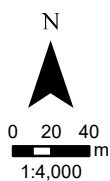
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Legend

- Site Boundary
- Highway
- Road

- Commercial Land Use
- Community Land Use
- Industrial Land Use
- Institutional Land Use

- Parkland Land Use
- Residential Land Use
- PCA Contributing to an APEC
- PCA Not Contributing to an APEC



Phase Two ESA
20 Rose Street, Barrie,
Ontario

Simcoe County Housing Corporation



Project 2305493

PROPERTY USE WITHIN PHASE
ONE STUDY AREA AND
POTENTIALLY CONTAMINATING
ACTIVITIES (PCAs)

June 2024

Fig. 3



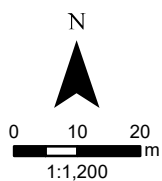


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Legend

- ▬ Site Boundary
- Highway
- Road
- ⊕ Approximate Borehole Location
- ⊕ Approximate Monitoring Well Location
- ⊕ Approximate Test Pit Location



Phase Two ESA
20 Rose Street, Barrie,
Ontario

Simcoe County Housing Corporaion



Project 2305493

BOREHOLE, TEST PIT,
AND MONITORING WELL
LOCATION PLAN

June 2024

Fig. 5

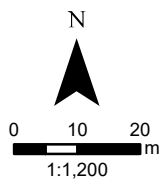


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Legend

- | | | |
|---------------|--------------------------------------|---------------------------|
| Site Boundary | Approximate Borehole Location | Former Building Footprint |
| Highway | Approximate Monitoring Well Location | Former Paved area |
| Road | Approximate Test Pit Location | |



Phase Two ESA
20 Rose Street, Barrie,
Ontario

Simcoe County Housing Corporaition



roject 2305493

Borehole, Testpit,
Monitoring well location
Plan with APEC

June 2024

Fig.5A



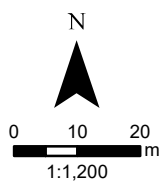
NOTES:

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Legend

- Site Boundary
- Highway
- Road
- Approximate Borehole Location
- Approximate Monitoring Well Location
- Ground Water Contour

[xxx.x] Water Levels on March 13, 2024 (in m above mean sea level)



Phase Two ESA
20 Rose Street, Barrie,
Ontario

County of Simcoe, Social
Housing Department

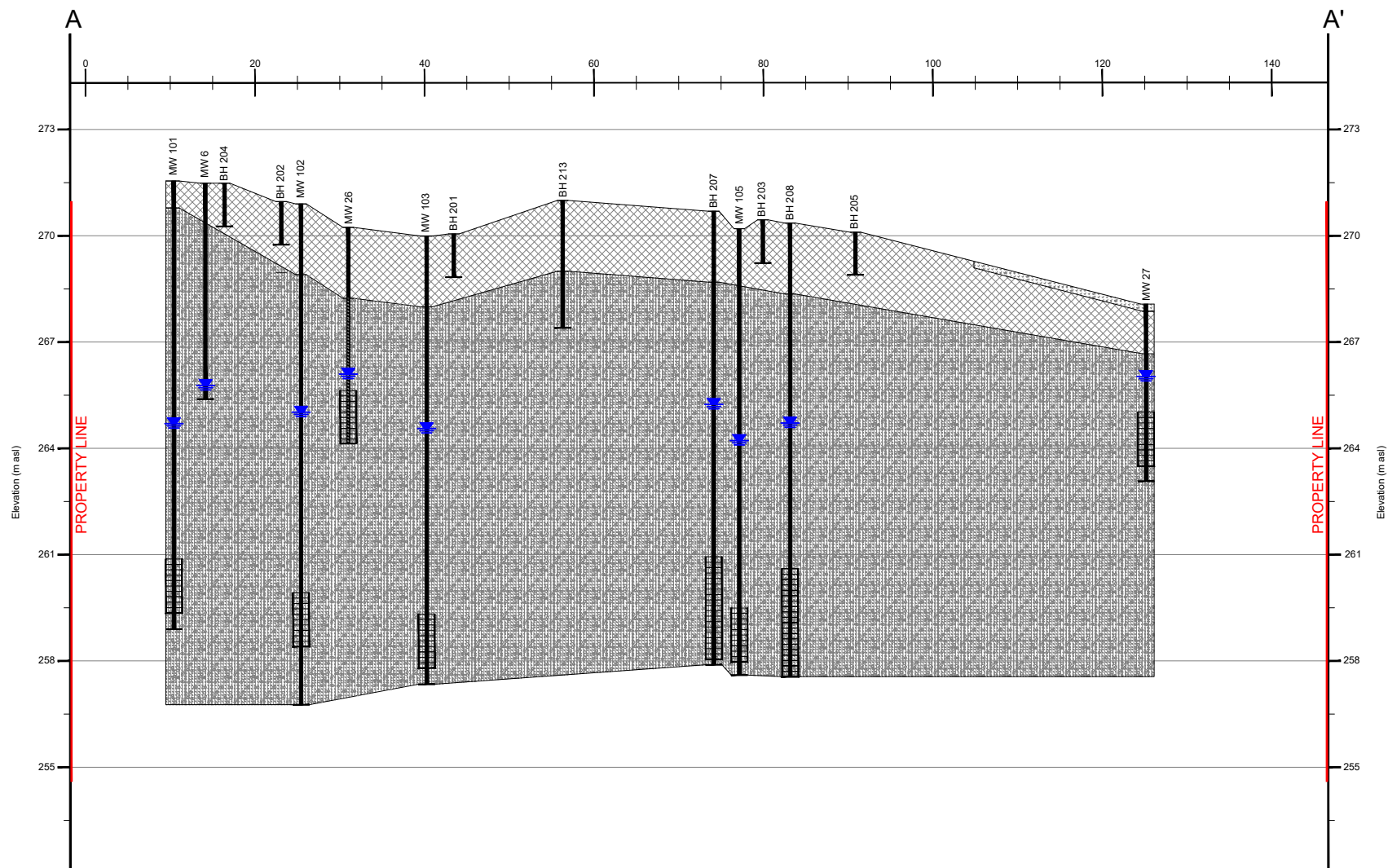


Project 2305493

Groundwater Contour Plan

June 2024

Fig. 6



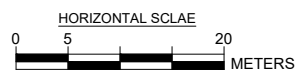
LEGEND:

-  TOPSOIL
-  FILL
-  SILTY SAND GLACIAL TILL



Groundwater level taken on May 13, 2024

NOTES:



PHASE TWO ENVIRONMENTAL SITE ASSESSMENT,
PROPOSED SIMCOE COUNTY HOUSING FACILITIES,
20 ROSE STREET, BARRIE, ONTARIO

Simcoe County Housing Corporation

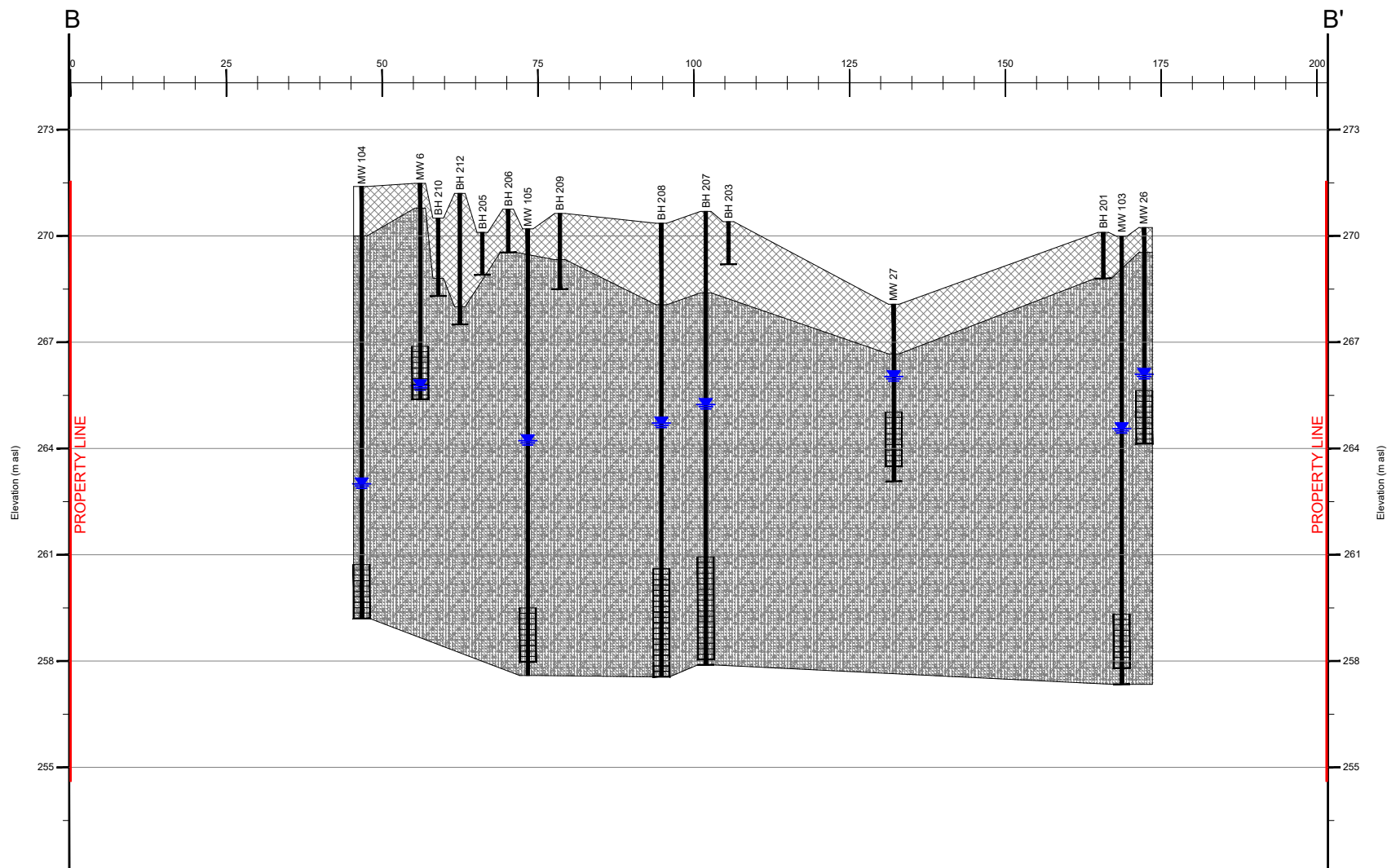


2305493

GEOLOGICAL CROSS
SECTION A-A'

June 2024

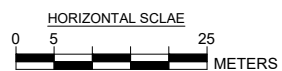
Fig. 7



LEGEND:

-  FILL
-  SILTY SAND GLACIAL TILL

NOTES:



PHASE TWO ENVIRONMENTAL SITE ASSESSMENT,
PROPOSED SIMCOE COUNTY HOUSING FACILITIES,
20 ROSE STREET, BARRIE, ONTARIO

Simcoe County Housing Corporation



2305493

GEOLOGICAL CROSS
SECTION B-B'

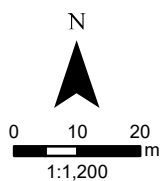
June 2024

Fig. 8



Legend

- ▬ Site Boundary
- ⊕ Approximate Borehole Location
- ⊕ Approximate Monitoring Well Location
- ⊕ Approximate Test Pit Location
- ⊕ (0.0-0.3 m) tested sample depth in m below grade
- ⊕ tested location meeting Table 2 SCS
- ▬ Highway
- ▬ Road



Phase Two ESA
20 Rose Street, Barrie,
Ontario

Simcoe County Housing Corporation



Project 2305493

Soil Analytical Testing-
Metals & hydride-forming Metals

June 2024

Fig. 9

Parameter	Table 2 -RPI SCS
EC	0.7 mS/cm
SAR	5

BH202 SS1	
Sample Depth:	0.0-0.6 m
Sample Elev.	271.0-270.4
Sample Date:	April 25, 2024
EC	0.37
SAR	13

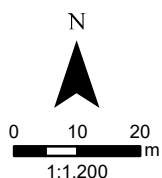
BH203 SS2	
Sample Depth:	0.6-1.2 m
Sample Elev.	269.9-269.3
Sample Date:	April 25, 2024
EC	0.66
SAR	8.42

BH205 SS2/ BH205D SS2		
Sample Depth:	0.6-1.2 m	0.6-1.2 m
Sample Elev.	269.5-268.9	269.5-268.9
Sample Date:	April 25, 2024	April 25, 2024
EC	0.57	0.69
SAR	14.1	16

* SAR level exceeds Table 2 RPI SCS but considered to have met as per Schedule 49.1 of O.Reg. 153/04 (as amended)

Legend

Site Boundary	Approximate Borehole Location	(0.0-0.3 m) tested sample depth in m below grade
Highway	Approximate Monitoring Well Location	tested location meeting Table 2 SCS
Road	Approximate Test Pit Location	tested location considered to have met Table 2 SCS
		14.1 SAR level exceeds Table 2 SCS



Phase Two ESA
20 Rose Street, Barrie,
Ontario

Simcoe County Housing Corporaition

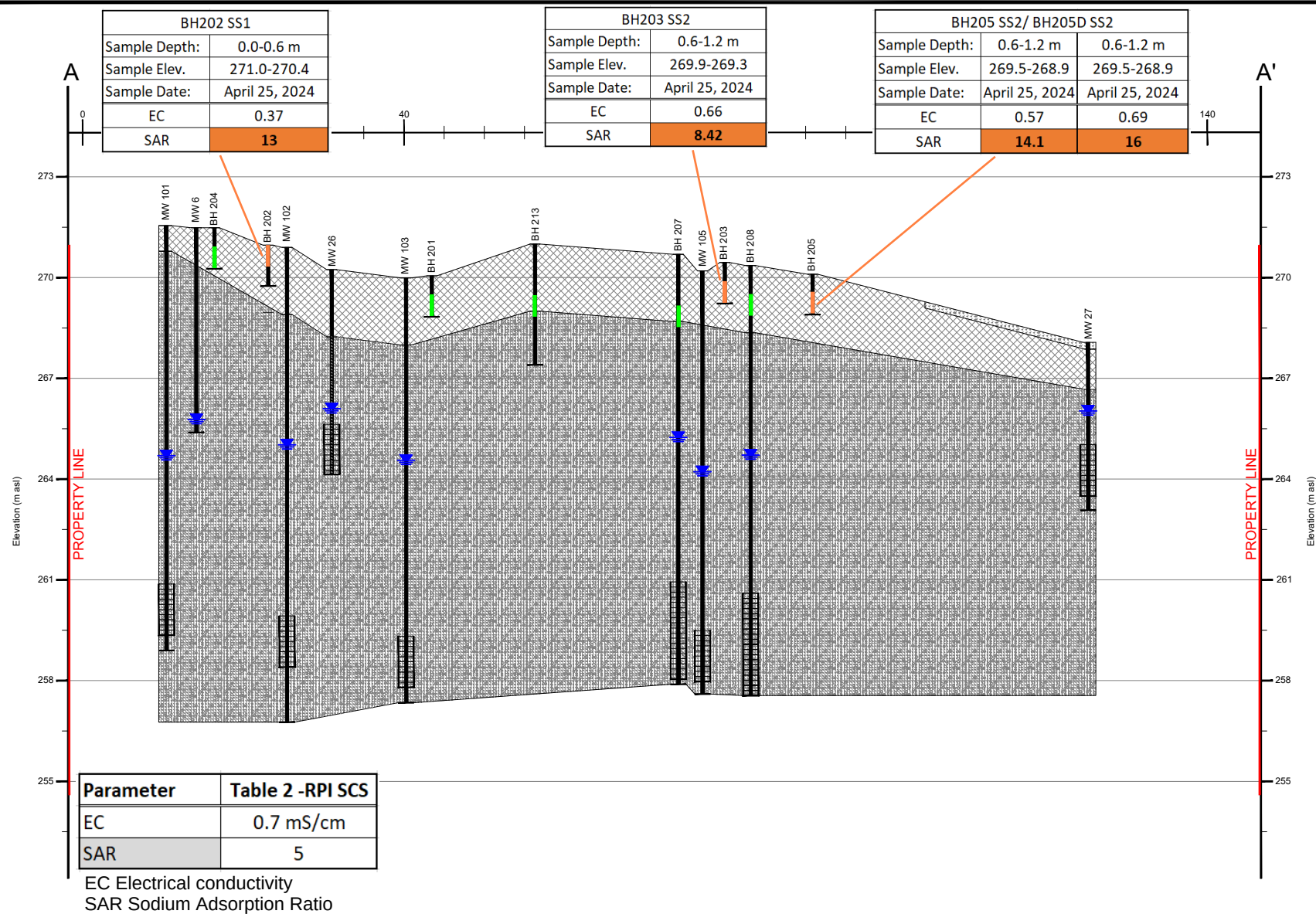


Project 2305493

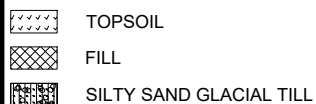
Soil Analytical Testing-
Other Regulated Parameters (ORPs)
incl. Electrical Conductivity (EC) and
Sodium Adsorption Ratio (SAR)

June 2024

Fig.10



LEGEND:

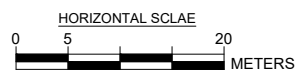


■ Tested sample meeting Table 2 SCS

■ Tested sample considered to have met Table 2 SCS

14.1 SAR level exceeds Table 2 RPI SCS but considered to have met as per Schedule 49.1 of O.Reg. 153/04 (as amended)

NOTES:



PHASE TWO ENVIRONMENTAL SITE ASSESSMENT,
PROPOSED SIMCOE COUNTY HOUSING FACILITIES,
20 ROSE STREET, BARRIE, ONTARIO

SIMCOE COUNTY



2305493

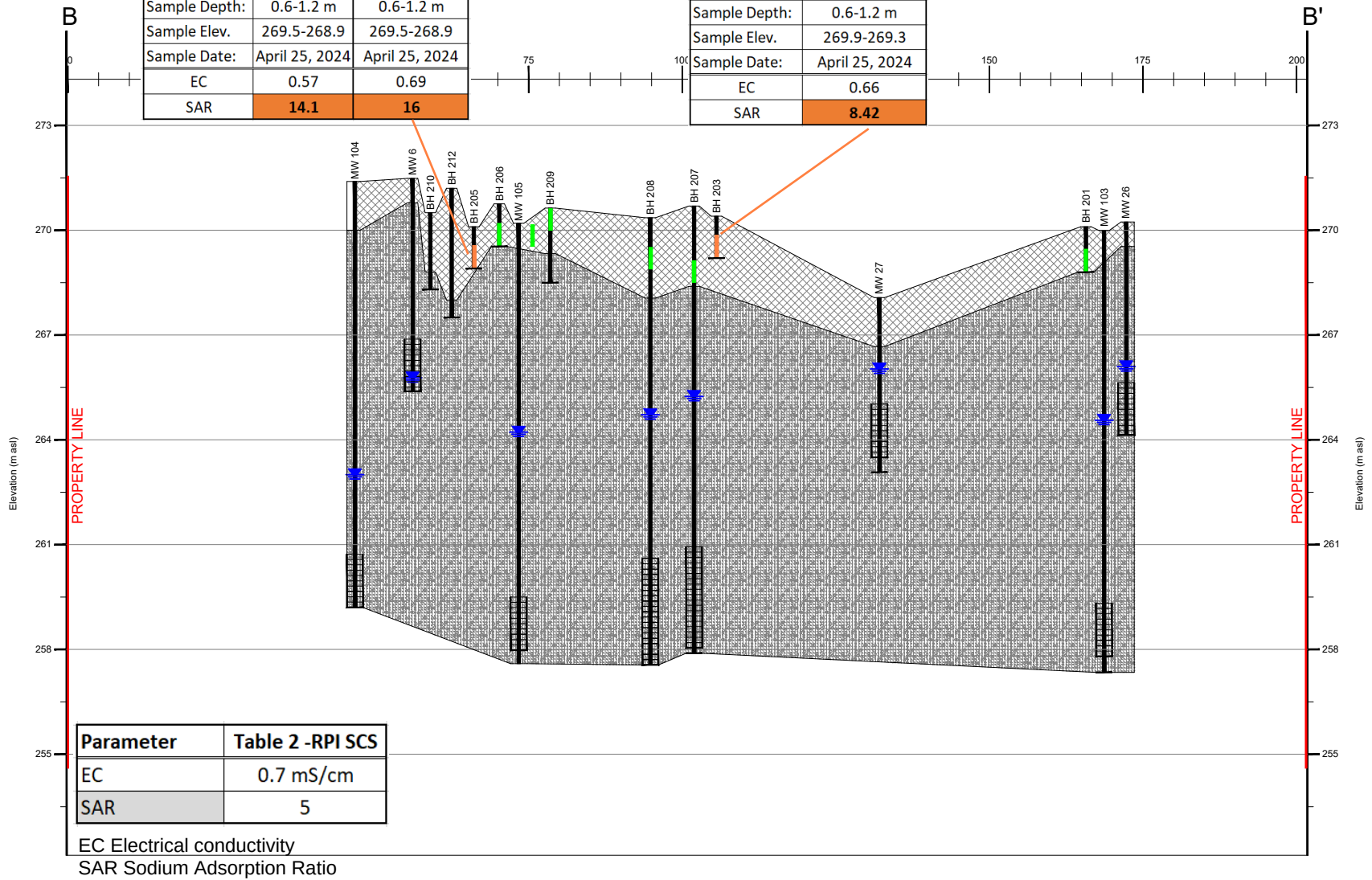
Soil Analytical Testing-
Other Regulated Parameters (ORPs)
incl. Electrical Conductivity (EC) and
Sodium Adsorption Ratio (SAR)
Cross Section A-A'

June 2024

Fig. 10A

BH205 SS2/ BH205D SS2		
Sample Depth:	0.6-1.2 m	0.6-1.2 m
Sample Elev.	269.5-268.9	269.5-268.9
Sample Date:	April 25, 2024	April 25, 2024
EC	0.57	0.69
SAR	14.1	16

BH203 SS2	
Sample Depth:	0.6-1.2 m
Sample Elev.	269.9-269.3
Sample Date:	April 25, 2024
EC	0.66
SAR	8.42



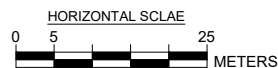
LEGEND:

- FILL
- SILTY SAND GLACIAL TILL

- Tested sample meeting Table 2 SCS
- Tested sample considered to have met Table 2 SCS

14.1 SAR level exceeds Table 2 RPI SCS but considered to have met as per Schedule 49.1 of O.Reg. 153/04 (as amended)

NOTES:



PHASE TWO ENVIRONMENTAL SITE ASSESSMENT,
PROPOSED SIMCOE COUNTY HOUSING FACILITIES,
20 ROSE STREET, BARRIE, ONTARIO

SIMCOE COUNTY



2305493

Soil Analytical Testing-
Other Regulated Parameters (ORPs)
incl. Electrical Conductivity (EC) and
Sodium Adsorption Ratio (SAR)
Cross Section B-B'

June 2024

Fig. 10B



Legend

Site Boundary

Highway

Road

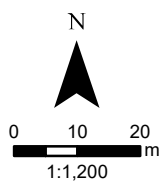
Approximate Borehole Location

Approximate Monitoring Well Location

Approximate Test Pit Location

(0.0-0.3 m) tested sample depth in m below grade

● ■ tested location meeting Table 2 SCS



Phase Two ESA
20 Rose Street, Barrie,
Ontario

Simcoe County Housing Corporaion



Project 2305493

Soil Analytical Testing-
BTEX and PHCs

June 2024

Fig. 11

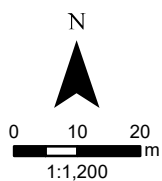


Legend

- Site Boundary
- Highway
- Road

- Approximate Borehole Location
- Approximate Monitoring Well Location
- Approximate Test Pit Location

(0.0-0.3 m) tested sample depth in m below grade
● tested location meeting Table 2 SCS



Phase Two ESA
 20 Rose Street, Barrie,
 Ontario

Simcoe County Housing Corporaion



Project 2305493

Soil Analytical Testing-
 VOCs

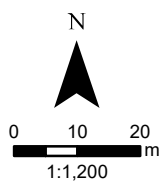
June 2024

Fig12



Legend

- Site Boundary
- Highway
- Road
- Approximate Borehole Location
- Approximate Monitoring Well Location
- Approximate Test Pit Location
- (0.0-0.3 m) tested sample depth in m below grade tested location meeting Table 2 SCS



Phase Two ESA
20 Rose Street, Barrie,
Ontario

Simcoe County Housing Corporaion



Project 2305493

Soil Analytical Testing-
PAHs

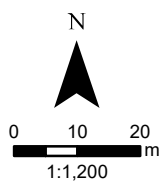
June 2024

Fig13



Legend

- Site Boundary
- Approximate Borehole Location
- Approximate Monitoring Well Location
- Approximate Test Pit Location
- Highway
- Road
- (0.0-0.3 m) tested sample depth in m below grade
- tested location meeting Table 2 SCS



Phase Two ESA
20 Rose Street, Barrie,
Ontario

County of Simcoe, Social
Housing Department



Project 2305493

Soil Analytical Testing-
OCs

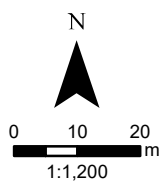
June 2024

Fig.14



Legend

- Site Boundary
- Approximate Borehole Location
- Approximate Monitoring Well Location
- Approximate Test Pit Location
- Highway
- Road
- (0.0-0.3 m) tested sample depth in m below grade
- tested location meeting Table 2 SCS



Phase Two ESA
20 Rose Street, Barrie,
Ontario

Simcoe County Housing Corporation



Project 2305493

Soil Analytical Testing-
PCBs

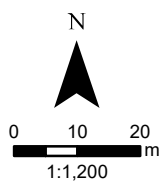
June 2024

Fig.15



Legend

- ▬ Site Boundary
- Highway
- Road
- ⊕ Approximate Borehole Location
- ⊕ Approximate Monitoring Well Location
- ⊞ Approximate Test Pit Location
- (0.0-0.3 m) tested sample depth in m below grade
- tested location meeting Table 2 SCS



Phase Two ESA
20 Rose Street, Barrie,
Ontario

Simcoe County Housing Corporaion

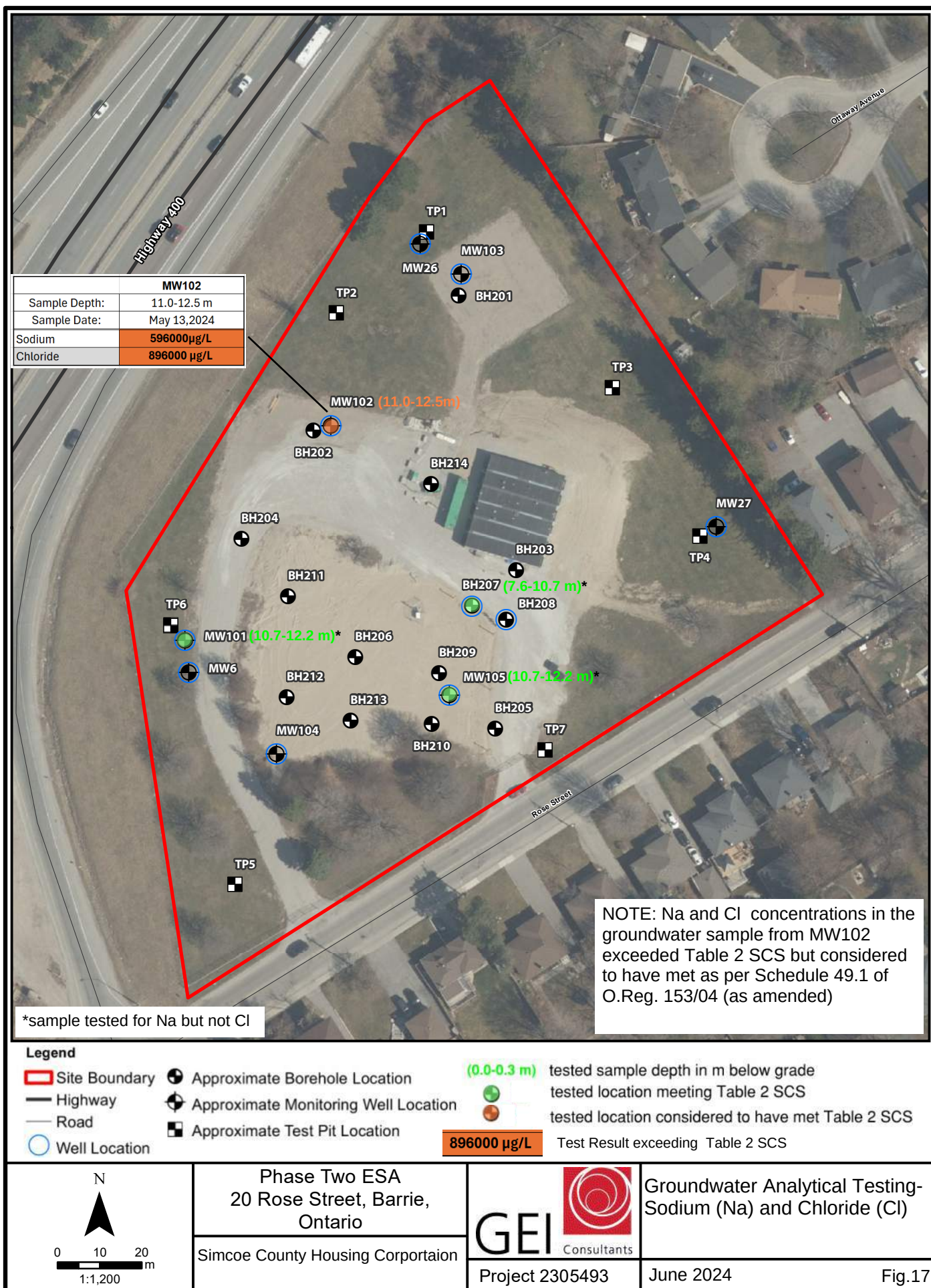


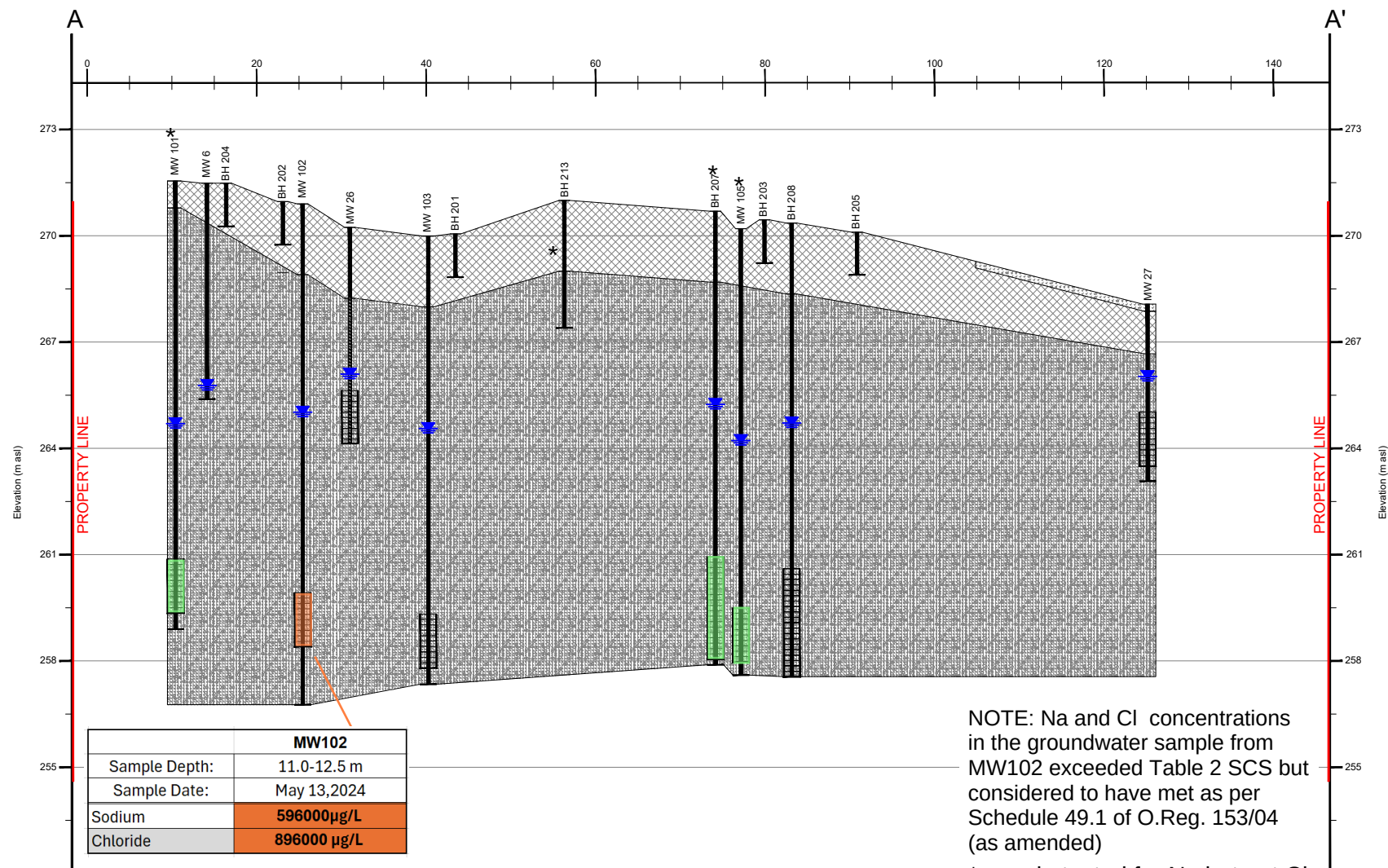
Project 2305493

Groundwater Analytical Testing-
Metals & hydride-forming Metals

June 2024

Fig.16





LEGEND:

- TOPSOIL
- FILL
- SILTY SAND GLACIAL TILL

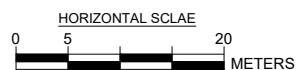
Tested sample meeting Table 2 SCS

896000 µg/L

Exceeds Table 2 RPI SCS but considered to have met as per Schedule 49.1 of O.Reg. 153/04 (as amended)

Tested sample considered to have met Table 2 SCS

NOTES:



PHASE TWO ENVIRONMENTAL SITE ASSESSMENT,
PROPOSED SIMCOE COUNTY HOUSING FACILITIES,
20 ROSE STREET, BARRIE, ONTARIO

Simcoe County Housing Corporation

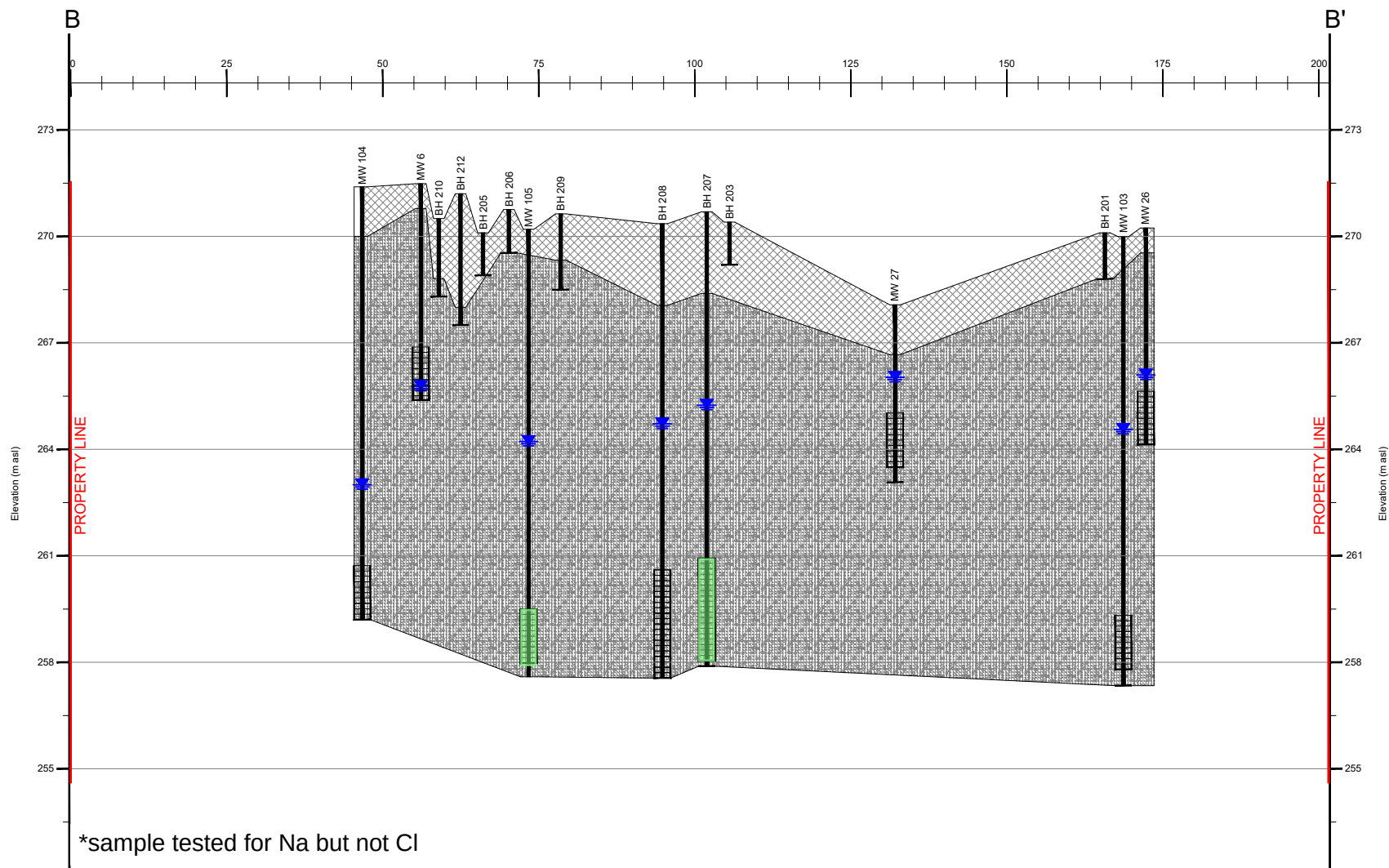


2305493

Groundwater Analytical Testing-
Sodium (Na) and Chloride (Cl)
Cross Section A-A'

June 2024

Fig. 17A

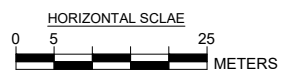


LEGEND:

-  FILL
-  SILTY SAND GLACIAL TILL

 Tested sample meeting Table 2 SCS

NOTES:



**PHASE TWO ENVIRONMENTAL SITE ASSESSMENT,
PROPOSED SIMCOE COUNTY HOUSING FACILITIES,
20 ROSE STREET, BARRIE, ONTARIO**

Simcoe County Housing Corporation



2305493

Groundwater Analytical Testing-
Sodium (Na) and Chloride (Cl)
Cross Section B-B'

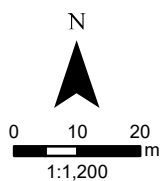
June 2024

Fig. 17B



Legend

- | | | | |
|--|--------------------------------------|--|---|
| ▬ Site Boundary | Approximate Borehole Location | (10.7-12.2 m) | tested sample depth in m below grade
tested location meeting Table 2 SCS |
| ▬ Highway | Approximate Monitoring Well Location | | |
| ▬ Road | Approximate Test Pit Location | | |



Phase Two ESA
20 Rose Street, Barrie,
Ontario

Simcoe County Housing Corporaion



Project 2305493

Groundwater Analytical Testing-
BTEX and PHCs

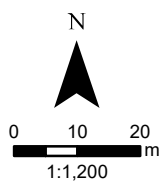
June 2024

Fig.18



Legend

- | | | | |
|---------------|--------------------------------------|--|-------------------------------------|
| Site Boundary | Approximate Borehole Location | (10.7-12.2 m) tested sample depth in m below grade | tested location meeting Table 2 SCS |
| Highway | Approximate Monitoring Well Location | | |
| Road | Approximate Test Pit Location | | |



Phase Two ESA
20 Rose Street, Barrie,
Ontario

Simcoe County Housing Corporaion



Project 2305493

Groundwater Analytical Testing-
VOCs

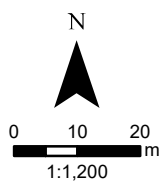
June 2024

Fig.19



Legend

- | | | | |
|---------------|--------------------------------------|---------------|---|
| Site Boundary | Approximate Borehole Location | (10.7-12.2 m) | tested sample depth in m below grade
tested location meeting Table 2 SCS |
| Highway | Approximate Monitoring Well Location | | |
| Road | Approximate Test Pit Location | | |



Phase Two ESA
20 Rose Street, Barrie,
Ontario

Simcoe County Housing Corporaion



Project 2305493

Groundwater Analytical Testing-
PAHs

June 2024

Fig.20

Tables



TABLE 1 – Areas of Potential Environmental Concern (APECs)

APEC⁽¹⁾	Location of APEC on Phase One Property	PCA⁽²⁾	Location of PCA (On-Site or Off-Site)	Contaminants of Potential Concern	Media Potentially Impacted (Groundwater, soil and/or sediment)
APEC 1: Potential presence of fill material of unknown quality associated with the site development in the mid to late 1950s	Entire Phase One Property	#30 – Importation of Fill Material of Unknown Quality (PCA 1)	On-Site	PAHs, Metals, As, Sb, Se, Cr (VI), Hg, B-HWS, CN-	Soil
APEC 2: Application of De-icing salts within former paved surfaces – parking lot and driveways	Paved Surfaces of Phase One Property	#Other – Application of De-Icing Salts (PCA 2)	On-Site	EC and SAR	Soil
APEC 3: Former OPP garage building utilized for repair and maintenance of OPP vehicles.	South portion of the Phase One Property	#52 – Storage, maintenance, fuelling and repair of equipment, vehicles, and material used to maintain transportation systems (PCA 3)	On-Site	PAHs, VOCs, PHCs, Metals	Soil, Groundwater
APEC 4: Former emergency diesel generator inside the former OPP garage building	South portion of the Phase One Property	#28 – Gasoline and Associated Products Storage in Fixed Tanks (PCA 4)	On-Site	BTEX, PHCs	Soil
APEC 5: Potential pesticide use associated with former orchard identified on Site in the 1940s -1950's	Entire Phase One Property	#40 – Pesticides (including Herbicides, Fungicides and Anti-Fouling Agents) Manufacturing, Processing, Bulk	On-Site	OCs, Metals, Hydride-forming Metals, Mercury	Soil



APEC⁽¹⁾	Location of APEC on Phase One Property	PCA⁽²⁾	Location of PCA (On-Site or Off-Site)	Contaminants of Potential Concern	Media Potentially Impacted (Groundwater, soil and/or sediment)
		Storage and Large-Scale Applications (PCA 5)			
APEC 6: Former pad-mounted transformer located within south portion of the site	South portion of the Phase One Property	#55 – Transformer Manufacturing, Processing and Use (PCA 6)	On-Site	PCBs, BTEX, PHC	Soil
APEC 7: Minor staining at the previous location of a mobile diesel generator	Central portion of the Phase One Property	#Other – Staining (PCA 7)	On-Site	BTEX, PHC	Soil
APEC 8: Marginal groundwater exceedance of Benzo (a) reported previously by others	Eastern portion of the Phase One Property	#Other – previous exceedance (PCA 8)	On-Site	PAHs	Groundwater

1) Area of Potential Environmental Concern means the area on, in or under a Phase One Study Area where one or more contaminants are potentially present, as determined through the Phase One ESA, including through:

- identification of past or current uses on, in or under the phase one property, and
- identification of potentially contaminating activities.

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.

PHCs = petroleum hydrocarbons; BTEX = benzene, toluene, ethylbenzene, xylenes; VOCs = volatile organic compounds; PAHs = polycyclic aromatic hydrocarbons; EC = electrical conductivity; SAR = sodium adsorption ratio; As = arsenic; Sb = antimony; Se = selenium; B-HWS = boron hot water soluble; Hg = mercury; Cr(VI) = chromium (VI) and CN- = cyanide; Na = sodium; Cl - = chloride



TABLE 2 – Summary of Soil Samples Submitted for Chemical Analysis

Soil Sample ID	Rationale	Requested Analyses	Soil Sample Depth (m bgs)	Consultant
BH201-SS2	APECs 1, 2	PAHs, Metals and Inorganics	0.61-1.22	GEI (2024)
BH202-SS1	APECs 1, 2	EC, SAR	0-0.61	GEI (2024)
BH203-SS2	APECs 1, 2	EC, SAR	0.61-1.22	GEI (2024)
BH204-SS2	APECs 1, 2	Metals and Inorganics	0.61-1.22	GEI (2024)
BH205-SS2	APECs 1, 2	EC, SAR	0.61-1.22	GEI (2024)
BH205D-SS2		EC, SAR	0.61-1.22	GEI (2024)
BH206-SS2	APEC 1	Metals and Inorganics	0.61-1.22	GEI (2024)
BH207-SS3	APECs 1, 3	PHCs, BTEX, VOCs, PAHs, Metals and Inorganics	1.52-2.13	GEI (2024)
BH208-SS2	APEC 1	Metals and Inorganics	0.76-1.37	GEI (2024)
BH209-SS1	APECs 1, 3	PHCs, BTEX, VOCs, Metals and Inorganics	0-0.61	GEI (2024)
BH209D-SS1		PHCs, BTEX, VOCs, Metals and Inorganics	0-0.61	GEI (2024)
BH210-SS1	APECs 1, 3, 4	PHCs, BTEX, Metals	0-0.61	GEI (2024)
BH211-SS2	APEC 1	Metals and Inorganics	0.76-1.37	GEI (2024)
BH212-SS4	APEC 1	PHCs, BTEX, PAHs, Metals and Inorganics	2.29-2.90	GEI (2024)
BH213-SS3	APEC 1	Metals and Inorganics	1.52-2.13	GEI (2024)
BH214-SS1	APECs 1, 7	PHCs, BTEX	0-0.61	GEI (2024)
TP1	APEC 5	OCPs, PCBs, Metals and Inorganics	0-0.3	GEI (2024)
TP101 (duplicate of TP1)		OCPs, Metals and Inorganics		
TP2	APEC 5	OCPs, Metals and Inorganics	0-0.3	GEI (2024)
TP3	APEC 5	OCPs, Metals and Inorganics	0-0.3	GEI (2024)
TP4	APEC 5	OCPs, PCBs, Metals and Inorganics	0-0.3	GEI (2024)
TP5	APEC 5	OCPs, Metals and Inorganics	0-0.3	GEI (2024)
TP6	APEC 5	OCPs, PCBs, Metals and Inorganics	0-0.3	GEI (2024)
TP7	APEC 6	PHCs, BTEX, PCBs	0-0.3	GEI (2024)
TP107 (Duplicate of TP7)		PBCs		



TABLE 3 – Monitoring Well Installation Details

Well ID	Consultant	Ground Elevation (m asl)	Top of screen (m bgs)	Bottom of screen (m bgs)	Screen length (m)	Top of screen (m asl)	Bottom of screen (m asl)	Geologic Units Intercepted by Well Screen	Well Condition
MW6	PML (2021)	271.50	4.6	6.1	1.5	265.4	266.9	Silty Sand Glacial Till	Intact
MW9	PML (2021)	270.20	10.7	12.2	1.5	258.0	259.5	Silty Sand Glacial Till	Destroyed
MW17	PML (2021)	269.80	4.6	6.1	1.5	263.7	265.2	Silty Sand Glacial Till	Destroyed
MW18	PML (2021)	270.20	10.7	12.2	1.5	258.0	259.5	Silty Sand Glacial Till	Destroyed
MW26	PML (2021)	270.25	4.6	6.1	1.5	264.2	265.7	Silty Sand Glacial Till	Intact
MW27	PML (2021)	266.55	3.0	4.6	1.5	262.0	265.3	Silty Sand Glacial Till	Intact
MW101	GEI (2023)	271.57	10.7	12.2	1.5	260.87	259.37	Silty and Sand Glacial Till	Intact
MW102	GEI (2023)	270.97	11.0	12.5	1.5	259.97	258.47	Silty and Sand Glacial Till	Intact
MW103	GEI (2023)	270.09	10.7	12.2	1.5	259.39	257.89	Silty and Sand Glacial Till	Intact
MW104	GEI (2023)	271.41	10.7	12.2	1.5	260.71	259.21	Silty and Sand Glacial Till	Intact
MW105	GEI (2023)	270.28	10.7	12.2	1.5	259.58	258.08	Silty and Sand Glacial Till	Intact
MW207	GEI (2024)	270.70	7.6	10.7	3.0	263.10	260.0	Silty and Sand Glacial Till	Intact
MW208	GEI (2024)	270.36	9.1	12.2	3.0	261.26	258.16	Silty and Sand Glacial Till	Intact



TABLE 4 – Summary of Groundwater Samples Submitted for Chemical Analysis

Monitoring Well ID	Rationale	Requested Analyses	Consultant
MW101	Site Characterization	PHCs, VOCs, Metals	GEI (2023)
MW102	APEC 2 (due diligence)	Na, Cl	GEI (2023)
MW105	APECs 3, 4	PHCs, VOCs, PAHs, Metals	GEI (2023)
MW105 DUP (Duplicate of MW105)			
MW207	APEC 3	PHCs, VOCs, Metals	GEI (2024)
MW208	AEPC 8	PAHs	GEI (2024)



TABLE 5 – Water Level Depths and Elevations

Borehole/Monitoring Well ID	Ground Surface Elevation	Groundwater Level (m bgs)	Groundwater Elevation (m asl)	Groundwater Monitoring Date
MW6	271.50	5.71	265.79	May 13, 2024
MW9	270.20	Destroyed		
MW17	269.80	Destroyed		
MW18	270.20	Destroyed		
MW26	270.25	4.14	266.11	May 13, 2024
MW27	266.55	2.04	264.51	May 13, 2024
MW101	271.57	6.85	264.72	May 13, 2024
MW102	270.97	5.88	265.09	May 13, 2024
MW103	270.09	5.43	264.66	May 13, 2024
MW104	271.41	8.39	263.02	May 13, 2024
MW105	270.28	5.98	264.30	May 13, 2024
MW207	270.70	5.45	265.25	May 13, 2024
MW208	270.36	5.64	264.72	May 13, 2024



Appendix A

Phase Two Conceptual Site Model



Phase Two Environmental Site Assessment Conceptual Site Model

20 Rose Street, Barrie, Ontario

This section presents a Phase Two Environmental Site Assessment (ESA) Conceptual Site Model (CSM), providing a narrative, graphical and tabulated description integrating information related to the Site geologic and hydrogeologic conditions, areas of potential environmental concern (APECs)/potentially contaminating activities (PCAs), presence and distribution of potential contaminants of concern, contaminant fate and transport and potential exposure pathways. The Phase Two CSM was completed in accordance with Ontario Regulation (O.Reg.) 153/04, as amended, and defined by the Ministry of Environment, Conservation and Parks (MECP).

1. INTRODUCTION

The RSC Property is located south adjacent to the Hwy 400 and east of Bayfield Street, on north side Rose Street in Barrie, Ontario, as shown on Figure 1. The RSC Property is irregular in shape and measures approximately 4.7 acres (1.9 hectares) in size. At the time of the Phase Two ESA investigation, the majority of the site was vacant, except for a modular structure erected in 2023 in the middle portion of the site. This temporary structure, managed by the Simcoe County Housing Corporation, provides emergency shelter for homeless individuals. The Site was formerly under commercial use, operated as Ontario Provincial Police (OPP) facility in the mid to late 1950's.

The Site is bounded by residential dwellings to the east, Rose Street followed by residential dwellings to the south. On the northern and western sides, the Site is bordered by Highway 400 and/or its adjacent ramp area. A small portion of an industrial property abuts the northeast corner of the Site. Refer to Figure 3 showing the land use of adjacent properties.

Refer to the following table for the Site identification information.

Table 1: Site Information

Site Details	
Municipal Addresses	20 Rose Street, Barrie, Ontario
Current Owner	Simcoe County Housing Corporation
Owner Address	1110 Highway 26, Midhurst, Ontario L9X 1N6
Owner Contact Persons	Jason Allan Email: jason.allan@simcoe.ca Rachelle Hamelin Email: rachelle.hamelin@simcoe.ca
Legal Descriptions	Part of Lots 7 & 8 North Side of Rose Street Plan 114 Barrie Part 1 51R42272; City of Barrie
Property Identification Number (PIN)	58810-0278 (LT)
Property Size	4.6 acres (1.87 hectares)
Approximate Universal Transverse Mercator (UTM) coordinates	Zone: 17 Easting: 603897 m Northing: 4917266 m (1m, NAD83, ArcGIS)

1.1 PREVIOUS INVESTIGATIONS

Following previous environmental reports were provided to GEI:

- a) PML (2021a) Phase Two Environmental Site Assessment, Proposed Simcoe County Facility, 20 Rose Street, Barrie, Ontario. Peto MacCallum Ltd. May 5, 2021. This report included a Phase One ESA report completed by Limited (GHD).
- b) PML (2021b) Geotechnical Investigation, Proposed Simcoe County Housing Facility, 20 Rose Street, Barrie, Ontario. Peto MacCallum Ltd. May 6, 2021.

A brief summary of the investigations is included below:

PML (2021a) Phase Two Environmental Site Assessment	
Objective	Investigate soil and groundwater quality at the Site for due diligence purposes based on a Phase One ESA conducted by GHD in 2019.
Phase One ESA Findings (GHD 2019)	GHD Phase One Report was included in Appendix A of the PML Phase Two report and identified following APECs: a) APEC #1 – Fuel Storage Tanks (Off-Site): Based on a review of ERIS, multiple records indicated the properties located at 309, 311 and 315 Bayfield Street, approximately 230 m west, were historically used as gasoline and service stations, with identified PHC, VOC, PAH impacts in soil and VOC, Na and Cl impacts in groundwater. b) APEC #2 – Historical Pesticide Use (On-Site): Based on a review of aerial photographs, Site appeared to be utilized for agricultural purposes (specifically as an orchard) between 1946 and 1957. c) APEC #3 – Vehicle Servicing Garage (On-Site): Based on correspondence with a Site representative, a garage building existed on-Site that was utilized for oil changes, painting and cleaning of OPP vehicles. d) APEC #4 – Fuel Storage Tank (On-Site): Based on Site reconnaissance, a standby diesel generator was identified within the garage building. e) APEC #5 – Transformer Use (on-Site): Based on Site reconnaissance, a pad mounted transformer was identified at the southern portion of the Site.
PML Phase Two ESA Program	• Advancement of twenty-six (26) boreholes (BH1 to BH10, BH12 to BH18, BH20, BH21, BH24 to BH30) up to a maximum depth of approximately 12.8 m below ground surface (bgs). • Installation of six (6) monitoring wells (MW6, MW9, MW17, MW18, MW24 and MW27). • Soil samples submitted for the analysis of petroleum hydrocarbons (PHCs), Benzene, Ethylbenzene, Toluene and Xylenes (BTEX), Volatile Organic Compounds (VOCs), Polycyclic Aromatic Hydrocarbons (PAHs), Polychlorinated Biphenyls (PCBs), Organochlorine (OC) Pesticides, Metals and Other Regulated Parameters (ORPs).

PML (2021a) Phase Two Environmental Site Assessment	
	Groundwater sample submitted for the analysis of PHCs, VOCs, PAHs, PCBs, and Metals.
Site Condition Standards	MECP (2011) Table 3: Full Depth Background Site Condition Standards (SCS) for Residential/Parkland/Institutional (RPI) property uses in a Non-Potable Ground Water Condition and coarse textured soils.
Soil	a) The stratigraphy at the Site comprised of topsoil and/or pavement followed by silty sand to sandy silt fill underlain by native silty sand glacial till. b) Bedrock was not encountered at the Site
Groundwater	a) Groundwater elevations range from 261.5 to 263.4 m (April 30, 2021) b) Regional groundwater flow is expected towards west, southwest.
Soil Conditions	The reported concentrations of PHCs, BTEX, VOCs, PAHs, PCBs, OC Pesticides, Metals and ORPs were detected below the selected Table 3 SCS except SAR in one sample BH/MW9 SS3 recorded at 6.25 which exceeded the selected SCS.
Groundwater Conditions	The reported concentrations of PHCs, VOCs, PAHs, PCBs, and Metals were reported below the applicable regulatory criteria. However, one marginal exceedance for Benzo (a) pyrene in the duplicate sample collected from MW18 was noted upon review of the analytical testing.

PML (2021b) Geotechnical Investigation	
Objective	Establish local geological settings and assess soil and groundwater conditions at the Site.
Program	a) Advancement of twenty-six (26) boreholes (BH1 to BH10, BH12 to BH18, BH20, BH21, BH24 to BH30) up to a maximum depth of approximately 12.8 m bgs in support of the subsurface assessment. b) Installation of six (6) monitoring wells (MW6, MW9, MW17, MW18, MW24 and MW27).
Soil	a) The stratigraphy at the Site is comprised of topsoil and/or pavement followed by silty sand to sandy silt fill underlain by native silty sand glacial till to a maximum depth of 12.8 m bgs.

PML (2021b) Geotechnical Investigation	
	b) Fill material was identified in all boreholes to a maximum depth of 2.9 m bgs. c) Bedrock was not encountered at the Site.
Groundwater	a) Groundwater elevations range from 261.5 to 263.4 m (April 30, 2021).

2. POTENTIALLY CONTAMINATING ACTIVITY AND AREAS OF POTENTIAL ENVIRONMENTAL CONCERN

2.1 POTENTIALLY CONTAMINATING ACTIVITIES

The surrounding land use plan and PCAs identified On-Site and in the Phase One ESA Study Area are shown on Figure 3. A list of all PCA's identified at the Site and within the Phase One ESA Study Area are presented below:

Table 2: Potentially Contaminating Activities in the Phase One Study Area

PCA Identifier	Address	PCA	PCA Location	Contributing to APEC at the Site?	Rationale
PCA 1	20 Rose Street	#30 – Importation of Fill Material of Unknown Quality	On-Site	yes	On-Site PCA
PCA 2		#Other – Application of De-Icing Salts		yes	On-Site PCA
PCA 3		#52 – Storage, maintenance, fuelling and repair of equipment, vehicles, and material used to maintain transportation systems		yes	On-Site PCA
PCA 4		#28 – Gasoline and Associated Products Storage in Fixed Tanks		yes	On-Site PCA
PCA 5		#40 – Pesticides (including Herbicides, Fungicides and Anti-Fouling Agents) Manufacturing, Processing, Bulk		yes	On-Site PCA

PCA Identifier	Address	PCA	PCA Location	Contributing to APEC at the Site?	Rationale
		Storage and Large-Scale Applications			
PCA 6		#55 – Transformer Manufacturing, Processing and Use		yes	On-Site PCA
PCA 7		#Other – Staining		yes	On-Site PCA
PCA 8		#Other – previous marginal groundwater exceedance		yes	On-Site PCA
PCA 9	92 Davidson Street	#58 – Waste Disposal and Waste Management. Including thermal treatment, landfilling and transfer of waste, other than use of biosoils as soil conditioners	Off-Site (120 m Northeast)	No	Due to significant distance of separation
PCA 10	267 Bayfield Street	#52 – Storage, maintenance, fuelling and repair of equipment, vehicles, and material used to maintain transportation systems	Off-Site (200 m southwest)	No	Inferred Trans-gradient
PCA 11		#28 – Gasoline and Associated Products Storage in Fixed Tanks		No	
PCA 12	307 Bayfield Street	#28 – Gasoline and Associated Products Storage in Fixed Tanks	Off-Site (240 m west)	No	Inferred Trans-gradient
PCA 13		#52 – Storage, maintenance, fuelling and repair of equipment, vehicles, and material used to maintain transportation systems		No	

PCA Identifier	Address	PCA	PCA Location	Contributing to APEC at the Site?	Rationale
PCA 14	309, 311 and 315 Bayfield Street	#Other - Previously Identified VOC and Na and Cl impacts in Groundwater	Off-Site (245 m west)	No	Inferred Trans-gradient
PCA 15		#52 – Storage, maintenance, fuelling and repair of equipment, vehicles, and material used to maintain transportation systems		No	
PCA 16		#28 – Gasoline and Associated Products Storage in Fixed Tanks		No	
PCA 17		#10 – Commercial Autobody Shops		No	

1) *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.*

The monitoring well network at the Site consists of five (5) monitoring wells previously advanced by GEI (2023), and two (2) monitoring wells advanced as part of this Phase Two investigation. Additionally, three (3) existing monitoring well advanced by PML (2021) were utilized. These on-site monitoring wells comprised 1.5 m or 3 m long screens installed within the native silty sand glacial till to intercept the overburden groundwater aquifer. Based on readings taken from the monitoring wells on May 13, 2024, the depth to groundwater across the Site ranged between approximately 2.04 m and 8.39 m below existing grade (Elev. 263.02 to 266.11 m above mean sea level). Based on water levels gathered from available monitoring wells at the Site, the local groundwater flow appears to be directed south towards Lake Simcoe, as shown in Figure 6.

The properties within the Phase Two Study Area to the south of the Site are considered to be hydraulically downgradient of the Site; properties to the north are considered to be hydraulically upgradient of the Site; and the properties to the east and west of the Site were considered to be hydraulically trans-gradient to the Site. Any PCAs located downgradient or trans-gradient of the Site are not considered to be contributing to an APEC on Site.

Based on the rationale provided, it is the opinion of the Qualified Person (QP) that eight (8) PCAs are considered APECs at the Site. Further discussion is provided below.

2.2 AREAS OF POTENTIAL ENVIRONMENTAL CONCERN

Based on the evaluation of the PCAs located on- and off-Site, eight (8) APECs were identified, as presented below:

Table 3: Areas of Potential Environmental Concern (APECs)

APEC	Location of APEC on Phase One Property	PCA	Location of PCA (On Site or Off-Site)	Contaminants of Potential Concern	Media Potentially Impacted (Ground Water, soil and/or sediment)
APEC 1: Potential presence of fill material of unknown quality associated with the site development in the mid to late 1950s	Entire Phase One Property	#30 – Importation of Fill Material of Unknown Quality (PCA 1)	On-Site	PAHs, Metals, As, Sb, Se, Cr (VI), Hg, B-HWS, CN-	Soil
APEC 2: Application of De-icing salts within former paved surfaces – parking lot and driveways	Paved Surfaces of Phase One Property	#Other – Application of De-Icing Salts (PCA 2)	On-Site	EC and SAR	Soil
APEC 3: Former OPP garage building utilized for repair and maintenance of OPP vehicles.	South portion of the Phase One Property	#52 – Storage, maintenance, fuelling and repair of equipment, vehicles, and material used to maintain transportation systems	On-Site	PAHs, VOCs, PHCs, Metals	Soil, Groundwater

APEC	Location of APEC on Phase One Property	PCA	Location of PCA (On Site or Off-Site)	Contaminants of Potential Concern	Media Potentially Impacted (Ground Water, soil and/or sediment)
		(PCA 3)			
APEC 4: Former emergency diesel generator inside the former OPP garage building	South portion of the Phase One Property	#28 – Gasoline and Associated Products Storage in Fixed Tanks (PCA 4)	On-Site	BTEX, PHCs	Soil
APEC 5: Potential pesticide use associated with former orchard identified on Site in the 1940s - 1950's	Entire Phase One Property	#40 – Pesticides (including Herbicides, Fungicides and Anti-Fouling Agents) Manufacturing, Processing, Bulk Storage and Large-Scale Applications (PCA 5)	On-Site	OCs, Metals, Hydride-forming Metals, Mercury	Soil
APEC 6: Former pad-mounted transformer located within south portion of the site	South portion of the Phase One Property	#55 – Transformer Manufacturing, Processing and Use (PCA 6)	On-Site	PCBs, BTEX, PHC	Soil

APEC	Location of APEC on Phase One Property	PCA	Location of PCA (On Site or Off-Site)	Contaminants of Potential Concern	Media Potentially Impacted (Ground Water, soil and/or sediment)
APEC 7: Minor staining at the previous location of a mobile diesel generator	Central portion of the Phase One Property	#Other – Staining (PCA 7)	On-Site	BTEX, PHC	Soil
APEC 8: Marginal groundwater exceedance of Benzo(a)pyrene reported previously by others	Eastern portion of the Phase One Property	#Other – previous exceedance (PCA 8)	On-Site	PAHs	Groundwater

1) 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

PHCs = petroleum hydrocarbons; BTEX = benzene, toluene, ethylbenzene and toluene; VOCs = volatile organic compounds; PAHs = polycyclic aromatic hydrocarbons; PCBs = polychlorinated biphenyls; OCS = organochlorine pesticides; As = arsenic, Sb = antimony, Se = selenium; Cr (VI) = chromium hexavalent; Hg = mercury; B-HWS = boron hot water soluble; CN- = cyanide; Na = sodium; Cl- = chloride

Refer to Figures 5 and 5A for the Site plan illustrating the borehole/monitoring well locations and APECs.

2.3 UNDERGROUND UTILITIES

The Site utilities and services were identified at the Site based on the relevant utility infrastructure observed during the Site reconnaissance and are summarized in the table below.

Utility	Source	Location	Site Entry
Electricity	On-Site generator	On-Site	Temporary electrical lines were observed at the Site from the temporary generator located at the

Utility	Source	Location	Site Entry
			central portion of the Site to the temporary light posts and temporary mobile housing.
Natural Gas	Enbridge	On- Site	A Natural gas main and associated lines were observed running along the southeastern portion of the Site, parallel with Rose Street.
Water	City of Barrie	On-Site	A water supply line is assumed to enter the southern portion of the Site and connect to the fire hydrant located at the southern portion of the Site.
Storm and Sanitary Sewer	City of Barrie	On-Site	A sanitary line is assumed to enter/exit the Site at the southern portion of the Site. Two (2) manholes were identified at the southeastern and eastern portions of the Site.
Communications	Bell	On-Site	Communications lines were not observed during Site reconnaissance.

3. PHYSICAL SITE DESCRIPTION

3.1 STRATIGRAPHY

The physiography of the Site is within the Simcoe Uplands and is characterized as Till Plains (drumlinized). The surficial geology of the Site is described as till consisting of moderately stoney to stoney silty sand to sand till. The bedrock in the general area consists of limestone, dolostone, shale, arkose, and sandstone of the Ottawa Group, Simcoe Group, and Shadow Lake Formation.

Based on the review of the OBM and Toporama map, the Site has an approximate elevation range from 267 to 274 m asl, with an approximate elevation differential of 7 m sloping from the western portion of the Site toward the eastern portion of the Site. Properties to the north, and south are generally at a similar elevation to the Site, properties to the west are generally at a higher elevation and properties to the east are generally at a lower elevation than the Site.

No waterbodies are located at the Phase One Property. Kidds Creek is located approximately 410 m west and Sophia Creek is located approximately 580 m east of the Site, both tributaries leading to Kempenfelt Bay as part of Lake Simcoe. Kempenfelt Bay is located approximately 1.5 km south of the Site. The inferred groundwater flow is anticipated to flow south toward Kempenfelt Bay.

Based on the review of available resources from the Ministry of Natural Resources and Forestry (MNRF) on December 7, 2023, no areas of natural significance were identified at the Site or within the Phase One Study Area. Additionally, no Provincially Significant wetlands or unevaluated wetlands are present within the Phase One Study Area.

Previously, PML conducted a Phase Two Environmental Assessment and Geotechnical Investigation in 2021. The programs indicated that the stratigraphy at the Site is comprised of topsoil and/or pavement followed by silty sand to sandy silt fill, underlain by native silty sand glacial till to a maximum depth of 12.8 m bgs. Fill material was identified in all boreholes to a maximum depth of 2.9 m bgs. As previously indicated, more than two-thirds (2/3) of the Site consisted of soil equal to or greater than 2 m in depth. Bedrock was not encountered at the Site.

A brief description of the soil stratigraphy at the Site, in order of depth, is summarized in the following sections. The interpreted Site geology is shown on the enclosed cross sections (Figures 7 and 8).

Surface Material

Topsoil was identified by PML (2021) at ground surface in eleven (11) boreholes (BHs 1 to 3, 6 to 8, 16, 20, 26 to 29). The topsoil ranged in thickness from 150 mm to 250 mm.

An asphalt layer ranging from 30 mm to 130 mm thick was encountered in thirteen (13) boreholes (BHs 4, 5, 9, 10, 12 to 15, 17, 18, 21, 25, and 30) during the PML (2021) investigation within paved areas. The asphalt layer was underlain by a granular layer ranging from 250 mm to 530 mm in thickness.

Granular material/gravel was identified at ground surface in four (3) boreholes (BHs 201, 203, 204 and 214) during the soil investigation as part of this Phase Two ESA. The material ranged in thickness from 150 mm to 600 mm.

Fill Material

Exposed fill material was encountered at the surface in borehole BH202, and boreholes BH205 to BH213 and beneath the granular material in boreholes BH203 and BH204. The fill consisted of silty sand to sand, with trace gravel, and extended to a maximum depth of 3.2 m below grade.

Previously, PML (2021) identified a fill layer beneath the topsoil or pavement in twenty-six (26) boreholes (BH1 to BH10, BH12 to BH18, BH20, BH21, and BH24 to BH30) to a maximum depth of 2.9 m bgs, consisting of silty sand to sandy silt.

Native Material

Native material predominantly comprised of silty sand to sandy silt and silty sand glacial till deposits.

A layer of silty sand was encountered below fill material in boreholes BH201 to BH203 and BH214. PML (2021) previously identified sand and silty sand beneath fill at boreholes BH5 and BH9, respectively.

The deposit of silty sand glacial till was identified beneath fill in boreholes BH207 to BH213. The glacial till deposits comprised varying amounts of silty sand with trace gravel and inferred cobbles and boulders. PML (2021) previously identified sandy silt to silt and sand glacial till to the maximum depth of 12.8 m bgs. The material was comprised of varying amounts of sand and silt, trace gravel and clay, and cobbles and boulders were noted during augering. Previous GEI boreholes (BH101 to BH105) also identified sand and silt glacial till with trace gravel and clay to a maximum depth of 14.2 m bgs.

Bedrock

Bedrock was not encountered in any of the borehole drilled at the Site. The depth to bedrock was estimated from the Bedrock Topography Series Map P.979 for Barrie Area, prepared by Ontario Division of Mines, issued in 1974 and is estimated to be approximately 145-150 m below existing grade (approximately 123.0 m above mean sea level).

3.2 HYDROGEOLOGY

One (1) hydrostratigraphic unit was encountered at the Site which acts as an aquifer.

The monitoring well network advanced at the Site consists of five (5) monitoring wells previously advanced by GEI (2023), six (6) monitoring wells previously advanced by PML (2021), of which three have been destroyed, and two (2) monitoring wells advanced as part of this Phase Two investigation, screened within the overburden. The 1.5 m or 3 m long screens were installed within the native silty sand glacial till to intercept the overburden groundwater aquifer.

The groundwater depths across the entire Site ranged between approximately 2.04 m bgs and 8.39 m bgs on May 13, 2024.

Based on water levels gathered from available monitoring wells at the Site, taken on May 13, 2024, the local groundwater flow appears to be directed south towards Lake Simcoe, as shown in Figure 6.

Hydraulic conductivity testing was completed in the hydrogeological investigation conducted by GEI. Single Well Response Test (SWRT) analysis was conducted at selected monitoring wells (BH/MW101, BH/MW102, BH/MW103, and BH/MW105) on January 2 and 10, 2024. The hydraulic conductivity values for each of the tested wells were calculated from the SWRT data using Aqtesolv Software and the Hvorslev solution for unconfined conditions. The hydraulic conductivity (K) was 1.3×10^{-6} m/s at BH/MW101, 1.0×10^{-6} at BH/MW102, 4.9×10^{-6} at BH/MW103, and 3.2×10^{-6} at BH/MW105.

The horizontal hydraulic gradient in groundwater, based on groundwater measurements collected on March 13, 2024, was 0.068 between MW207 and MW208, and 0.114 between MW26 and MW23, with a geometric mean of 0.088 m/m.

It is noted that vertical hydraulic gradients were not evaluated for this Site as a second water bearing unit was not identified at the depths investigated at the Site nor were impacts in groundwater identified as a result of the Phase Two ESA Investigations.

3.3 SITE SENSITIVITY

No waterbodies are located at the Site or Phase One Study Area. The nearest water body is Kidds Creek which is located approximately 410 m west and second nearest water body is Sophia Creek is located approximately 580 m east of the Site, both tributaries leading to Kempenfelt Bay as part of Lake Simcoe. Kempenfelt Bay is located approximately 1.5 km south of the Site.

Based on the review of available resources from the Ministry of Natural Resources, no areas of natural significance were identified at the Site or within the Phase One Study Area.

The Site Sensitivity classification with respect to the conditions set out under Section 41 and 43.1 of O.Reg.153/04 were further evaluated to determine if the Site is sensitive, as presented in the table below:

Table 4: Site Sensitivity

Sensitivity	Classification	Does Sensitivity Apply to Site?
Section 41 applies if	(i) property is within an area of natural significance	No
	(ii) property includes or is adjacent to an area of natural significance or part of such an area	No
	(iii) property includes land that is within 30 m of an area of natural significance or part of such an area	No
	(iv) soil at property has a pH value for surface soil less than 5 or greater than 9	No
	(v) soil at property has a pH value for sub-surface soil less than 5 or greater than 11	No
	(vi) a qualified person is of the opinion that, given the characteristics of the property and the certifications the qualified person would be required to make in a record of site condition in relation to the property as specified in Schedule A, it is appropriate to apply this section to the property	No
Section 43.1 applies if	(i) property is a shallow soil property	No
	(ii) property includes all or part of a water body or is adjacent to a water body or includes land that is within 30 m of a water body	No

Based on the analytical results, no parameters were detected in soil or groundwater at concentrations in exceedance of the applicable SCS.

3.4 REMEDIATION

No remediation has occurred at the Site.

3.5 SOIL IMPORTATION AND EXPORT

No soil importation or export has occurred on Site. Additionally, no excess soil was imported to Site or generated for off-Site export as part of the Phase Two ESA Investigation.

3.6 LAND USE

The Site is currently zoned as commercial land use. It is GEI's understanding that the County of Simcoe is proposing to redevelop the former the Ontario Provincial Police (OPP) facility at 20 Rose Street into a social housing complex. Section 168.3.1 of the Environmental Protection Act does not prohibit the proposed future use of the Site.

4. CONTAMINANTS OF CONCERN

The MECP (2011a) Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition for Residential/Parkland/Institutional Land Use and coarse textured soils were considered applicable for determining contaminants of concern (COCs), based on the reasons presented below:

Table 5: Site Condition Standards

Descriptor	Site-Specific Condition
Section 41 Site Sensitivity	Not applicable - The soil at the Site has pH values between 5 and 9 for surficial soil; and, between 5 and 11 for subsurface soil. - The Site is not located within, or adjacent to, an area of natural significance, or part of such an area; and, the Site does not include land that is within 30 m of an area of natural significance, or part of such an area.
Section 43.1 Site Sensitivity	Not applicable - The Site is not considered a shallow soil property, based on the recovered soil cores, which indicated that more than two-thirds of the Site has an overburden thickness in excess of 2 m; and, - The Site is not located within 30 m of a surface water body; the nearest water body is Kidds Creek which is located approximately 410 m west and second nearest water body is Sophia Creek is located approximately 580 m east of the Site, both tributaries leading to Kempenfelt Bay as part of Lake Simcoe. Kempenfelt Bay is located approximately 1.5 km south of the Site.
Section 35 Ground Water	Potable The Site is considered potable by the City of Barrie.
Land Use	Residential/Parkland/Institutional The future use of the Site will be residential land use.
Soil Texture	Coarse-textured The predominant texture of soils at the Site is considered to be coarse textured.

Sodium Adsorption Ratio (SAR) was identified in soil and Sodium and Chloride exceedances were identified in groundwater at the Site in exceedance of the applicable MECP Table 2 SCS during the Phase Two investigations conducted by PML (2021) and GEI, which are considered to be the result of winter de-icing salt application on pavement surfaces. However, under the newly amended O.Reg.153/04 (O.Reg.407/19), if a substance has been applied to surfaces for the safety of vehicular or pedestrian traffic under the conditions of snow or ice or both (i.e., application of de-icing salts), its related parameters are not deemed to be in exceedance of the MECP Table 2 SCS. As de-icing salts were utilized at the Site and on the paved areas surrounding the Site buildings at the Site, it is of the opinion of the QP that the SAR, Sodium and Chloride impairments are not considered as contaminants of concern. De-icing salts will continue to be used for the future proposed residential development.

It is noted that the initial groundwater sampling program conducted on April 1, 2021, PML (2021a) detected elevated concentrations of Benzo(a)pyrene in groundwater in a duplicate sample of

MW18. It is noted that the results MW18 indicated that Benzo(a)pyrene was non-detect, however the duplicate sample concentration was 0.016 µg/L (standard 0.01 µg/L). As this elevated concentration of the identified parameter is associated with identified on-Site APECs, as well as no odour and visible sheen was noted in the groundwater samples, an additional sampling program was conducted by GEI. The previously existing monitoring well (MW18) was no longer present at the Site. As such, GEI advanced a new monitoring well (BH/MW208) to reassess the presence of the previously identified Benzo(a)pyrene exceedance in the duplicate sample in groundwater at MW18 (PML). The resulting analysis of groundwater sampled at BH/MW208 indicated that the concentration of Benzo(a)pyrene and all other PAH parameters were non-detect.

Based on the results of the resampling event, it is the opinion of the QP that the original marginally elevated duplicate concentration of Benzo(a)pyrene was anomalous and potentially associated with an increased amount of sediment in the sample and/or human error during the initial sampling program by PML. As such, low flow sampling methods were utilized in turn as a reliable sampling method during the subsequent sampling event to minimize external error. Based on the information above, it is in QP's opinion that the initial elevated concentration of Benzo(a)pyrene in groundwater is considered anomalous and therefore is not regarded as a COC at the Site.

The following table summarizes the analytical testing completed on soil and groundwater samples at each APEC and is also included in the figures 9 to 20.

APEC	Contaminants of Potential Concern	Analytical Parameter tested for Soil samples from this APEC	Analytical Parameter tested for Groundwater samples from this APEC	Exceedances
APEC 1: Potential presence of fill material of unknown quality associated with the site development in the mid to late 1950s	Soil: PAHs, Metals, As, Sb, Se, Cr (VI), Hg, B-HWS, CN	Soil samples from Boreholes: BH 201 to BH214	Not identified as potential media of concern	Soil: None Identified Groundwater: None Identified
APEC 2: Application of De-icing salts within former paved surfaces – parking lot and driveways	Soil: EC and SAR	Soil samples from Boreholes: BH 201 to BH205	For due diligence Groundwater sample from MW102 was tested for Sodium and Chloride	Soil: None Identified ** Groundwater: None Identified**
APEC 3: Former OPP garage building utilized for repair and	Soil and Groundwater: PHCs, BTEX, PAHs, Metals	Soil samples from Boreholes: BH 207,	Groundwater samples from MW 105 and BH207	Soil: None Identified Groundwater: None Identified

APEC	Contaminants of Potential Concern	Analytical Parameter tested for Soil samples from this APEC	Analytical Parameter tested for Groundwater samples from this APEC	Exceedances
maintenance of OPP vehicles.		BH209, BH210		
APEC 4: Former emergency diesel generator inside the former OPP garage building	Soil: PHCs, BTEX,	Soil samples from Borehole: BH210	For due diligence Groundwater sample from MW 105	Soil: None Identified Groundwater: None Identified
APEC 5: Potential pesticide use associated with former orchard identified on Site in the 1940s -1950's	Soil: OCs, Metals, Mercury	Soil samples from Test Pits: TP1 to TP6	Not identified as potential media of concern	Soil: None Identified Groundwater: None Identified
APEC 6: Former pad-mounted transformer located within south portion of the site	Soil: BTEX, PHC, PCBs	Soil samples from Test Pit: TP7	Not identified as potential media of concern	Soil: None Identified Groundwater: None Identified
APEC 7: Minor staining at the previous location of a mobile diesel generator	Soil: PHCs, BTEX,	Soil samples from Borehole: BH 214	Not identified as potential media of concern	Soil: None Identified Groundwater: None Identified
APEC 8: Marginal groundwater exceedance of Benzo (a) reported previously by others	Groundwater: PAHs	Soil not identified as potential media of concern	Groundwater sample from BH208	Soil: None Identified Groundwater: None Identified

**** Elevated levels of SAR in the soil samples 201 SS1, 203 SS2, 205 SS2 exceeding the selected Table 2 SCS were recorded which are considered to be the result of winter de-icing salt application over the former paved surfaces. Also, elevated levels of Sodium and Chloride in groundwater sample MW102, exceeding the selected Table 2 SCS were recorded which are also considered to be the result of winter de-icing salt application over the former paved surfaces. As per Section 49.1 of O.Reg. 153/04 (as amended), if a substance has been applied to surfaces for the safety of vehicular or pedestrian traffic under the conditions of snow or ice or both (i.e., application of de-icing salts), its related parameters are not deemed to be in exceedance of the MECP Table 2 SCS. Elevated levels of SAR in soil samples and Sodium and Chloride in groundwater sample recorded at the are thereby considered to have met the Table 2 SCS.**

Based on the analytical results, no parameters were detected in soil or groundwater at concentrations in exceedance of the applicable SCS.

4.1 SOIL AND GROUNDWATER IMPACTS

4.1.1 SOIL

No soil COCs were identified at the Site.

4.1.2 GROUNDWATER

No COCs were identified in groundwater at the Site.

4.2 CONTAMINANT FATE AND TRANSPORT

4.2.1 SOIL MEDIA

No soil COCs were identified at the Site.

4.2.2 GROUNDWATER MEDIA

No COCs were identified in groundwater at the Site.

4.2.3 PREFERENTIAL PATHWAYS

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

As no COCs were identified at the Site, no possible preferential pathways were identified.

4.2.4 CLIMATIC CONDITIONS

It is noted that climatic or meteorological conditions may have influenced the distribution and migration of COCs at the Site. As no COCs were identified at the Site, climate conditions are not of concern.

4.2.5 SOIL VAPOUR MIGRATION

As no impacts were identified in soil or groundwater, no potential for vapour intrusion to indoor air was identified.

5. EXPOSURE PATHWAYS

5.1 Human Receptors and Exposure Pathways

As no COCs were identified in soil or groundwater at the Site, there are no complete exposure pathways for human receptors at the future proposed development.

Scenario	Receptor	Exposure Pathways
Property Residents	Adult (including pregnant female), Teen, Child, Toddler, Infant	None
Workers – Short Term (outdoor)	Adult (including pregnant female)	None
Property Visitor - Recreational	Adult (including pregnant female), Teen, Child, Toddler, Infant	None
Property Visitor - Trespassers	Adult (including pregnant female), Teen, Child, Toddler, Infant	None
Workers – Construction	Adult (including pregnant female)	None

The human health conceptual Site model is included in Figure 21.

5.2 Ecological Receptors and Exposure Pathways

Given that soil COCs have been remediated and no groundwater COCs are present at the Site, there are no complete exposure pathways for ecological receptors at the future proposed development.

Primary Source	Secondary Source	Receptor	Exposure Pathway
None impacted soil	None impacted soil	Terrestrial vegetation	None
		Soil invertebrates	None
		Terrestrial birds and mammals	None
	None impacted groundwater	Terrestrial vegetation	None
		Soil invertebrates	None
		Terrestrial birds and mammals	None
	None impacted plant & animal tissue	Soil invertebrates	None
		Terrestrial birds and mammals	None

The ecological health conceptual Site model is included in Figure 22.

Appendix B

Sampling and Analysis Plan





SITE SAMPLING AND ANALYSIS PLAN

20 Rose Street, Barrie, Ontario

Submitted to:

Simcoe County Housing Corporation
1110 Highway 26,
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1. Introduction

This Site Sampling and Analysis Plan (SSAP) that was developed in support of the Phase Two ESA which will be conducted to provide further characterization of the Site subsurface conditions. The SSAP presents the procedures and measures that will be undertaken during field investigative activities to characterize the Site conditions and meet the data quality objectives of the Phase Two ESA.

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

2. Field Sampling Program

2.1 Field Sampling Program

The field sampling program was developed to provide for the collection of samples of the surficial and subsurface soil materials for chemical analysis of parameters identified as potential contaminants of concern identified in the Phase One ESA.

The soil samples will be collected from of the surficial fill and overburden material. The groundwater samples will be collected from each newly and previously installed monitoring well, as required.

The monitoring wells will be installed at selected boreholes to intercept the groundwater table aquifer. The monitoring wells will be installed with 1.5 m or 3.0 m long screens extending to a maximum depth of approximately 12.8 m below grade.

Elevation of the boreholes and monitoring wells will be obtained through the completion of an elevation survey with reference to a Site temporary benchmark or a local geodetic benchmark. Groundwater flow will be determined through groundwater level measurements and the relative groundwater elevations established in the Site elevation survey.

3. Field Methods

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

- Borehole Drilling;
- Soil Sampling;
- Monitoring Well Installation;
- Monitoring Well Development;
- Groundwater Level Measurements;
- Elevation Survey;



- Groundwater Sampling, *if required*; and
- Residue Management Procedures.

The field investigative methods will be performed as described below:

3.1 Borehole Drilling and Test Pitting

Boreholes will be advanced at the Site to facilitate the collection of soil samples for chemical analysis and geologic characterization and for the installation of groundwater monitoring wells. Test pits will be advanced at the Site to facilitate the collection of surficial soil samples for chemical analysis. Boreholes will be advanced at the Site to a maximum depth of approximately 12.8 m below grade, within the overburden materials to provide for the collection of soil samples beneath the Site. The borehole locations will be selected to assess soil and groundwater (if required) quality at the Site.

Prior to borehole drilling and test pitting activities, utility clearances will be obtained from public locators, as required. Boreholes will be advanced into the surficial fill and overburden soils by a drilling company under the full-time supervision of GEI staff. A truck mounted drilling machine equipped with solid and hollow stem augers and split spoons will be utilized to advance the boreholes through the overburden materials. Test pits will be conducted by GEI staff by hand with a shovel.

3.2 Soil Sampling

Soil samples for geologic characterization and chemical analysis will be collected from the overburden boreholes using 5 cm diameter, 60 cm long, stainless steel split-spoon sampling devices advanced ahead of the augers. The split-spoon samplers will be attached to drill rods and advanced into the soil by means of a machine-driven hammer. Split-spoon soil samples will be collected where possible, beginning at the ground surface and subsequently at continuous intervals. Geologic and sampling details of the recovered cores will be logged, and the samples will be assessed for the potential presence of non-aqueous phase liquids.

Surficial soil samples for chemical analysis will be collected maximum depth of 0.6 m below grade, using a shovel under the full-time supervision of GEI staff.

A portion of each soil sample will be placed in a sealed Ziploc® plastic bag and allowed to reach ambient temperature prior to field screening with a photoionization detector (PID) that will be calibrated by the supplier with an appropriate reference gas and zeroed in ambient conditions prior to use. The vapour measurements will be made by inserting the instrument's probe into the plastic bag while manipulating the sample to ensure volatilization of the soil gases. These readings will provide a real-time indication of the relative concentration of volatile organic vapours encountered in the subsurface during drilling. Samples for chemical analysis will be selected on the basis of visual, combustible gas and olfactory evidence of impacts and at specific intervals to define the lateral and vertical extent of suspected impacts.

Recommended volumes of soil samples selected for chemical analysis will be collected into pre-cleaned, laboratory supplied, analytical test group specific containers. The samples will be placed into clean insulated coolers chilled with ice for storage and transport. Samples intended for PHC and/or VOC and/or BTEX analysis will be collected using a laboratory-supplied soil core sampler, placed into the vials containing methanol for preservation purposes and sealed using Teflon lined



septa lids. The samples will be assigned unique identification numbers, and the date, time, location, and requested analyses for each sample will be documented in a bound field notebook. The samples will be submitted to a CAEL certified laboratory within analytical test group holding times under Chain of Custody (COC) protocols. New disposable chemical resistant gloves will be used during the handling and sample collection for each soil core to prevent sample cross-contamination.

3.3 Monitoring Well Installation

Monitoring wells will be installed in general accordance with Ontario Regulation 903/90, as amended and will be installed by a licensed well contractor.

The monitoring wells will be constructed using 50 mm diameter, Schedule 40, PVC riser pipe and number 10 slot size (0.25 mm) well screens. The base of the well screens will be sealed with PVC end caps. All well pipe connections will be factory machined threaded flush couplings. The pipe components will be pre-wrapped in plastic, which will be removed prior to insertion in the borehole to minimize the potential for contamination. No lubricants or adhesives will be used in the construction of the monitoring wells. The annular space around the well screens will be backfilled with silica sand to at least 0.3 m above the top of the screen. Granular bentonite will be placed in the borehole annulus from the top of the sand pack to approximately grade. The monitoring wells will be completed with protective casings.

3.4 Monitoring Well Development

Monitoring wells will be developed to remove fine sediment particles potentially lodged in the sand pack and well screen to enhance contact with the surrounding formation groundwater and will be developed using dedicated bailers. Monitoring well development will be monitored by multiparameter water quality meter visual observations of turbidity, and by taking field measurements of pH and conductivity for every well volume removed. Standing water volumes will be determined by means of a water level meter. Water quality parameter measurements will be recorded using a multiparameter water quality meter. A minimum of approximately three (3) well volumes will be removed; and, well development will continue until the purged water has chemically stabilized as indicated by field parameters measurements.

Well development details will be documented on a well development log sheet or in a bound hard cover notebook. All water accumulated during well development will be collected and stored in sealed containers.

3.5 Groundwater Level Measurements

Groundwater level measurements will be recorded from monitoring wells to determine groundwater flow and direction at the Site. Water levels will be measured with respect to the top of the casing by means of a groundwater level meter. The water levels will be recorded on water level log sheets or in a bound field notebook. The water level meter probe will be decontaminated between monitoring well locations.

3.6 Elevation Survey

An elevation survey will be conducted to obtain vertical control of the newly installed monitoring well locations. The top of casing and ground surface elevation of each monitoring well location



will be surveyed against a known geodetic benchmark, or if unavailable, against a suitable arbitrary temporary benchmark. Elevations measured against a geodetic benchmark will be recorded as meters above mean sea level (m AMSL). The arbitrary temporary benchmark will be assigned an elevation of 100.00 m. The elevation survey will be accurate to within ± 1 cm.

3.7 Groundwater Sampling

If required, groundwater samples will be collected from monitoring wells for chemical analysis. The monitoring wells will be purged first of three to five wetted well volumes of water to remove standing water and draw in fresh formation water as previously described. Dedicated well materials will be used for well purging and sample collection.

Recommended groundwater sample volumes will be collected into pre-cleaned, laboratory-supplied vials or bottles provided with analytical test group specific preservatives, as required. The samples will be placed in an insulated cooler chilled with ice for storage and transport. Where needed, bottles will be checked for headspace.

All groundwater samples will be assigned unique identification numbers, and the date, time, project number and company name will be specified on each bottle. The samples will be submitted to the contractual laboratory within analytical test group holding times under COC protocols. New disposable chemical resistant gloves will be used for each sampling location to prevent sample cross-contamination.

3.8 Residue Management Procedures

The residue materials produced during the borehole drilling, soil sampling programs and monitoring well sampling programs comprised of decontamination fluids from equipment cleaning, and waters from well development and purging will be placed in sealed drums for future off-Site disposal.



4. Field Quality Assurance/Quality Control Program

The objective of the field quality assurance/quality control (QA/QC) program is to obtain soil and groundwater samples and other field measurements that provide data of acceptable quality that meets the objectives of the Phase Two ESA. The objectives of the QA/QC program will be achieved through the implementation of procedures for the collection of unbiased (i.e., non-contaminated) samples, sample documentation and the collection of appropriate QC samples to provide a measure of sample reproducibility and accuracy. The field QA/QC measures will comprise:

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

Details on the field QA/QC measures are provided in the following sections.

4.1 Decontamination Protocols

Decontamination protocols will be followed during field sampling where non-dedicated sampling equipment is used to prevent sample cross contamination. For the borehole drilling and soil sampling, split soil sampling devices will be cleaned/decontaminated between sampling intervals and auger flights between borehole locations. For the monitoring well installation, well components are not to come into contact with the ground surface prior to insertion into boreholes. Electronic water level meters will be decontaminated between monitoring well locations during well development, purging activities and rising head tests. All decontamination fluids will be collected and stored in sealed containers.

4.2 Equipment Calibration

All equipment requiring calibration will be calibrated according to manufacturer's requirements using analytical grade reagents, or by the supplier prior to conducting field activities.

4.3 Sample Preservation

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

4.4 Sample Documentation

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



4.5 Field Quality Control Samples

Field quality controls samples will be collected to evaluate the accuracy and reproducibility of the field sampling procedures. Where required, for groundwater samples, a trip blank prepared by a laboratory will be submitted for chemical analysis to evaluate the potential for sample cross-contamination or bias. The recommended alert criteria for the trip blank sample are the detections of any test group analyte at a concentration in excess of laboratory detection limits.

4.6 Accredited Laboratory Quality Assurance/Quality Control

All soil and groundwater analytical testing will be performed by Eurofins Environmental Testing Canada, Inc. (Eurofins), which is an accredited laboratory. Eurofins is accredited under the Standards Council of Canada/Canadian Association of Environmental Analytical Laboratories (Accredited Laboratory No. 852) in accordance with ISO/IEC 17025:2017 - "General Requirements for the Competence of Testing and Calibration Laboratories".

Certificates of Analysis are expected from Eurofins reporting the results of all the chemical analyses performed on the submitted soil samples. Review of the Certificates of Analysis prepared by Eurofins is required to determine that they were in compliance with the requirements set out under subsection 47(3) of O.Reg.153/04.

The analytical program conducted by Eurofins includes analytical test group specific QA/QC measures to evaluate the accuracy and precision of the analytical results and the efficiency of analyte recovery during solute extraction procedures. The laboratory QA/QC program consists of the preparation and analysis of laboratory duplicate samples to assess precision and sample homogeneity, method blanks to assess analytical bias, spiked blanks and QC standards to evaluate analyte recovery, matrix spikes to evaluate matrix interferences and surrogate compound recoveries (VOCs only) to evaluate extraction efficiency. The laboratory QA/QC results will be presented in the Quality Assurance Report provided in the Certificate of Analysis prepared by Eurofins. The QA/QC results will be reported as percent recoveries for matrix spikes, spike blanks and QC standards, RPDs for laboratory duplicates and analyte concentrations for method blanks.



Appendix C

Analytical Results



Sample ID	MECP (2011) Table 2: Full Depth Generic SCS in a Potable Groundwater Condition Residential/Parkland/Institutional Land Use (coarse textured soil)	BH207-SS3	BH209-SS1	BH209D-SS1 (Duplicate of BH209-SS1)	BH210-SS1	BH212-SS4	BH214-SS1	TP7
Lab ID		1725647	1725649	1725650	1725651	1725653	1725655	1725639
Sampling Date		2024-04-24	2024-04-25	2024-04-25	2024-04-25	2024-04-25	2024-04-25	2024-04-24
Soil Sample Depth (m)		1.52-2.13	0-0.61	0-0.61	0-0.61	2.29-2.90	0-0.61	0-0.3
Consultant		GEI	GEI	GEI	GEI	GEI	GEI	GEI
Laboratory		Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins
Acetone	16	< 0.5	< 0.5	< 0.5	-	-	-	-
Benzene	0.21	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068
Bromodichloromethane	1.5	< 0.05	< 0.05	< 0.05	-	-	-	-
Bromoform	0.27	< 0.05	< 0.05	< 0.05	-	-	-	-
Bromomethane	0.05	< 0.05	< 0.05	< 0.05	-	-	-	-
Carbon Tetrachloride	0.05	< 0.05	< 0.05	< 0.05	-	-	-	-
Chlorobenzene	2.4	< 0.05	< 0.05	< 0.05	-	-	-	-
Chloroform	0.05	< 0.05	< 0.05	< 0.05	-	-	-	-
Dibromochloromethane	2.3	< 0.05	< 0.05	< 0.05	-	-	-	-
1,2-Dichlorobenzene	1.2	< 0.05	< 0.05	< 0.05	-	-	-	-
1,3-Dichlorobenzene	4.8	< 0.05	< 0.05	< 0.05	-	-	-	-
1,4-Dichlorobenzene	0.083	< 0.05	< 0.05	< 0.05	-	-	-	-
Dichlorodifluoromethane	16	< 0.05	< 0.05	< 0.05	-	-	-	-
1,1-Dichloroethane	0.47	< 0.05	< 0.05	< 0.05	-	-	-	-
1,2-Dichloroethane	0.05	< 0.05	< 0.05	< 0.05	-	-	-	-
1,1-Dichloroethylene	0.05	< 0.05	< 0.05	< 0.05	-	-	-	-
cis-1,2-Dichloroethylene	1.9	< 0.05	< 0.05	< 0.05	-	-	-	-
trans-1,2-Dichloroethylene	0.084	< 0.05	< 0.05	< 0.05	-	-	-	-
1,2-Dichloropropane	0.05	< 0.05	< 0.05	< 0.05	-	-	-	-
cis-1,3-Dichloropropene	0.05	< 0.05	< 0.05	< 0.05	-	-	-	-
trans-1,3-Dichloropropene	0.05	< 0.05	< 0.05	< 0.05	-	-	-	-
cis- & trans-1,3-Dichloropropene	0.05	< 0.05	< 0.05	< 0.05	-	-	-	-
Ethylbenzene	1.1	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018
Ethylene Dibromide (1,2-Dibromoethane)	0.05	< 0.05	< 0.05	< 0.05	-	-	-	-
Hexane (n)	2.8	< 0.05	< 0.05	< 0.05	-	-	-	-
Methyl ethyl ketone (2-Butanone)	16	< 0.5	< 0.5	< 0.5	-	-	-	-
Methyl Isobutyl Ketone	1.7	< 0.5	< 0.5	< 0.5	-	-	-	-
Methyl t-butyl ether (MTBE)	0.75	< 0.05	< 0.05	< 0.05	-	-	-	-
Methylene chloride (Dichloromethane)	0.1	< 0.05	< 0.05	< 0.05	-	-	-	-
Styrene	0.7	< 0.05	< 0.05	< 0.05	-	-	-	-
1,1,1,2-Tetrachloroethane	0.058	< 0.05	< 0.05	< 0.05	-	-	-	-
1,1,2,2-Tetrachloroethane	0.05	< 0.05	< 0.05	< 0.05	-	-	-	-
Tetrachloroethylene	0.28	< 0.05	< 0.05	< 0.05	-	-	-	-
Toluene	2.3	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
1,1,1-Trichloroethane	0.38	< 0.05	< 0.05	< 0.05	-	-	-	-
1,1,2-Trichloroethane	0.05	< 0.05	< 0.05	< 0.05	-	-	-	-
Trichloroethylene	0.061	< 0.01	< 0.01	< 0.01	-	-	-	-
Trichlorofluoromethane	4	<0.05	<0.05	<0.05	-	-	-	-
Vinyl Chloride	0.02	< 0.02	< 0.02	< 0.02	-	-	-	-
m-Xylene + p-Xylene	NV	<0.05	<0.05	<0.05	0.06	<0.05	<0.05	<0.05
o-Xylene	NV	<0.05	<0.05	<0.05	0.06	<0.05	<0.05	<0.05
Xylenes (Total)	3.1	<0.05	<0.05	<0.05	0.12	<0.05	<0.05	<0.05
PHC F1 (C6-C10)	55	<10	<10	<10	<10	<10	<10	<10
PHC F2 (C10-C16)	98	<2	<2	<2	<2	<2	6	3
PHC F3 (C16-C34)	300	<20	<20	<20	<20	30	<20	40
PHC F4 (C34-C50)	2800	<20	<20	<20	<20	<20	<20	30
PHC F4 (C34-C50)-gravimetric	2800	NV	NV	NV	NV	NV	NV	NV

All soil concentrations reported in µg/g.

'<' = Parameter below detection limit, as indicated

'NV' = No value

Bold Concentration exceeds MECP (2011) SCS.

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

Sample ID		BH201-SS2	BH207-SS3	BH212-SS4
Lab ID	MECP (2011) Table 2: Full Depth Generic SCS in a Potable Groundwater Condition Residential/Parkland/Institutional Land Use (coarse textured soil)	1725640	1725647	1725653
Sampling Date		2024-04-25	2024-04-24	2024-04-25
Soil Sample Depth (m)		0.61-1.22	1.52-2.13	2.29-2.90
Consultant		GEI	GEI	GEI
Laboratory		Eurofins	Eurofins	Eurofins
Acenaphthene	7.9	< 0.05	< 0.05	0.06
Acenaphthylene	0.15	< 0.05	< 0.05	< 0.05
Anthracene	0.67	< 0.05	< 0.05	0.13
Benzo(a)anthracene	0.5	< 0.05	< 0.05	0.22
Benzo(a)pyrene	0.3	< 0.05	< 0.05	0.21
Benzo(b)fluoranthene	0.78	< 0.05	< 0.05	0.18
Benzo(ghi)perylene	6.6	< 0.05	< 0.05	0.07
Benzo(k)fluoranthene	0.78	< 0.05	< 0.05	0.11
Chrysene	7	< 0.05	< 0.05	0.23
Dibenz(a,h)anthracene	0.1	< 0.05	< 0.05	< 0.05
Fluoranthene	0.69	< 0.05	< 0.05	0.48
Fluorene	62	< 0.05	< 0.05	0.06
Indeno(1,2,3-cd)pyrene	0.38	< 0.05	< 0.05	0.07
1&2-Methylnaphthalene	0.99	< 0.05	< 0.05	< 0.05
Naphthalene	0.6	< 0.013	< 0.013	0.04
Phenanthrene	6.2	< 0.05	< 0.05	0.48
Pyrene	78	< 0.05	< 0.05	0.41

All soil concentrations reported in µg/g.
Parameter below detection limit, as indicated

'<' =

'NV' =

No value

Bold

Concentration exceeds MECP (2011) SCS.

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

Sample ID	MECP (2011) Table 2: Full Depth Generic SCS in a Potable Groundwater Condition Residential/Parkland/Institutional Land Use (coarse textured soil)	TP1	TP4	TP6	TP7	TP107 (Duplicate of TP7)
Lab ID		1725632	1725636	1725638	1725639	1725656
Sampling Date		2024-04-24	2024-04-24	2024-04-24	2024-04-24	2024-04-24
Soil Sample Depth (m)		0-0.3	0-0.3	0-0.3	0-0.3	0-0.3
Consultant		GEI	GEI	GEI	GEI	GEI
Laboratory		Eurofins	Eurofins	Eurofins	Eurofins	Eurofins
Total Polychlorinated Biphenyls	0.35	<0.02	<0.02	<0.02	<0.02	<0.02
Aroclor 1242	NV	<0.02	<0.02	<0.02	<0.02	<0.02
Aroclor 1248	NV	<0.02	<0.02	<0.02	<0.02	<0.02
Aroclor 1254	NV	<0.02	<0.02	<0.02	<0.02	<0.02
Aroclor 1260	NV	<0.02	<0.02	<0.02	<0.02	<0.02

'<' =
'NV'=
Bold

All soil concentrations reported in µg/g.
Parameter below detection limit, as indicated
No value
Concentration exceeds MECP (2011) SCS.

Sample ID	MECP (2011) Table 2: Full Depth Generic SCS in a Potable Groundwater Condition Residential/Parkland/Institutional Land Use (coarse textured soil)	TP1	TP101 (Duplicate of TP1)	TP2	TP3	TP4	TP5	TP6
Lab ID		1725632	1725633	1725634	1725635	1725636	1725637	1725638
Sampling Date		2024-04-24	2024-04-24	2024-04-24	2024-04-24	2024-04-24	2024-04-24	2024-04-24
Soil Sample Depth (m)		0-0.3	0-0.3	0-0.3	0-0.3	0-0.3	0-0.3	0-0.3
Consultant		GEI	GEI	GEI	GEI	GEI	GEI	GEI
Laboratory		Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins
Aldrin	0.05	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Chlordane	0.05	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006
Dieldrin	0.05	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Endosulfan I + Endosulfan II	0.04	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
Endrin	0.04	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
gamma-BHC	0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Heptachlor	0.05	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Heptachlor epoxide	0.05	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Hexachlorobenzene	0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Hexachlorobutadiene	0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Hexachloroethane	0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Methoxychlor	0.05	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
p,p'-DDD	0.05	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
p,p'-DDE	0.05	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
p,p'-DDT	1.4	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
All groundwater concentrations reported in µg/L.								
'<' = Parameter below detection limit, as indicated								
'NV' = No value								
Bold	Concentration exceeds MECP (2011) SCS.							
	Non-detect but detection limit exceeds the MECP (2011) SCS.							
	Parameter detected and no SCS provided							

Sample ID	MECP (2011) Table 2: Full Depth Generic SCS in a Potable Groundwater Condition Residential/Parkland/Institutional Land Use (coarse textured soil)	BH201-SS2	BH202-SS1	BH203-SS2	BH204-SS2	BH205-SS2	BH205D-SS2 (Duplicate of BH205-SS2)	BH206-SS2	BH207-SS3	BH208-SS2	BH209-SS1	BH209D-SS1 (Duplicate of BH209-SS1)	BH210-SS1
Lab ID		1725642	1725642	1725643	1725641	1725644	1725645	1725646	1725647	1725648	1725649	1725650	1725651
Sampling Date		2024-04-25	2024-04-25	2024-04-25	2024-04-25	2024-04-25	2024-04-25	2024-04-25	2024-04-24	2024-04-24	2024-04-25	2024-04-25	2024-04-25
Soil Sample Depth (m)		0.61-1.22	0-0.61	0.61-1.22	0.61-1.22	0.61-1.22	0.61-1.22	0.61-1.22	1.52-2.13	0.76-1.37	0-0.61	0-0.61	0-0.61
Consultant		GEI	GEI	GEI	GEI	GEI	GEI	GEI	GEI	GEI	GEI	GEI	GEI
Laboratory		Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins
pH (pH units)	5-9 (surface soil); 5-11 (subsurface soil)	6.74	-	-	7.55	-	-	7.79	7.8	7.66	7.67	7.73	-
Electrical Conductivity (mS/cm)	0.7	0.08	0.37	0.66	0.2	0.57	0.69	0.12	0.17	0.18	0.14	0.13	-
Free Cyanide	0.051	<0.005	-	-	<0.005	-	-	<0.005	<0.005	<0.005	<0.005	<0.005	-
Sodium Adsorption Ratio (unitless)	5	1.98	13	8.42	4.35	14.1	16	0.62	3.01	0.41	1.86	1.83	-
Antimony	7.5	<1	-	-	<1	-	-	<1	<1	<1	<1	<1	<1
Arsenic	18	2	-	-	<1	-	-	1	2	1	2	2	3
Barium	390	66	-	-	22	-	-	27	69	51	53	61	68
Beryllium	4	<1	-	-	<1	-	-	<1	<1	<1	<1	<1	<1
Boron (total)	120	<5	-	-	<5	-	-	<5	6	<5	<5	<5	6
Boron (hot water soluble)	1.5	<0.5	-	-	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	-
Cadmium	1.2	<0.4	-	-	<0.4	-	-	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium (total)	160	26	-	-	10	-	-	13	18	16	18	18	22
Chromium VI	8	<0.20	-	-	0.28	-	-	<0.20	<0.20	<0.20	<0.20	<0.20	-
Cobalt	22	5	-	-	2	-	-	3	5	4	4	5	6
Copper	140	11	-	-	3	-	-	6	15	8	9	11	11
Lead	120	4	-	-	2	-	-	3	3	3	4	5	7
Mercury	0.27	<0.1	-	-	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	-
Molybdenum	6.9	<1	-	-	<1	-	-	<1	<1	<1	<1	<1	<1
Nickel	100	14	-	-	5	-	-	5	11	8	11	10	11
Selenium	2.4	0.9	-	-	<0.5	-	-	<0.5	1.1	0.7	0.6	0.9	1
Silver	20	<0.2	-	-	<0.2	-	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Thallium	1	<1	-	-	<1	-	-	<1	<1	<1	<1	<1	<1
Uranium	23	0.5	-	-	<0.5	-	-	<0.5	<0.5	<0.5	0.5	<0.5	<0.5
Vanadium	86	39	-	-	22	-	-	36	32	31	28	34	39
Zinc	340	24	-	-	9	-	-	15	27	19	25	26	27

All soil concentrations reported in µg/g.

'<' = Parameter below detection limit, as indicated

'NV' = No value

Bold Concentration exceeds MECP (2011) SCS.

Sample ID	MECP (2011) Table 2: Full Depth Generic SCS in a Potable Groundwater Condition Residential/Parkland/Institutional Land Use (coarse textured soil)	BH211-SS2	BH212-SS4	BH213-SS3	TP1	TP101 (Duplicate of TP1)	TP2	TP3	TP4	TP5	TP6
Lab ID		1725652	1725653	1725654	1725632	1725633	1725634	1725635	1725636	1725637	1725638
Sampling Date		2024-04-25	2024-04-25	2024-04-25	2024-04-24	2024-04-24	2024-04-24	2024-04-24	2024-04-24	2024-04-24	2024-04-24
Soil Sample Depth (m)		0.76-1.37	2.29-2.90	1.52-2.13	0-0.3	0-0.3	0-0.3	0-0.3	0-0.3	0-0.3	0-0.3
Consultant		GEI	GEI	GEI	GEI	GEI	GEI	GEI	GEI	GEI	GEI
Laboratory		Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins	Eurofins
pH (pH units)	5-9 (surface soil); 5-11 (subsurface soil)	7.78	7.85	7.84	5.75	5.6	6.6	5.7	5.62	6.42	6.71
Electrical Conductivity (mS/cm)	0.7	0.06	0.08	0.08	0.08	0.07	0.12	0.06	0.06	0.1	0.11
Free Cyanide	0.051	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Sodium Adsorption Ratio (unitless)	5	0.22	0.21	0.46	0.72	0.8	0.72	0.43	0.41	0.36	0.41
Antimony	7.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Arsenic	18	<1	<1	1	17	15	9	14	15	7	10
Barium	390	10	12	34	58	51	60	46	47	61	58
Beryllium	4	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Boron (total)	120	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Boron (hot water soluble)	1.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Cadmium	1.2	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium (total)	160	6	6	14	19	14	23	27	14	20	18
Chromium VI	8	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Cobalt	22	2	2	3	4	4	5	4	4	5	4
Copper	140	4	4	7	13	11	14	10	13	12	11
Lead	120	1	2	2	56	48	41	43	44	28	30
Mercury	0.27	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	6.9	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Nickel	100	3	3	6	9	7	11	12	7	8	8
Selenium	2.4	<0.5	<0.5	<0.5	0.7	0.6	0.8	0.8	0.7	0.7	0.7
Silver	20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Thallium	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Uranium	23	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	0.5
Vanadium	86	18	15	29	34	29	35	40	30	35	31
Zinc	340	6	7	18	44	39	50	39	37	38	36

All soil concentrations reported in µg/g.
 '<' = Parameter below detection limit, as indicated
 'NV' = No value
Bold = Concentration exceeds MECP (2011) SCS.

Sample ID	MECP (2011) Table 2: Full Depth Generic SCS in a Potable Groundwater Condition Residential/Parkland/Institutional Land Use (coarse textured soil)	MW101	MW105	MW105 DUP (Duplicate of MW105)	MW207
Lab ID		1727549	1727551	1727552	1727553
Sampling Date		2024-05-13	2024-05-13	2024-05-13	2024-05-13
Screen Depth Interval (m)		10.7-12.2	10.7-12.2	10.7-12.2	7.6-10.7
Consultant		GEI	GEI	GEI	GEI
Laboratory		Eurofins	Eurofins	Eurofins	Eurofins
Acetone	16	<5	<5	<5	<5
Benzene	0.21	<0.5	<0.5	<0.5	<0.5
Bromodichloromethane	1.5	<0.3	<0.3	<0.3	<0.3
Bromoform	0.27	<0.4	<0.4	<0.4	<0.4
Bromomethane	0.05	<0.5	<0.5	<0.5	<0.5
Carbon Tetrachloride	0.05	<0.2	<0.2	<0.2	<0.2
Chlorobenzene	2.4	<0.5	<0.5	<0.5	<0.5
Chloroform	0.05	<0.5	<0.5	<0.5	<0.5
Dibromochloromethane	2.3	<0.3	<0.3	<0.3	<0.3
1,2-Dichlorobenzene	1.2	<0.4	<0.4	<0.4	<0.4
1,3-Dichlorobenzene	4.8	<0.4	<0.4	<0.4	<0.4
1,4-Dichlorobenzene	0.083	<0.4	<0.4	<0.4	<0.4
Dichlorodifluoromethane	16	<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethane	0.47	<0.4	<0.4	<0.4	<0.4
1,2-Dichloroethane	0.05	<0.5	<0.5	<0.5	<0.5
1,1-Dichloroethylene	0.05	<0.5	<0.5	<0.5	<0.5
1,2-Dichloropropane	0.05	<0.5	<0.5	<0.5	<0.5
cis-1,3-Dichloropropene	0.05	<0.5	<0.5	<0.5	<0.5
trans-1,3-Dichloropropene	0.05	<0.5	<0.5	<0.5	<0.5
cis- & trans-1,3-Dichloropropene	0.05	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	1.1	<0.5	<0.5	<0.5	<0.5
Ethylene Dibromide (1,2-Dibromoethane)	0.05	<0.2	<0.2	<0.2	<0.2
Hexane (n)	2.8	<5	<5	<5	<5
Methyl ethyl ketone (2-Butanone)	16	<2	<2	<2	<2
Methyl isobutyl Ketone	1.7	<5	<5	<5	<5
Methyl t-butyl ether (MTBE)	0.75	<2	<2	<2	<2
Methylene chloride (Dichloromethane)	0.1	<4.0	<4.0	<4.0	<4.0
Styrene	0.7	<0.5	<0.5	<0.5	<0.5
1,1,1,2-Tetrachloroethane	0.058	<0.5	<0.5	<0.5	<0.5
1,1,2,2-Tetrachloroethane	0.05	<0.5	<0.5	<0.5	<0.5
Tetrachloroethylene	0.28	<0.3	<0.3	<0.3	<0.3
Toluene	2.3	<0.4	<0.4	<0.4	<0.4
1,1,1-Trichloroethane	0.38	<0.4	<0.4	<0.4	<0.4
1,1,2-Trichloroethane	0.05	<0.4	<0.4	<0.4	<0.4
Trichloroethylene	0.061	<0.3	<0.3	<0.3	<0.3
Trichlorofluoromethane	4	<0.5	<0.5	<0.5	<0.5
Vinyl Chloride	0.02	<0.2	<0.2	<0.2	<0.2
m-Xylene + p-Xylene	NV	<0.4	<0.4	<0.4	<0.4
o-Xylene	NV	<0.4	<0.4	<0.4	<0.4
Xylenes (Total)	3.1	<0.5	<0.5	<0.5	<0.5
PHC F1 (C6-C10)	55	<20	<20	<20	<20
PHC F2 (C10-C16)	98	<20	<20	<20	<20
PHC F3 (C16-C34)	300	<50	<50	<50	<50
PHC F4 (C34-C50)	2800	<50	<50	<50	<50

All groundwater concentrations reported in µg/L.

'<' = Parameter below detection limit, as indicated

'NV' = No value

Bold

Concentration exceeds MECP (2011) SCS.

Sample ID	MECP (2011) Table 2: Full Depth Generic SCS in a Potable Groundwater Condition All Types of Land Use (coarse textured soil)	MW105	MW105 DUP (Duplicate of MW105)	MW208
Lab ID		1727551	1727552	1727554
Sampling Date		2024-05-13	2024-05-13	2024-05-13
Screen Depth Interval (m)		10.7-12.2	10.7-12.2	9.1-12.2
Consultant		GEI	GEI	GEI
Laboratory		Eurofins	Eurofins	Eurofins
Acenaphthene	4.1	<0.1	<0.1	<0.1
Acenaphthylene	1	<0.1	<0.1	<0.1
Anthracene	2.4	<0.1	<0.1	<0.1
Benzo(a)anthracene	1	<0.1	<0.1	<0.1
Benzo(a)pyrene	0.01	<0.01	<0.01	<0.01
Benzo(b)fluoranthene	0.1	<0.05	<0.05	<0.05
Benzo(ghi)perylene	0.2	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	0.1	<0.05	<0.05	<0.05
Chrysene	0.1	<0.05	<0.05	<0.05
Dibenz(a,h)anthracene	0.2	<0.1	<0.1	<0.1
Fluoranthene	0.41	<0.1	<0.1	<0.1
Fluorene	120	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	0.2	<0.1	<0.1	<0.1
1-Methylnaphthalene	3.2	<0.1	<0.1	<0.1
2-Methylnaphthalene	3.2	<0.1	<0.1	<0.1
1&2-Methylnaphthalene	3.2	<0.1	<0.1	<0.1
Naphthalene	11	<0.1	<0.1	<0.1
Phenanthrene	1	<0.1	<0.1	<0.1
Pyrene	4.1	<0.1	<0.1	<0.1

All groundwater concentrations reported in µg/L.

'<' = Parameter below detection limit, as indicated

'NV' = No value

Bold

Concentration exceeds MECP (2011) SCS.

Sample ID	MECP (2011) Table 2: Full Depth Generic SCS in a Potable Groundwater Condition All Types of Land Use (coarse textured soil)	MW101	MW102	MW105	MW105 DUP (Duplicate of MW105)	MW207
Lab ID		1727549	1727550	1727551	1727552	1727553
Sampling Date		2024-05-13	2024-05-13	2024-05-13	2024-05-13	2024-05-13
Screen Depth Interval (m)		10.7-12.2	11.0-12.5	10.7-12.2	10.7-12.2	7.6-10.7
Consultant		GEI	GEI	GEI	GEI	GEI
Laboratory		Eurofins	Eurofins	Eurofins	Eurofins	Eurofins
Free Cyanide	66	-	-	-	-	-
Sodium	490000	345000	596000	18000	17000	66000
Chloride	790000	-	896000	-	-	-
Antimony	6	<0.5	-	<0.5	<0.5	<0.5
Arsenic	25	<1	-	<1	<1	<1
Barium	1000	170	-	70	70	80
Beryllium	4	<0.5	-	<0.5	<0.5	<0.5
Boron (total)	5000	10	-	<10	<10	10
Cadmium	2.7	<0.1	-	<0.1	<0.1	<0.1
Chromium (total)	50	<1	-	2	2	2
Chromium VI	25	<1	-	<1	<1	<1
Cobalt	3.8	0.2	-	<0.2	<0.2	<0.2
Copper	87	2	-	<1	<1	1
Lead	10	<1	-	<1	<1	<1
Mercury	0.29	-	-	-	-	-
Molybdenum	70	<5	-	<5	<5	<5
Nickel	100	<5	-	<5	<5	<5
Selenium	10	<1	-	<1	<1	2
Silver	1.5	<0.1	-	<0.1	<0.1	<0.1
Thallium	2	<0.1	-	<0.1	<0.1	<0.1
Uranium	20	<1	-	<1	<1	<1
Vanadium	6.2	1	-	2	2	1
Zinc	1100	<10	-	<10	<10	<10

All groundwater concentrations reported in µg/L.

'<' = Parameter below detection limit, as indicated

'NV' = No value

Bold

Concentration exceeds MECP (2011) SCS.

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

Appendix D

Borehole Logs



RECORD OF BOREHOLE No. 101

Project Number: 2305493

Project Client: **County of Simcoe, Social Housing**

Project Name: **Social Housing Facility**

Project Location: **20 Rose Street, Barrie**

Drilling Location: **See Borehole Location Plan**

Local Benchmark: _____

Drilling Method: **Mud Rotary Drilling** Drilling Machine: **Track Mount**

Logged By: BH Northing: 4917241 Date Started: Dec 4/23

Reviewed By: **AW** Easting: **603839** Date Completed: **Dec 4/23**

Local Benchmark: _____

[illegible]

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	Groundwater depth encountered on completion of drilling: Dry		Cave depth after auger removal: Open
	Groundwater depth observed on: May 13/24 at depth of: 6.9 m.		Groundwater Elevation: 264.6 m

Borehole details presented do not constitute a thorough understanding of all potential conditions present and require interpretative assistance from a qualified geotechnical engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commissioned and the accompanying 'Explanation of Boring Log'.

Scale 1 : 100

Page: 1 of 1

RECORD OF BOREHOLE No. 102



Project Number: **2305493**
 Project Client: **County of Simcoe, Social Housing**
 Project Name: **Social Housing Facility**
 Project Location: **20 Rose Street, Barrie**
 Drilling Location: **See Borehole Location Plan**
 Local Benchmark: _____

Drilling Method: **Mud Rotary Drilling** Drilling Machine: **Track Mount**
 Logged By: **BH** Northing: **4917292** Date Started: **Dec 6/23**
 Reviewed By: **AW** Easting: **603873** Date Completed: **Dec 6/23**

LITHOLOGY PROFILE		SOIL SAMPLING				DEPTH (m)	ELEVATION (m)	FIELD TESTING	LAB TESTING					Instrumentation Installation	COMMENTS & GRAIN SIZE DISTRIBUTION (%)				
Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT "N" Value			Shear Strength Testing (kPa) × Other Test + Pocket Penetrometer ▲ Field Vane (Intact) △ Field Vane (Remolded) 40 80 120 160 Penetration Testing ○ SPT ● DCPT 10 20 30 40	Atterberg Limits PL LL ○ Water Content (%) 10 20 30 40						GR	SA	SI	CL	
0.0	270.9					0													
						2													
						4													
						6													
						8													
						10													
9.1	261.8					12													
						14													
13.7	257.2	SS	12	100	31			31											
14.2	256.8																		

Ed = 61.5 MPa
PI = 6.2 MPa

Ed = 46.3 MPa
PI = 5.7 MPa

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Groundwater depth encountered on completion of drilling: Dry Cave depth after auger removal: Open
 Groundwater depth observed on: May 13/24 at depth of: 5.9 m. Groundwater Elevation: 265.0 m

Borehole details presented do not constitute a thorough understanding of all potential conditions present and require interpretative assistance from a qualified geotechnical engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commissioned and the accompanying 'Explanation of Boring Log'.

Scale: 1:100

Page: 1 of 1

RECORD OF BOREHOLE No. 103

Project Number: 2305493

Project Client: **County of Simcoe, Social Housing**

Project Name: **Social Housing Facility**

Project Location: **20 Rose Street, Barrie**

Drilling Location: **See Borehole Location Plan**

Local Benchmark:

Drilling Method: **Mud Rotary Drilling** Drilling Machine: **Track Mount**

Logged By: **BH** Northing: **4917328** Date Started: **Dec 5/23**

Reviewed By: **AW** Easting: **603904** Date Completed: **Dec 5/23**

[illegible]

GEI CONSULTANTS
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	Groundwater depth encountered on completion of drilling: 11.9 m.		Cave depth after auger removal: Open
	Groundwater depth observed on: May 13/24 at depth of: 5.4 m.		Groundwater Elevation: 264.6 m

Borehole details presented do not constitute a thorough understanding of all potential conditions present and require interpretative assistance from a qualified geotechnical engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commissioned and the accompanying 'Explanation of Boring Log'.

Scale 1 : 100

Page: 1 of 1

RECORD OF BOREHOLE No. 104



Project Number: **2305493**
 Project Client: **County of Simcoe, Social Housing**
 Project Name: **Social Housing Facility**
 Project Location: **20 Rose Street, Barrie**
 Drilling Location: **See Borehole Location Plan**
 Local Benchmark: _____

Drilling Method: **Mud Rotary Drilling** Drilling Machine: **Track Mount**
 Logged By: **BH** Northing: **4917217** Date Started: **Dec 6/23**
 Reviewed By: **AW** Easting: **603861** Date Completed: **Dec 6/23**

LITHOLOGY PROFILE		SOIL SAMPLING				DEPTH (m)	ELEVATION (m)	FIELD TESTING		LAB TESTING				Instrumentation Installation	COMMENTS & GRAIN SIZE DISTRIBUTION (%)			
Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT "N" Value			Shear Strength Testing (kPa)		Atterberg Limits					GR	SA	SI	CL
								✕ Other Test + Pocket Penetrometer ▲ Field Vane (Intact) △ Field Vane (Remolded)	△ Combustible Organic Vapour (ppm) ▲ Combustible Organic Vapour (%LEL) ◇ Total Organic Vapour (ppm)									
								40 80 120 160	100 200 300 400									
								Penetration Testing										
								○ SPT ● DCPT										
								10 20 30 40										
																</		

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Groundwater depth encountered on completion of drilling: Dry Cave depth after auger removal: Open
 Groundwater depth observed on: May 13/24 at depth of: 8.4 m. Groundwater Elevation: 263.0 m

Borehole details presented do not constitute a thorough understanding of all potential conditions present and require interpretative assistance from a qualified geotechnical engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commissioned and the accompanying 'Explanation of Boring Log'.

Scale: 1 : 100
 Page: 1 of 1

RECORD OF BOREHOLE No. 105



Project Number: **2305493**
 Project Client: **County of Simcoe, Social Housing**
 Project Name: **Social Housing Facility**
 Project Location: **20 Rose Street, Barrie**
 Drilling Location: **See Borehole Location Plan**
 Local Benchmark: _____

Drilling Method: **Mud Rotary Drilling** Drilling Machine: **Track Mount**
 Logged By: **BH** Northing: **4917228** Date Started: **Dec 4/23**
 Reviewed By: **AW** Easting: **603902** Date Completed: **Dec 4/23**

LITHOLOGY PROFILE		SOIL SAMPLING				DEPTH (m)	ELEVATION (m)	FIELD TESTING		LAB TESTING				Instrumentation Installation	COMMENTS & GRAIN SIZE DISTRIBUTION (%)			
Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT "N" Value			Shear Strength Testing (kPa)		Atterberg Limits					GR	SA	SI	CL
								✕ Other Test + Pocket Penetrometer ▲ Field Vane (Intact) △ Field Vane (Remolded)	△ Combustible Organic Vapour (ppm) ▲ Combustible Organic Vapour (%LEL) ◇ Total Organic Vapour (ppm)									
								Penetration Testing ○ SPT ● DCPT		PL	○ Water Content (%)	LL						

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Groundwater depth encountered on completion of drilling: 10.0 m. Cave depth after auger removal: Open
 Groundwater depth observed on: May 13/24 at depth of: 6.0 m. Groundwater Elevation: 264.2 m

Borehole details presented do not constitute a thorough understanding of all potential conditions present and require interpretative assistance from a qualified geotechnical engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commissioned and the accompanying 'Explanation of Boring Log'.

Scale: 1 : 100

Page: 1 of 1

RECORD OF BOREHOLE No. PML -1

Project Number: 2305493

Project Client: **County of Simcoe, Social Housing**

Project Name: **Social Housing Facility**

Project Location: **20 Rose Street, Barrie**

Drilling Location: **See Borehole Location Plan**

Local Benchmark:

Drilling Method: **Mud Rotary Drilling** Drilling Machine: **Track Mount**

Logged By: **BH** Northing: **4917184** Date Started:

Reviewed By: **AW** Easting: **603851** Date Completed:

[illegible]

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 Groundwater depth encountered on completion of drilling:

 Groundwater depth observed on:

Groundwater Elevation:

Borehole details presented do not constitute a thorough understanding of all potential conditions present and require interpretative assistance from a qualified geotechnical engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commissioned and the accompanying 'Explanation of Boring Log'.

Scale 1 : 100

Page: 1 of 1

RECORD OF BOREHOLE No. PML -2

Project Number: **2305493**
 Project Client: **County of Simcoe, Social Housing**
 Project Name: **Social Housing Facility**
 Project Location: **20 Rose Street, Barrie**
 Drilling Location: **See Borehole Location Plan**
 Local Benchmark: _____



Drilling Method: **Mud Rotary Drilling** Drilling Machine: **Track Mount**
 Logged By: **BH** Northing: **4917198** Date Started: _____
 Reviewed By: **AW** Easting: **603841** Date Completed: _____

LITHOLOGY PROFILE		SOIL SAMPLING				DEPTH (m)	ELEVATION (m)	FIELD TESTING		LAB TESTING				Instrumentation Installation	COMMENTS & GRAIN SIZE DISTRIBUTION (%)			
Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT "N" Value			Shear Strength Testing (kPa)		Atterberg Limits					GR	SA	SI	CL
								×	Other Test	△	Combustible Organic Vapour (ppm)							
								+	Pocket Penetrometer	▲	Combustible Organic Vapour (%LEL)							
								▲	Field Vane (Intact)	◇	Total Organic Vapour (ppm)							
								△	Field Vane (Remolded)									
									40 80 120 160									
									Penetration Testing									
								○	SPT	●	DCPT							
									10 20 30 40									

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Groundwater depth encountered on completion of drilling:

Groundwater depth observed on:

Groundwater Elevation:

Borehole details presented do not constitute a thorough understanding of all potential conditions present and require interpretative assistance from a qualified geotechnical engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commissioned and the accompanying 'Explanation of Boring Log'.

Scale: 1 : 100

Page: 1 of 1

RECORD OF BOREHOLE No. PML -3

Project Number: **2305493**
 Project Client: **County of Simcoe, Social Housing**
 Project Name: **Social Housing Facility**
 Project Location: **20 Rose Street, Barrie**
 Drilling Location: **See Borehole Location Plan**
 Local Benchmark: _____



Drilling Method: **Mud Rotary Drilling** Drilling Machine: **Track Mount**
 Logged By: **BH** Northing: **4917193** Date Started: _____
 Reviewed By: **AW** Easting: **603868** Date Completed: _____

LITHOLOGY PROFILE		SOIL SAMPLING				DEPTH (m)	ELEVATION (m)	FIELD TESTING		LAB TESTING				Instrumentation Installation	COMMENTS & GRAIN SIZE DISTRIBUTION (%)			
Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT "N" Value			Shear Strength Testing (kPa)		Atterberg Limits					GR	SA	SI	CL
								Other Test	Penetration Testing	Combustible Organic Vapour (ppm)	Combustible Organic Vapour (%LEL)	Total Organic Vapour (ppm)	Water Content (%)					
								×	○	△	△	◇						
								+	●	▲	▲	◇						
								Field Vane (Intact)		Field Vane (Remolded)								
								40	80	120	160	100	200	300	400			
												PL				LL		

RECORD OF BOREHOLE No. PML -4

Project Number: 2305493

Project Client: **County of Simcoe, Social Housing**

Project Name: **Social Housing Facility**

Project Location: 20 Rose Street, Barrie

Drilling Location: **See Borehole Location Plan**

Local Benchmark:

Drilling Method: **Mud Rotary Drilling** Drilling Machine: **Track Mount**

Logged By: **BH** Northing: **4917202** Date Started:

Reviewed By: **AW** Easting: **603857** Date Completed:

[illegible]

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 Groundwater depth encountered on completion of drilling:

 Groundwater depth observed on:

Groundwater Elevation:

Borehole details presented do not constitute a thorough understanding of all potential conditions present and require interpretative assistance from a qualified geotechnical engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commissioned and the accompanying 'Explanation of Boring Log'.

Scale 1 : 100

Page: 1 of 1

RECORD OF BOREHOLE No. PML -8

Project Number: **2305493**
 Project Client: **County of Simcoe, Social Housing**
 Project Name: **Social Housing Facility**
 Project Location: **20 Rose Street, Barrie**
 Drilling Location: **See Borehole Location Plan**
 Local Benchmark: _____



Drilling Method: **Mud Rotary Drilling** Drilling Machine: **Track Mount**
 Logged By: **BH** Northing: **4917251** Date Started: _____
 Reviewed By: **AW** Easting: **603837** Date Completed: _____

LITHOLOGY PROFILE		SOIL SAMPLING				DEPTH (m)	ELEVATION (m)	FIELD TESTING		LAB TESTING				Instrumentation Installation	COMMENTS & GRAIN SIZE DISTRIBUTION (%)			
Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT "N" Value			Shear Strength Testing (kPa)		Atterberg Limits					GR	SA	SI	CL
								×	Other Test	△	Combustible Organic Vapour (ppm)							
								+	Pocket Penetrometer	▲	Combustible Organic Vapour (%LEL)							
								▲	Field Vane (Intact)	◇	Total Organic Vapour (ppm)							
								△	Field Vane (Remolded)									
									40 80 120 160									
									Penetration Testing									
									○ SPT ● DCPT									
									10 20 30 40									
									</									

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Groundwater depth encountered on completion of drilling:

Groundwater depth observed on:

Groundwater Elevation:

Borehole details presented do not constitute a thorough understanding of all potential conditions present and require interpretative assistance from a qualified geotechnical engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commissioned and the accompanying 'Explanation of Boring Log'.

Scale: 1 : 100

Page: 1 of 1

RECORD OF BOREHOLE No. PML -9

Project Number: **2305493**
 Project Client: **County of Simcoe, Social Housing**
 Project Name: **Social Housing Facility**
 Project Location: **20 Rose Street, Barrie**
 Drilling Location: **See Borehole Location Plan**
 Local Benchmark: _____



Drilling Method: **Mud Rotary Drilling** Drilling Machine: **Track Mount**
 Logged By: **BH** Northing: **4917221** Date Started: _____
 Reviewed By: **AW** Easting: **603911** Date Completed: _____

LITHOLOGY PROFILE		SOIL SAMPLING				DEPTH (m)	ELEVATION (m)	FIELD TESTING		LAB TESTING				Instrumentation Installation	COMMENTS & GRAIN SIZE DISTRIBUTION (%)			
Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT "N" Value			Shear Strength Testing (kPa)		Atterberg Limits					GR	SA	SI	CL
								✕ Other Test + Pocket Penetrometer ▲ Field Vane (Intact) △ Field Vane (Remolded)	△ Combustible Organic Vapour (ppm) ▲ Combustible Organic Vapour (%LEL) ◇ Total Organic Vapour (ppm)									
	0.0 270.2							40 80 120 160		PL 10 20 30 40 LL								
	0.5 269.7					0	270											
	2.1 268.1					2	268											
	2.9 267.3																	
						4	266											
						6	264											
						8	262											
						10	260											
						12	258											
	12.8 257.4																	
	Borehole Terminated at 12.8 m																	

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Groundwater depth encountered on completion of drilling: _____

Groundwater depth observed on: _____

Groundwater Elevation: _____

Borehole details presented do not constitute a thorough understanding of all potential conditions present and require interpretative assistance from a qualified geotechnical engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commissioned and the accompanying 'Explanation of Boring Log'.

Scale **1 :100**

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RECORD OF BOREHOLE No. PML -10



Project Number: **2305493**
 Project Client: **County of Simcoe, Social Housing**
 Project Name: **Social Housing Facility**
 Project Location: **20 Rose Street, Barrie**
 Drilling Location: **See Borehole Location Plan**
 Local Benchmark: _____

Drilling Method: **Mud Rotary Drilling** Drilling Machine: **Track Mount**
 Logged By: **BH** Northing: **4917267** Date Started: _____
 Reviewed By: **AW** Easting: **603855** Date Completed: _____

LITHOLOGY PROFILE		SOIL SAMPLING				DEPTH (m)	ELEVATION (m)	FIELD TESTING		LAB TESTING				Instrumentation Installation	COMMENTS & GRAIN SIZE DISTRIBUTION (%)			
Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT "N" Value			Shear Strength Testing (kPa)		Atterberg Limits					GR	SA	SI	CL
								✕ Other Test + Pocket Penetrometer ▲ Field Vane (Intact) △ Field Vane (Remolded)	△ Combustible Organic Vapour (ppm) ▲ Combustible Organic Vapour (%LEL) ◇ Total Organic Vapour (ppm)									
								40 80 120 160	100 200 300 400									
								Penetration Testing										
								○ SPT ● DCPT										
								10 20 30 40										

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Groundwater depth encountered on completion of drilling:

Groundwater depth observed on:

Groundwater Elevation:

Borehole details presented do not constitute a thorough understanding of all potential conditions present and require interpretative assistance from a qualified geotechnical engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commissioned and the accompanying 'Explanation of Boring Log'.

Scale: 1 : 100

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RECORD OF BOREHOLE No. PML -12



Project Number: **2305493**
 Project Client: **County of Simcoe, Social Housing**
 Project Name: **Social Housing Facility**
 Project Location: **20 Rose Street, Barrie**
 Drilling Location: **See Borehole Location Plan**
 Local Benchmark: _____

Drilling Method: **Mud Rotary Drilling** Drilling Machine: **Track Mount**
 Logged By: **BH** Northing: **4917268** Date Started: _____
 Reviewed By: **AW** Easting: **603873** Date Completed: _____

LITHOLOGY PROFILE		SOIL SAMPLING				DEPTH (m)	ELEVATION (m)	FIELD TESTING		LAB TESTING				Instrumentation Installation	COMMENTS & GRAIN SIZE DISTRIBUTION (%)				
Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT "N" Value			Shear Strength Testing (kPa)		Atterberg Limits					GR	SA	SI	CL	
						×	+	▲	△	△	▲	◇	PL	LL					
								○	●										
																	</		

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Groundwater depth encountered on completion of drilling:

Groundwater depth observed on:

Groundwater Elevation:

Borehole details presented do not constitute a thorough understanding of all potential conditions present and require interpretative assistance from a qualified geotechnical engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commissioned and the accompanying 'Explanation of Boring Log'.

Scale: 1 : 100

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RECORD OF BOREHOLE No. PML -14



Project Number: **2305493**
 Project Client: **County of Simcoe, Social Housing**
 Project Name: **Social Housing Facility**
 Project Location: **20 Rose Street, Barrie**
 Drilling Location: **See Borehole Location Plan**
 Local Benchmark: _____

Drilling Method: **Mud Rotary Drilling** Drilling Machine: **Track Mount**
 Logged By: **BH** Northing: **4917265** Date Started: _____
 Reviewed By: **AW** Easting: **603896** Date Completed: _____

LITHOLOGY PROFILE		SOIL SAMPLING				DEPTH (m)	ELEVATION (m)	FIELD TESTING		LAB TESTING		Instrumentation Installation	COMMENTS & GRAIN SIZE DISTRIBUTION (%)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT "N" Value			Shear Strength Testing (kPa)		Atterberg Limits			GR	SA	SI	CL																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
								✕ Other Test + Pocket Penetrometer ▲ Field Vane (Intact) △ Field Vane (Remolded) ○ SPT ● DCPT	△ Combustible Organic Vapour (ppm) ▲ Combustible Organic Vapour (%LEL) ◇ Total Organic Vapour (ppm) PL ○ Water Content (%) LL																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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Groundwater depth encountered on completion of drilling: _____

Groundwater depth observed on: _____

Groundwater Elevation: _____

Borehole details presented do not constitute a thorough understanding of all potential conditions present and require interpretative assistance from a qualified geotechnical engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commissioned and the accompanying 'Explanation of Boring Log'.

Scale: 1 : 100

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RECORD OF BOREHOLE No. PML -15

Project Number: 2305493

Project Client: **County of Simcoe, Social Housing**

Project Name: **Social Housing Facility**

Project Location: **20 Rose Street, Barrie**

Drilling Location: **See Borehole Location Plan**

Local Benchmark:

Drilling Method: **Mud Rotary Drilling** Drilling Machine: **Track Mount**

Logged By: **BH** Northing: **4917288** Date Started:

Reviewed By: **AW** Easting: **603879** Date Completed:

[illegible]

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 Groundwater depth encountered on completion of drilling:

 Groundwater depth observed on:

Groundwater Elevation:

Borehole details presented do not constitute a thorough understanding of all potential conditions present and require interpretative assistance from a qualified geotechnical engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commissioned and the accompanying 'Explanation of Boring Log'.

Scale 1 : 100

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RECORD OF BOREHOLE No. PML -18

Project Number: **2305493**
 Project Client: **County of Simcoe, Social Housing**
 Project Name: **Social Housing Facility**
 Project Location: **20 Rose Street, Barrie**
 Drilling Location: **See Borehole Location Plan**
 Local Benchmark: _____



Drilling Method: **Mud Rotary Drilling** Drilling Machine: **Track Mount**
 Logged By: **BH** Northing: **4917245** Date Started: _____
 Reviewed By: **AW** Easting: **603916** Date Completed: _____

LITHOLOGY PROFILE		SOIL SAMPLING				DEPTH (m)	ELEVATION (m)	FIELD TESTING		LAB TESTING				Instrumentation Installation	COMMENTS & GRAIN SIZE DISTRIBUTION (%)			
Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT "N" Value			Shear Strength Testing (kPa)		Atterberg Limits					GR	SA	SI	CL
								Penetration Testing		Water Content (%)								
								Other Test + Pocket Penetrometer ▲ Field Vane (Intact) △ Field Vane (Remolded)		Combustible Organic Vapour (ppm) Combustible Organic Vapour (%LEL) Total Organic Vapour (ppm)								
								40 80 120 160		100 200 300 400								
								○ SPT ● DCPT										
								10 20 30 40		10 20 30 40								

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Groundwater depth encountered on completion of drilling: _____
 Groundwater depth observed on: _____ Groundwater Elevation: _____

Borehole details presented do not constitute a thorough understanding of all potential conditions present and require interpretative assistance from a qualified geotechnical engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commissioned and the accompanying 'Explanation of Boring Log'.

Scale **1 :100**

Page: **1 of 1**

RECORD OF BOREHOLE No. PML -20



Project Number: **2305493**
 Project Client: **County of Simcoe, Social Housing**
 Project Name: **Social Housing Facility**
 Project Location: **20 Rose Street, Barrie**
 Drilling Location: **See Borehole Location Plan**
 Local Benchmark: _____

Drilling Method: **Mud Rotary Drilling** Drilling Machine: **Track Mount**
 Logged By: **BH** Northing: **4917304** Date Started: _____
 Reviewed By: **AW** Easting: **603887** Date Completed: _____

LITHOLOGY PROFILE		SOIL SAMPLING				DEPTH (m)	ELEVATION (m)	FIELD TESTING		LAB TESTING				Instrumentation Installation	COMMENTS & GRAIN SIZE DISTRIBUTION (%)			
Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT "N" Value			Shear Strength Testing (kPa)		Atterberg Limits					GR	SA	SI	CL
								✕ Other Test + Pocket Penetrometer ▲ Field Vane (Intact) △ Field Vane (Remolded)	△ Combustible Organic Vapour (ppm) ▲ Combustible Organic Vapour (%LEL) ◇ Total Organic Vapour (ppm)									
								4080120160	100200300400									
								Penetration Testing	PL									
								○ SPT ● DCPT	○ Water Content (%)									
					</													

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Groundwater depth encountered on completion of drilling:

Groundwater depth observed on:

Groundwater Elevation:

Borehole details presented do not constitute a thorough understanding of all potential conditions present and require interpretative assistance from a qualified geotechnical engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commissioned and the accompanying 'Explanation of Boring Log'.

Scale: 1:100

Page: 1 of 1

RECORD OF BOREHOLE No. PML -21

Project Number: 2305493

Project Client: **County of Simcoe, Social Housing**

Project Name: **Social Housing Facility**

Project Location: **20 Rose Street, Barrie**

Drilling Location: **See Borehole Location Plan**

Local Benchmark: _____

Drilling Method: **Mud Rotary Drilling** Drilling Machine: **Track Mount**

Logged By: BH Northing: 4917267 Date Started: _____

Reviewed By: **AW** Easting: **603927** Date Completed:



LITHOLOGY PROFILE		SOIL SAMPLING				DEPTH (m) ELEVATION (m)		FIELD TESTING		LAB TESTING		Instrumentation Installation	COMMENTS & GRAIN SIZE DISTRIBUTION (%)			
Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT "N" Value			Shear Strength Testing (kPa)		Atterberg Limits						
						× Other Test + Pocket Penetrometer ▲ Field Vane (Intact) ▲ Field Vane (Remolded) 40 80 120 160	Penetration Testing ○ SPT ● DCPT 10 20 30 40	△ Combustible Organic Vapour (ppm) ▲ Combustible Organic Vapour (%LEL) ◇ Total Organic Vapour (ppm) 100 200 300 400	PL ————— LL ○ Water Content (%) 10 20 30 40	GR	SA	SI	CL			
	0.0 269.8															
	0.5 269.4															
	2.1 267.7															
	4.3 265.5															
Borehole Terminated at 4.3 m																

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 Groundwater depth encountered on completion of drilling:

 Groundwater depth observed on:

Groundwater Elevation:

Borehole details presented do not constitute a thorough understanding of all potential conditions present and require interpretative assistance from a qualified geotechnical engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commissioned and the accompanying 'Explanation of Boring Log'.

Scale 1 : 100

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RECORD OF BOREHOLE No. PML -24



Project Number: **2305493**
 Project Client: **County of Simcoe, Social Housing**
 Project Name: **Social Housing Facility**
 Project Location: **20 Rose Street, Barrie**
 Drilling Location: **See Borehole Location Plan**
 Local Benchmark: _____

Drilling Method: **Mud Rotary Drilling** Drilling Machine: **Track Mount**
 Logged By: **BH** Northing: **4917295** Date Started: _____
 Reviewed By: **AW** Easting: **603923** Date Completed: _____

LITHOLOGY PROFILE		SOIL SAMPLING				DEPTH (m)	ELEVATION (m)	FIELD TESTING		LAB TESTING				Instrumentation Installation	COMMENTS & GRAIN SIZE DISTRIBUTION (%)				
Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT "N" Value			Shear Strength Testing (kPa)		Atterberg Limits					GR	SA	SI	CL	
						×	+	▲	△	△	▲	◇	○	●					PL
								40	80	120	160	100	200	300	400				
								10	20	30	40	10	20	30	40				

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Groundwater depth encountered on completion of drilling:

Groundwater depth observed on:

Groundwater Elevation:

Borehole details presented do not constitute a thorough understanding of all potential conditions present and require interpretative assistance from a qualified geotechnical engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commissioned and the accompanying 'Explanation of Boring Log'.

Scale: 1 : 100

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RECORD OF BOREHOLE No. PML -25



Project Number: **2305493**
 Project Client: **County of Simcoe, Social Housing**
 Project Name: **Social Housing Facility**
 Project Location: **20 Rose Street, Barrie**
 Drilling Location: **See Borehole Location Plan**
 Local Benchmark: _____

Drilling Method: **Mud Rotary Drilling** Drilling Machine: **Track Mount**
 Logged By: **BH** Northing: **4917323** Date Started: _____
 Reviewed By: **AW** Easting: **603904** Date Completed: _____

LITHOLOGY PROFILE		SOIL SAMPLING				DEPTH (m)	ELEVATION (m)	FIELD TESTING		LAB TESTING				Instrumentation Installation	COMMENTS & GRAIN SIZE DISTRIBUTION (%)			
Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT "N" Value			Shear Strength Testing (kPa)		Atterberg Limits					GR	SA	SI	CL
								✕ Other Test + Pocket Penetrometer ▲ Field Vane (Intact) △ Field Vane (Remolded)	△ Combustible Organic Vapour (ppm) ▲ Combustible Organic Vapour (%LEL) ◇ Total Organic Vapour (ppm)									
0.0	270.1					0	270	40 80 120 160		PL								
0.5	269.7							Penetration Testing										
								○ SPT ● DCPT										
2.1	268.0					2	268											
						4	266											
6.5	263.7					6	264											
	Borehole Terminated at 6.5 m																	

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Groundwater depth encountered on completion of drilling: _____

Groundwater depth observed on: _____

Groundwater Elevation: _____

Borehole details presented do not constitute a thorough understanding of all potential conditions present and require interpretative assistance from a qualified geotechnical engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commissioned and the accompanying 'Explanation of Boring Log'.

Scale: **1 :100**

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RECORD OF BOREHOLE No. PML -27



Project Number: **2305493**
 Project Client: **County of Simcoe, Social Housing**
 Project Name: **Social Housing Facility**
 Project Location: **20 Rose Street, Barrie**
 Drilling Location: **See Borehole Location Plan**
 Local Benchmark: _____

Drilling Method: **Mud Rotary Drilling** Drilling Machine: **Track Mount**
 Logged By: **BH** Northing: **4917268** Date Started: _____
 Reviewed By: **AW** Easting: **603965** Date Completed: _____

LITHOLOGY PROFILE		SOIL SAMPLING				DEPTH (m) ELEVATION (m)		FIELD TESTING		LAB TESTING		Instrumentation Installation	COMMENTS & GRAIN SIZE DISTRIBUTION (%)				
Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT "N" Value			Shear Strength Testing (kPa)		Atterberg Limits			GR SA SI CL				
						×	+	▲	△	△	▲	◇	○	●	PL	LL	○

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Groundwater depth encountered on completion of drilling: _____
 Groundwater depth observed on: May 13/24 at depth of: 2.0 m. Groundwater Elevation: 266.1 m

Borehole details presented do not constitute a thorough understanding of all potential conditions present and require interpretative assistance from a qualified geotechnical engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commissioned and the accompanying 'Explanation of Boring Log'.

Scale: 1 : 100

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RECORD OF BOREHOLE No. PML -28

Project Number: **2305493**
 Project Client: **County of Simcoe, Social Housing**
 Project Name: **Social Housing Facility**
 Project Location: **20 Rose Street, Barrie**
 Drilling Location: **See Borehole Location Plan**
 Local Benchmark: _____

Drilling Method: **Mud Rotary Drilling** Drilling Machine: **Track Mount**
 Logged By: **BH** Northing: **4917292** Date Started: _____
 Reviewed By: **AW** Easting: **603947** Date Completed: _____



LITHOLOGY PROFILE		SOIL SAMPLING				DEPTH (m)	ELEVATION (m)	FIELD TESTING		LAB TESTING				Instrumentation Installation	COMMENTS & GRAIN SIZE DISTRIBUTION (%)			
Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT "N" Value			Shear Strength Testing (kPa)		Atterberg Limits					GR	SA	SI	CL
								✕ Other Test + Pocket Penetrometer ▲ Field Vane (Intact) △ Field Vane (Remolded)	△ Combustible Organic Vapour (ppm) ▲ Combustible Organic Vapour (%LEL) ◇ Total Organic Vapour (ppm)									
0.0	267.5					0		40 80 120 160	100 200 300 400	PL								
0.2	267.2							Penetration Testing										
1.4	266.1					2		○ SPT ● DCPT										
						4												
						6												
6.5	261.0																	
Borehole Terminated at 6.5 m																		

RECORD OF BOREHOLE No. PML -29



Project Number: **2305493**
 Project Client: **County of Simcoe, Social Housing**
 Project Name: **Social Housing Facility**
 Project Location: **20 Rose Street, Barrie**
 Drilling Location: **See Borehole Location Plan**
 Local Benchmark: _____

Drilling Method: **Mud Rotary Drilling** Drilling Machine: **Track Mount**
 Logged By: **BH** Northing: **4917306** Date Started: _____
 Reviewed By: **AW** Easting: **603937** Date Completed: _____

LITHOLOGY PROFILE		SOIL SAMPLING				DEPTH (m)	ELEVATION (m)	FIELD TESTING		LAB TESTING				Instrumentation Installation	COMMENTS & GRAIN SIZE DISTRIBUTION (%)						
Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT "N" Value			Shear Strength Testing (kPa)		Atterberg Limits					GR	SA	SI	CL			
						Other Test	Pocket Penetrometer	Field Vane (Intact)	Field Vane (Remolded)	Combustible Organic Vapour (ppm)	Combustible Organic Vapour (%LEL)	Total Organic Vapour (ppm)	Water Content (%)								
								40	80	120	160	PL	10	20	30	40	LL				
	0.0 268.2					0	268														
	0.2 267.9																				
	2.1 266.1					2	266														
																		</			

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Groundwater depth encountered on completion of drilling:

Groundwater depth observed on:

Groundwater Elevation:

Borehole details presented do not constitute a thorough understanding of all potential conditions present and require interpretative assistance from a qualified geotechnical engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commissioned and the accompanying 'Explanation of Boring Log'.

Scale: 1 : 100

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RECORD OF BOREHOLE No. PML -30



Project Number: **2305493**
 Project Client: **County of Simcoe, Social Housing**
 Project Name: **Social Housing Facility**
 Project Location: **20 Rose Street, Barrie**
 Drilling Location: **See Borehole Location Plan**
 Local Benchmark: _____

Drilling Method: **Mud Rotary Drilling** Drilling Machine: **Track Mount**
 Logged By: **BH** Northing: **4917331** Date Started: _____
 Reviewed By: **AW** Easting: **603918** Date Completed: _____

LITHOLOGY PROFILE		SOIL SAMPLING				DEPTH (m)	ELEVATION (m)	FIELD TESTING		LAB TESTING				Instrumentation Installation	COMMENTS & GRAIN SIZE DISTRIBUTION (%)			
Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT "N" Value			Shear Strength Testing (kPa)		Atterberg Limits					GR	SA	SI	CL
								✕ Other Test + Pocket Penetrometer ▲ Field Vane (Intact) △ Field Vane (Remolded)	△ Combustible Organic Vapour (ppm) ▲ Combustible Organic Vapour (%LEL) ◇ Total Organic Vapour (ppm)									
								40 80 120 160	100 200 300 400									
								Penetration Testing		PL								
								○ SPT ● DCPT		○ Water Content (%)								
								10 20 30 40		10 20 30 40								
	PAVEMENT					0	269.9											
	FILL					0.4	269.5											
	SILTY SAND GLACIAL TILL					1.4	268.5											
						2	268											
						4	266											
						6	264											
	Borehole Terminated at 6.5 m					6.5	263.4											

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Groundwater depth encountered on completion of drilling: _____

Groundwater depth observed on: _____

Groundwater Elevation: _____

Borehole details presented do not constitute a thorough understanding of all potential conditions present and require interpretative assistance from a qualified geotechnical engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commissioned and the accompanying 'Explanation of Boring Log'.

Scale: 1 : 100

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RECORD OF BOREHOLE No. 201



Project Number: **2305493**
 Project Client: **County of Simcoe, Social Housing**
 Project Name: **Social Housing Facility**
 Project Location: **20 Rose Street, Barrie**
 Drilling Location: **See Borehole Location Plan**
 Local Benchmark: _____

Drilling Method: **Mud Rotary Drilling** Drilling Machine: **Track Mount**
 Logged By: **BH** Northing: **4917326** Date Started: **Apr 24-25/24**
 Reviewed By: **AW** Easting: **603904** Date Completed: **Apr 24-25/24**

LITHOLOGY PROFILE		SOIL SAMPLING				DEPTH (m)	ELEVATION (m)	FIELD TESTING		LAB TESTING		Instrumentation Installation	COMMENTS & GRAIN SIZE DISTRIBUTION (%)				
Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT "N" Value			Shear Strength Testing (kPa)		Atterberg Limits			GR	SA	SI	CL	
								×	△ Combustible Organic Vapour (ppm) ▲ Combustible Organic Vapour (%LEL) ◇ Total Organic Vapour (ppm)								
								40 80 120 160	100 200 300 400								
								Penetration Testing									
								○ SPT ● DCPT									
								10 20 30 40									

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Groundwater depth encountered on completion of drilling: Dry Cave depth after auger removal: Open
 Groundwater depth observed on: Groundwater Elevation:

Borehole details presented do not constitute a thorough understanding of all potential conditions present and require interpretative assistance from a qualified geotechnical engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commissioned and the accompanying 'Explanation of Boring Log'.

Scale: 1 : 100

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RECORD OF BOREHOLE No. 202



Project Number: **2305493**
 Project Client: **County of Simcoe, Social Housing**
 Project Name: **Social Housing Facility**
 Project Location: **20 Rose Street, Barrie**
 Drilling Location: **See Borehole Location Plan**
 Local Benchmark: _____

Drilling Method: **Mud Rotary Drilling** Drilling Machine: **Track Mount**
 Logged By: **BH** Northing: **4917292** Date Started: **Apr 24-25/24**
 Reviewed By: **AW** Easting: **603872** Date Completed: **Apr 24-25/24**

LITHOLOGY PROFILE		SOIL SAMPLING				DEPTH (m)	ELEVATION (m)	FIELD TESTING		LAB TESTING		Instrumentation Installation	COMMENTS & GRAIN SIZE DISTRIBUTION (%)				
Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT "N" Value			Shear Strength Testing (kPa)		Atterberg Limits			GR	SA	SI	CL	
								✕ Other Test + Pocket Penetrometer ▲ Field Vane (Intact) △ Field Vane (Remolded)	△ Combustible Organic Vapour (ppm) ▲ Combustible Organic Vapour (%LEL) ◇ Total Organic Vapour (ppm)								
								40 80 120 160	100 200 300 400								
								Penetration Testing									
								○ SPT ● DCPT									
								10 20 30 40									

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Groundwater depth encountered on completion of drilling: Dry
 Groundwater depth observed on: _____
 Cave depth after auger removal: Open
 Groundwater Elevation: _____

Borehole details presented do not constitute a thorough understanding of all potential conditions present and require interpretative assistance from a qualified geotechnical engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commissioned and the accompanying 'Explanation of Boring Log'.

Scale: 1 : 100

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RECORD OF BOREHOLE No. 203



Project Number: **2305493**
 Project Client: **County of Simcoe, Social Housing**
 Project Name: **Social Housing Facility**
 Project Location: **20 Rose Street, Barrie**
 Drilling Location: **See Borehole Location Plan**
 Local Benchmark: _____

Drilling Method: **Mud Rotary Drilling** Drilling Machine: **Track Mount**
 Logged By: **BH** Northing: **4917256** Date Started: **Apr 24-25/24**
 Reviewed By: **AW** Easting: **603915** Date Completed: **Apr 24-25/24**

LITHOLOGY PROFILE		SOIL SAMPLING				DEPTH (m)	ELEVATION (m)	FIELD TESTING		LAB TESTING		Instrumentation Installation	COMMENTS & GRAIN SIZE DISTRIBUTION (%)			
Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT "N" Value			Shear Strength Testing (kPa)		Atterberg Limits			GR	SA	SI	CL
	0.0 - 270.4 LIMESTONE GRANULAR: 150 mm	AS	1			0	270	×	Other Test	△	Combustible Organic Vapour (ppm)					
	0.4 - 270.3 FILL: Sand, some gravel, trace silt brown, moist	AS	2					+	Pocket Penetrometer	▲	Combustible Organic Vapour (%LEL)					
	0.6 - 269.8 SILTY SAND: Trace gravel, brown, moist							▲	Field Vane (Intact)	△	Total Organic Vapour (ppm)					
	1.2 Borehole Terminated at 1.2 m							△	Field Vane (Remolded)							
									Penetration Testing		Water Content (%)					
									○ SPT ● DCPT							

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Groundwater depth encountered on completion of drilling: Dry
 Groundwater depth observed on: _____
 Cave depth after auger removal: Open
 Groundwater Elevation: _____

Borehole details presented do not constitute a thorough understanding of all potential conditions present and require interpretative assistance from a qualified geotechnical engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commissioned and the accompanying 'Explanation of Boring Log'.

Scale: 1:100

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RECORD OF BOREHOLE No. 204



Project Number: **2305493**
 Project Client: **County of Simcoe, Social Housing**
 Project Name: **Social Housing Facility**
 Project Location: **20 Rose Street, Barrie**
 Drilling Location: **See Borehole Location Plan**
 Local Benchmark: _____

Drilling Method: **Mud Rotary Drilling** Drilling Machine: **Track Mount**
 Logged By: **BH** Northing: **4917265** Date Started: **Apr 24-25/24**
 Reviewed By: **AW** Easting: **603852** Date Completed: **Apr 24-25/24**

LITHOLOGY PROFILE		SOIL SAMPLING				DEPTH (m)	ELEVATION (m)	FIELD TESTING		LAB TESTING				Instrumentation Installation	COMMENTS & GRAIN SIZE DISTRIBUTION (%)			
Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT "N" Value			Shear Strength Testing (kPa)		Atterberg Limits					GR	SA	SI	CL
								×	△ Combustible Organic Vapour (ppm) ▲ Combustible Organic Vapour (%LEL) ◇ Total Organic Vapour (ppm)									
0.0	271.5					0		40 80 120 160	100 200 300 400	PL								
0.6	270.9	SS	1	100	23			Penetration Testing		Water Content (%)								
								○ SPT ● DCPT										
1.2	270.3	SS	2	75	15			15 ○ 23		3 6 ○								
	Borehole Terminated at 1.2 m																	

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Groundwater depth encountered on completion of drilling: Dry Cave depth after auger removal: Open
 Groundwater depth observed on: Groundwater Elevation:

Borehole details presented do not constitute a thorough understanding of all potential conditions present and require interpretative assistance from a qualified geotechnical engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commissioned and the accompanying 'Explanation of Boring Log'.

Scale: 1 : 100

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RECORD OF BOREHOLE No. 205



Project Number: 2305493

Project Client: **County of Simcoe, Social Housing**

Project Name: Social Housing Facility

Project Location: **20 Rose Street, Barrie**

Drilling Location: **See Borehole Location Plan**

Local Benchmark: _____

Drilling Method: Mud Rotary Drilling Drilling Machine: Track Mount

Logged By: BH Northing: 4917220 Date Started: Apr 24-25/24

Reviewed By: **AW** Easting: **603912** Date Completed: **Apr 24-25/24**

[illegible]

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	Groundwater depth encountered on completion of drilling: Dry		Cave depth after auger removal: Open
	Groundwater depth observed on:		Groundwater Elevation:

Borehole details presented do not constitute a thorough understanding of all potential conditions present and require interpretative assistance from a qualified geotechnical engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commissioned and the accompanying 'Explanation of Boring Log'.

Scale 1 : 100

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RECORD OF BOREHOLE No. 206



Project Number: **2305493**
 Project Client: **County of Simcoe, Social Housing**
 Project Name: **Social Housing Facility**
 Project Location: **20 Rose Street, Barrie**
 Drilling Location: **See Borehole Location Plan**
 Local Benchmark: _____

Drilling Method: **Mud Rotary Drilling** Drilling Machine: **Track Mount**
 Logged By: **BH** Northing: **4917237** Date Started: **Apr 24-25/24**
 Reviewed By: **AW** Easting: **603879** Date Completed: **Apr 24-25/24**

LITHOLOGY PROFILE		SOIL SAMPLING				DEPTH (m)	ELEVATION (m)	FIELD TESTING		LAB TESTING				Instrumentation Installation	COMMENTS & GRAIN SIZE DISTRIBUTION (%)			
Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT "N" Value			Shear Strength Testing (kPa)		Atterberg Limits		Combustible Organic Vapour (ppm)			GR	SA	SI	CL
								Penetration Testing		Water Content (%)		Total Organic Vapour (ppm)						
								SPT DCPT		PL LL		100 200 300 400						
				</														

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Groundwater depth encountered on completion of drilling: Dry Cave depth after auger removal: Open
 Groundwater depth observed on: Groundwater Elevation:

Borehole details presented do not constitute a thorough understanding of all potential conditions present and require interpretative assistance from a qualified geotechnical engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commissioned and the accompanying 'Explanation of Boring Log'.

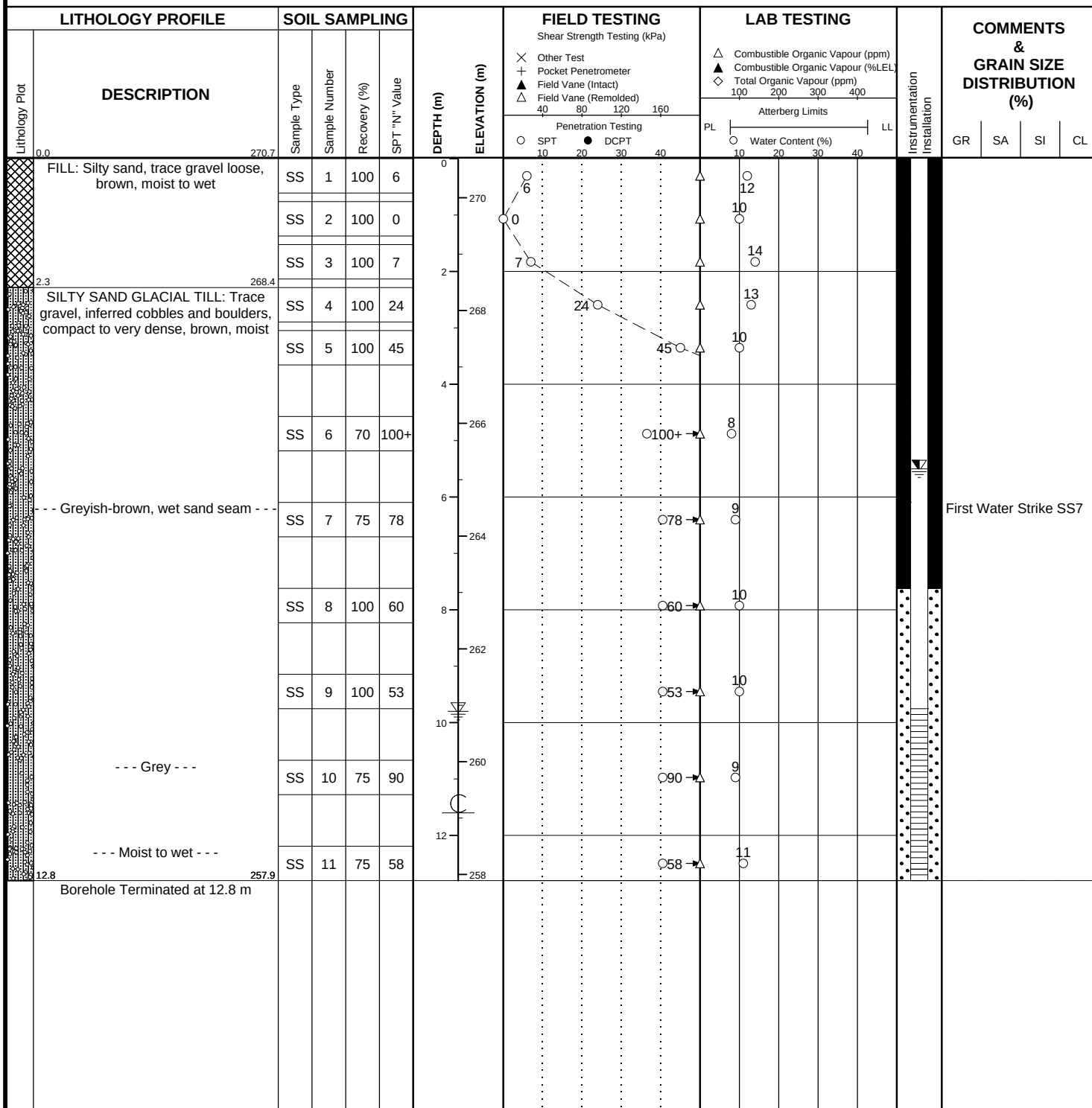
Scale: 1 : 100

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RECORD OF BOREHOLE No. 207

Project Number: **2305493**
 Project Client: **County of Simcoe, Social Housing**
 Project Name: **Social Housing Facility**
 Project Location: **20 Rose Street, Barrie**
 Drilling Location: **See Borehole Location Plan**
 Local Benchmark: _____

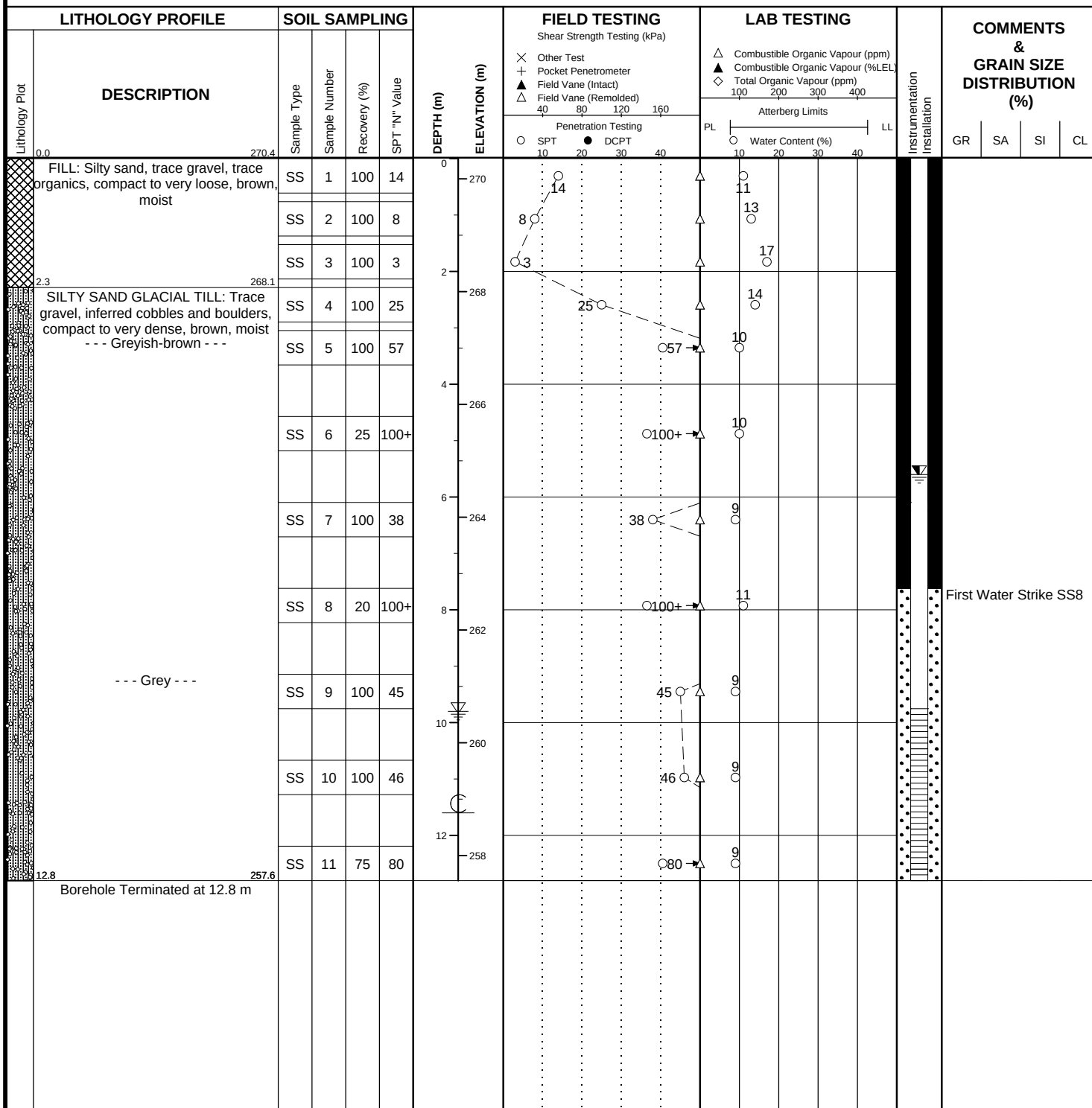
Drilling Method: **Mud Rotary Drilling** Drilling Machine: **Track Mount**
 Logged By: **BH** Northing: **4917239** Date Started: **Apr 24-25/24**
 Reviewed By: **AW** Easting: **603903** Date Completed: **Apr 24-25/24**



RECORD OF BOREHOLE No. 208

Project Number: **2305493**
 Project Client: **County of Simcoe, Social Housing**
 Project Name: **Social Housing Facility**
 Project Location: **20 Rose Street, Barrie**
 Drilling Location: **See Borehole Location Plan**
 Local Benchmark: _____

Drilling Method: **Mud Rotary Drilling** Drilling Machine: **Track Mount**
 Logged By: **BH** Northing: **4917237** Date Started: **Apr 24-25/24**
 Reviewed By: **AW** Easting: **603909** Date Completed: **Apr 24-25/24**



RECORD OF BOREHOLE No. 209



Project Number: **2305493**
 Project Client: **County of Simcoe, Social Housing**
 Project Name: **Social Housing Facility**
 Project Location: **20 Rose Street, Barrie**
 Drilling Location: **See Borehole Location Plan**
 Local Benchmark: _____

Drilling Method: **Mud Rotary Drilling** Drilling Machine: **Track Mount**
 Logged By: **BH** Northing: **4917231** Date Started: **Apr 24-25/24**
 Reviewed By: **AW** Easting: **603899** Date Completed: **Apr 24-25/24**

LITHOLOGY PROFILE		SOIL SAMPLING				DEPTH (m)	ELEVATION (m)	FIELD TESTING		LAB TESTING				Instrumentation Installation	COMMENTS & GRAIN SIZE DISTRIBUTION (%)			
Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT "N" Value			Shear Strength Testing (kPa)		Atterberg Limits					GR	SA	SI	CL
								Other Test Pocket Penetrometer Field Vane (Intact) Field Vane (Remolded)	Combustible Organic Vapour (ppm) Combustible Organic Vapour (%LEL) Total Organic Vapour (ppm)									
								Penetration Testing										
								SPT DCPT										

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Groundwater depth encountered on completion of drilling: Dry Cave depth after auger removal: Open
 Groundwater depth observed on: Groundwater Elevation:

Borehole details presented do not constitute a thorough understanding of all potential conditions present and require interpretative assistance from a qualified geotechnical engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commissioned and the accompanying 'Explanation of Boring Log'.

Scale: 1:100

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RECORD OF BOREHOLE No. 210



Project Number: **2305493**
 Project Client: **County of Simcoe, Social Housing**
 Project Name: **Social Housing Facility**
 Project Location: **20 Rose Street, Barrie**
 Drilling Location: **See Borehole Location Plan**
 Local Benchmark: _____

Drilling Method: **Mud Rotary Drilling** Drilling Machine: **Track Mount**
 Logged By: **BH** Northing: **4917221** Date Started: **Apr 24-25/24**
 Reviewed By: **AW** Easting: **603897** Date Completed: **Apr 24-25/24**

LITHOLOGY PROFILE		SOIL SAMPLING				DEPTH (m)	ELEVATION (m)	FIELD TESTING		LAB TESTING		Instrumentation Installation	COMMENTS & GRAIN SIZE DISTRIBUTION (%)				
Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT "N" Value			Shear Strength Testing (kPa)		Atterberg Limits			GR	SA	SI	CL	
								✕ Other Test + Pocket Penetrometer ▲ Field Vane (Intact) △ Field Vane (Remolded)	△ Combustible Organic Vapour (ppm) ▲ Combustible Organic Vapour (%LEL) ◇ Total Organic Vapour (ppm)								
								40 80 120 160	100 200 300 400								
								Penetration Testing									
								○ SPT ● DCPT									
								10 20 30 40									

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Groundwater depth encountered on completion of drilling: Dry
 Groundwater depth observed on: _____
 Cave depth after auger removal: Open
 Groundwater Elevation: _____

Borehole details presented do not constitute a thorough understanding of all potential conditions present and require interpretative assistance from a qualified geotechnical engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commissioned and the accompanying 'Explanation of Boring Log'.

Scale: 1:100

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RECORD OF BOREHOLE No. 211

Project Number: **2305493**
 Project Client: **County of Simcoe, Social Housing**
 Project Name: **Social Housing Facility**
 Project Location: **20 Rose Street, Barrie**
 Drilling Location: **See Borehole Location Plan**
 Local Benchmark: _____

Drilling Method: **Mud Rotary Drilling** Drilling Machine: **Track Mount**
 Logged By: **BH** Northing: **4917247** Date Started: **Apr 24-25/24**
 Reviewed By: **AW** Easting: **603864** Date Completed: **Apr 24-25/24**



LITHOLOGY PROFILE		SOIL SAMPLING				DEPTH (m)	ELEVATION (m)	FIELD TESTING		LAB TESTING				Instrumentation Installation	COMMENTS & GRAIN SIZE DISTRIBUTION (%)			
Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT "N" Value			Shear Strength Testing (kPa)		Atterberg Limits					GR	SA	SI	CL
								Other Test Pocket Penetrometer Field Vane (Intact) Field Vane (Remolded)	Combustible Organic Vapour (ppm) Combustible Organic Vapour (%LEL) Total Organic Vapour (ppm)									
								Penetration Testing SPT DCPT	Water Content (%)									

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Groundwater depth encountered on completion of drilling: Dry
 Cave depth after auger removal: Open
 Groundwater depth observed on: _____
 Groundwater Elevation: _____

Borehole details presented do not constitute a thorough understanding of all potential conditions present and require interpretative assistance from a qualified geotechnical engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commissioned and the accompanying 'Explanation of Boring Log'.

Scale: **1 :100**

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RECORD OF BOREHOLE No. 212



Project Number: **2305493**
 Project Client: **County of Simcoe, Social Housing**
 Project Name: **Social Housing Facility**
 Project Location: **20 Rose Street, Barrie**
 Drilling Location: **See Borehole Location Plan**
 Local Benchmark: _____

Drilling Method: **Mud Rotary Drilling** Drilling Machine: **Track Mount**
 Logged By: **BH** Northing: **4917230** Date Started: **Apr 24-25/24**
 Reviewed By: **AW** Easting: **603867** Date Completed: **Apr 24-25/24**

LITHOLOGY PROFILE		SOIL SAMPLING				DEPTH (m)	ELEVATION (m)	FIELD TESTING		LAB TESTING		Instrumentation Installation	COMMENTS & GRAIN SIZE DISTRIBUTION (%)				
Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT "N" Value			Shear Strength Testing (kPa)		Atterberg Limits			GR	SA	SI	CL	
								×	△ Combustible Organic Vapour (ppm) ▲ Combustible Organic Vapour (%LEL) ◇ Total Organic Vapour (ppm)								
								40 80 120 160	100 200 300 400								
								Penetration Testing									
								○ SPT ● DCPT									
								10 20 30 40									

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Groundwater depth encountered on completion of drilling: Dry Cave depth after auger removal: Open
 Groundwater depth observed on: Groundwater Elevation:

Borehole details presented do not constitute a thorough understanding of all potential conditions present and require interpretative assistance from a qualified geotechnical engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commissioned and the accompanying 'Explanation of Boring Log'.

Scale: **1 :100**

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RECORD OF BOREHOLE No. 213



Project Number: **2305493**
 Project Client: **County of Simcoe, Social Housing**
 Project Name: **Social Housing Facility**
 Project Location: **20 Rose Street, Barrie**
 Drilling Location: **See Borehole Location Plan**
 Local Benchmark: _____

Drilling Method: **Mud Rotary Drilling** Drilling Machine: **Track Mount**
 Logged By: **BH** Northing: **4917222** Date Started: **Apr 24-25/24**
 Reviewed By: **AW** Easting: **603878** Date Completed: **Apr 24-25/24**

LITHOLOGY PROFILE		SOIL SAMPLING				DEPTH (m)	ELEVATION (m)	FIELD TESTING		LAB TESTING				Instrumentation Installation	COMMENTS & GRAIN SIZE DISTRIBUTION (%)			
Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT "N" Value			Shear Strength Testing (kPa)		Atterberg Limits					GR	SA	SI	CL
								Other Test Pocket Penetrometer Field Vane (Intact) Field Vane (Remolded)		Combustible Organic Vapour (ppm) Combustible Organic Vapour (%LEL) Total Organic Vapour (ppm)								
								40 80 120 160		100 200 300 400								
								Penetration Testing										
								SPT DCPT										
								10 20 30 40		10 20 30 40								

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Groundwater depth encountered on completion of drilling: Dry Cave depth after auger removal: Open
 Groundwater depth observed on: Groundwater Elevation:

Borehole details presented do not constitute a thorough understanding of all potential conditions present and require interpretative assistance from a qualified geotechnical engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commissioned and the accompanying 'Explanation of Boring Log'.

Scale: 1 : 100

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RECORD OF BOREHOLE No. 214



Project Number: **2305493**
 Project Client: **County of Simcoe, Social Housing**
 Project Name: **Social Housing Facility**
 Project Location: **20 Rose Street, Barrie**
 Drilling Location: **See Borehole Location Plan**
 Local Benchmark: _____

Drilling Method: **Mud Rotary Drilling** Drilling Machine: **Track Mount**
 Logged By: **BH** Northing: **4917278** Date Started: **Apr 24-25/24**
 Reviewed By: **AW** Easting: **603897** Date Completed: **Apr 24-25/24**

LITHOLOGY PROFILE		SOIL SAMPLING				DEPTH (m)	ELEVATION (m)	FIELD TESTING		LAB TESTING		Instrumentation Installation	COMMENTS & GRAIN SIZE DISTRIBUTION (%)				
Lithology Plot	DESCRIPTION	Sample Type	Sample Number	Recovery (%)	SPT "N" Value			Shear Strength Testing (kPa)		Atterberg Limits			GR	SA	SI	CL	
								✕ Other Test + Pocket Penetrometer ▲ Field Vane (Intact) △ Field Vane (Remolded)	△ Combustible Organic Vapour (ppm) ▲ Combustible Organic Vapour (%LEL) ◇ Total Organic Vapour (ppm)								
0.0	270.5							40 80 120 160		PL 10 20 30 40 LL							
0.6	269.9	AS	1			0	270	○ SPT 10 20 30 40 ● DCPT		○ 9							
1.2	269.3	AS	2							○ 13							
Borehole Terminated at 1.2 m																	

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 Canada Ltd.
 www.geiconsultants.com

Groundwater depth encountered on completion of drilling: Dry
 Groundwater depth observed on: _____
 Cave depth after auger removal: Open
 Groundwater Elevation: _____

Borehole details presented do not constitute a thorough understanding of all potential conditions present and require interpretative assistance from a qualified geotechnical engineer. Also, borehole information should be read in conjunction with the geotechnical report for which it was commissioned and the accompanying 'Explanation of Boring Log'.

Scale: 1 : 100

Page: 1 of 1

Appendix E

Exposure Pathway Conceptual Site Models



Figure 20 - Ecological Conceptual On-Site Model

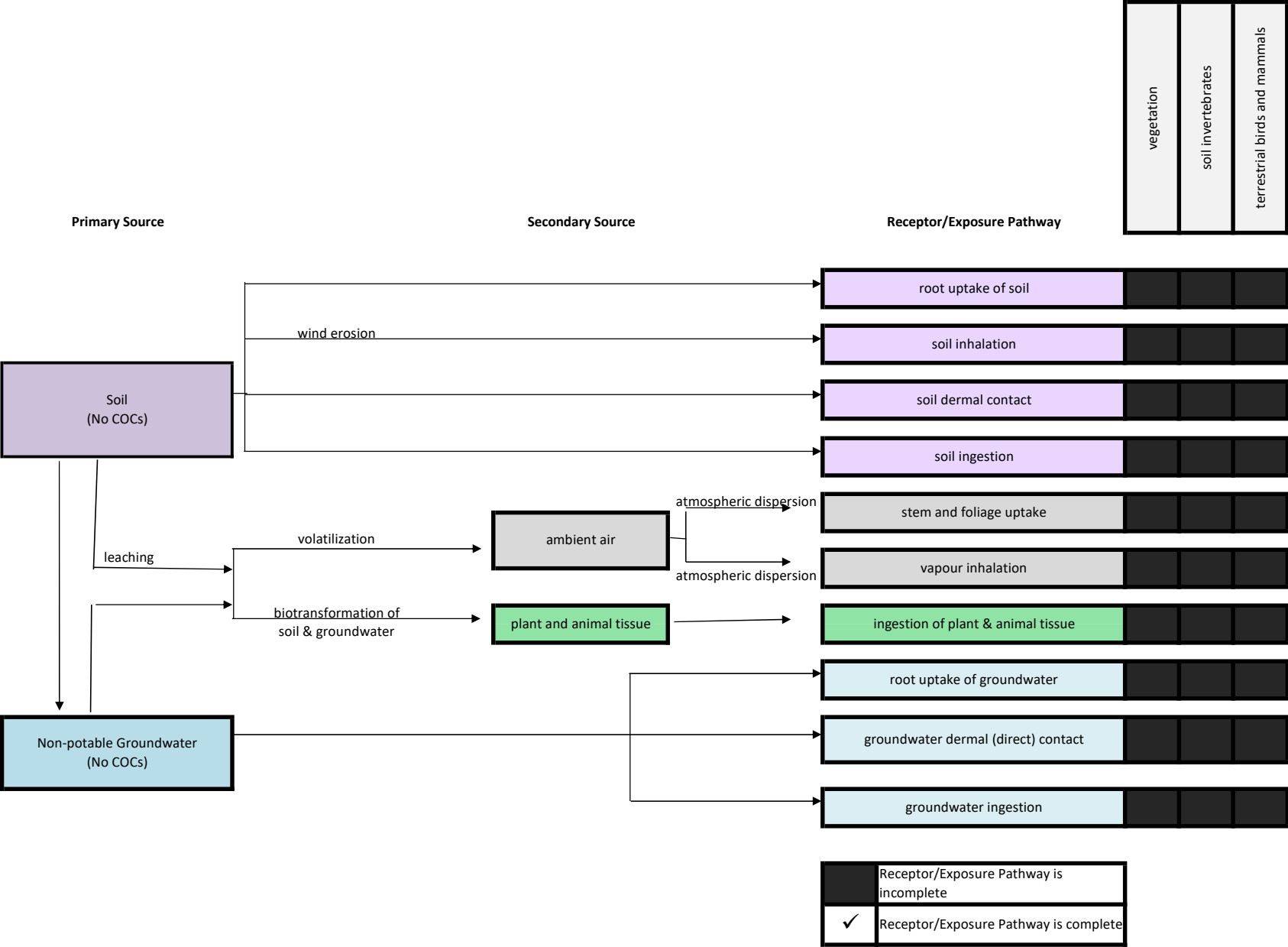
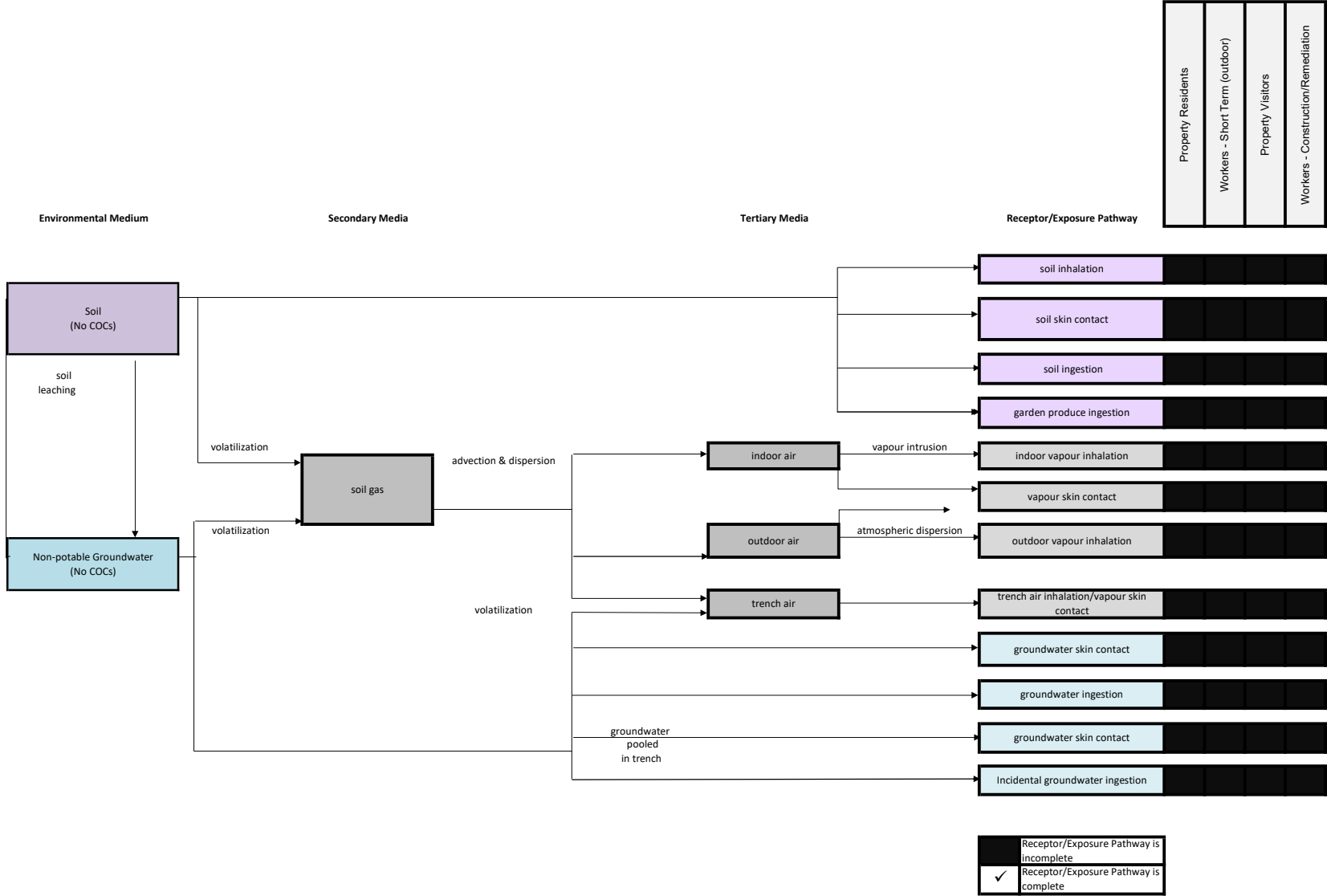


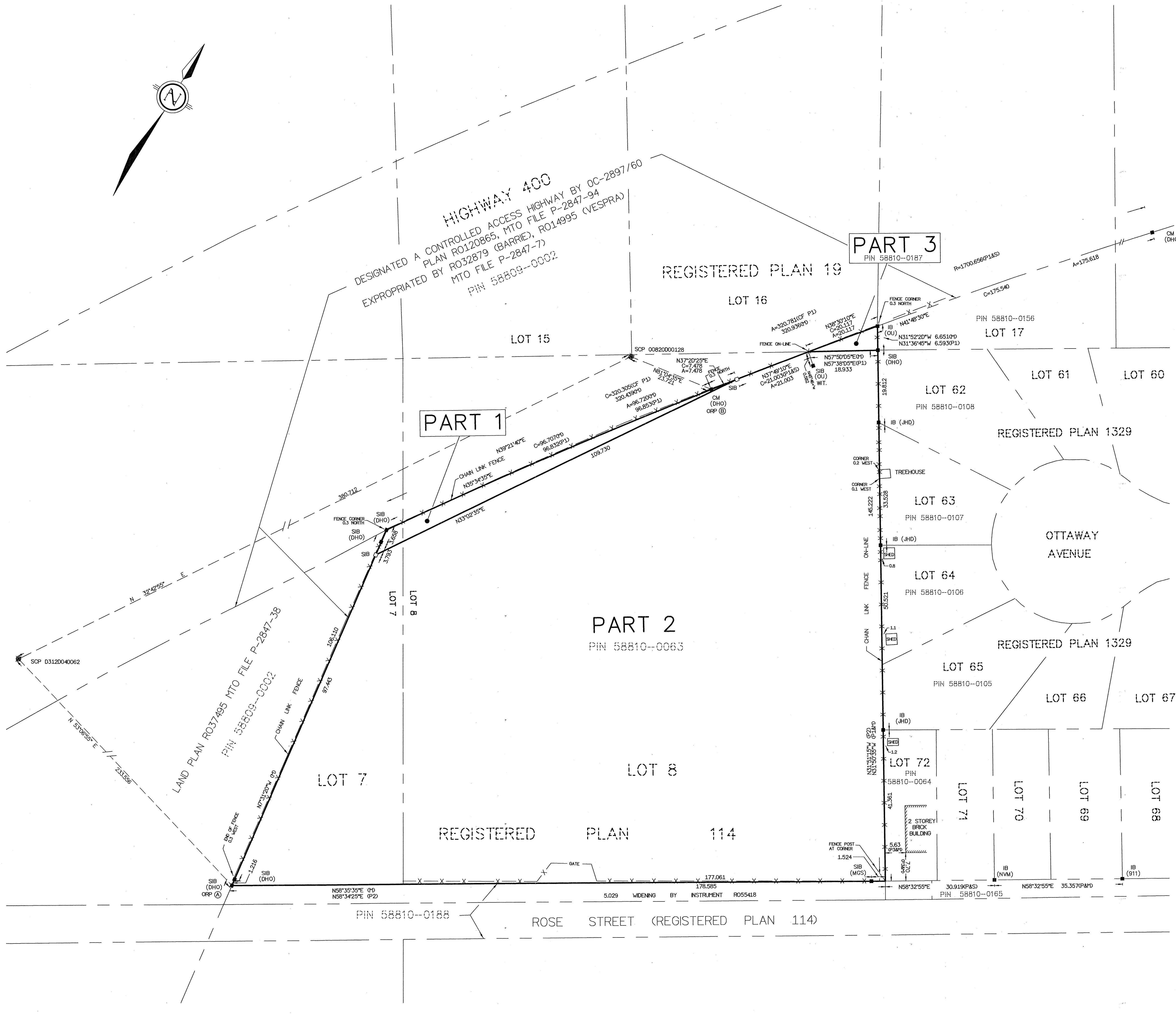
Figure 21 - Human Health Conceptual On-Site Model



Appendix F

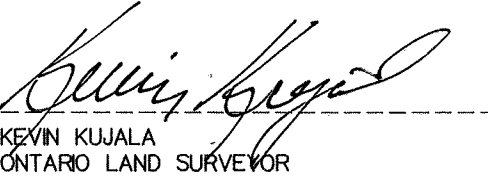
Survey Plan





1. REQUIRE THIS PLAN TO BE DEPOSITED UNDER THE LAND TITLES ACT AND THE REGISTRY ACT.

DATE Oct. 30/19


KEVIN KUJALA
ONTARIO LAND SURVEYOR

PLAN 51R-42272

RECEIVED AND DEPOSITED

DATE November 16, 2019


"D. Bossie"
REPRESENTATIVE FOR THE LAND REGISTRAR FOR THE LAND TITLES DIVISION AND REGISTRY DIVISION OF SIMCOE (No. 53)

SCHEDULE - LAND TITLES DIVISION		SCHEDULE - REGISTRY DIVISION		
PART	LOT	REGISTERED PLAN	PIN	AREA
1	PART OF LOTS 7 & 8	114	ALL OF 58810-0063	320.7m ²
2	PART OF LOT 16	19	ALL OF 58810-0187	63.5m ²

PLAN OF SURVEY OF
PART OF LOTS 7 AND 8,
REGISTERED PLAN 114
and PART OF LOT 16
REGISTERED PLAN 19
CITY OF BARRIE
COUNTY OF SIMCOE
SCALE 1:500

5m 0 5 25m

TULLOCH GEOMATICS INC., O.L.S.

BEARING NOTE:
BEARINGS ARE MTM GRID AND ARE DERIVED FROM SPECIFIED CONTROL POINTS 0082000128 AND 03120040062.

METRIC:
DISTANCES AND COORDINATES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048.
GROUND DISTANCES SHOWN HEREON CAN BE CONVERTED TO MTM GRID BY MULTIPLYING BY A COMBINED SCALE FACTOR OF 0.99986611.

CONVERGENCE NOTE:
A CONVERGENCE (ROTATION) FACTOR OF 0°09'25" CLOCKWISE HAS BEEN APPLIED TO THE ASTRONOMIC BEARINGS OF UNDERLYING PLAN P.
AND A CONVERGENCE (ROTATION) FACTOR OF 0°08'25" CLOCKWISE HAS BEEN APPLIED TO ASTRONOMIC BEARINGS OF UNDERLYING PLANS P1 & P2.

LEGEND:

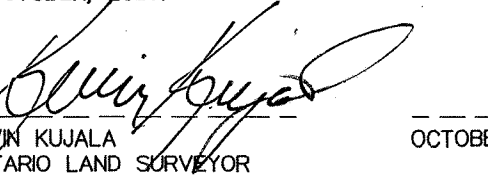
- DENOTES FOUND MONUMENT
- DENOTES PLANTED MONUMENT
- SB DENOTES STANDARD IRON BAR 0.025 x 0.025 x 1.22
- SSB DENOTES SHORT STANDARD IRON BAR 0.025 x 0.025 x 0.61
- IB DENOTES IRON BAR
- CM DENOTES CONCRETE MONUMENT
- OT1 DENOTES TULLOCH GEOMATICS INC., O.L.S.
- 1604 DENOTES REGISTERED PLAN 1329
- P1 DENOTES PLAN 32879 (MTO PLAN P-2847-0007)
- P2 DENOTES PLAN SHOWING ONTARIO PROVINCIAL POLICE DISTRICT HEADQUARTERS BY MINISTRY OF GOVERNMENT SERVICES, DATED OCTOBER 4th, 1988.
- P3 DENOTES PLAN SHOWING LOTS 70, 71 AND 72, REGISTERED PLAN 1329 BY JAMES H. DAYMOND, DATED JULY 4, 1961.
- P4 DENOTES REGISTERED PLAN 114
- DHO DENOTES DEPARTMENT OF HIGHWAYS, ONTARIO
- ORP DENOTES OBSERVED REFERENCE POINT
- OU DENOTES ORIGIN UNKNOWN
- 911 DENOTES JANE BRADBURY, OLS
- JHD DENOTES JAMES H. DAYMOND, OLS
- NVM DENOTES NO VISIBLE MARKINGS
- MGS DENOTES MINISTRY OF GOVERNMENT SERVICES
- CF DENOTES CALCULATED FROM

ALL COORDINATES ARE IN METRES, ARE RELATED TO MTM ZONE 10 (79°30'W LONGITUDE) NAD83 (ORIGINAL) AND HAVE A RELATIVE ACCURACY TO MEET THE REQUIREMENTS OF URBAN AREA AT A 95% CONFIDENCE LEVEL.			
ORP	NORTHING	EASTING	
A	4917823.497	289184841	
B	4918007.292	289227219	
SCP	NORTHING	EASTING	
0082000128	4918003.613	289203.788	
03120040062	4917883.336	288998.056	

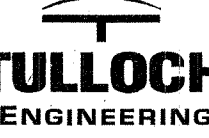
COORDINATES CANNOT, IN THEMSELVES, BE USED TO RE-ESTABLISH THE CORNERS OR BOUNDARIES SHOWN ON THIS PLAN.

SURVEYOR'S CERTIFICATE

I CERTIFY THAT:
(1) THIS SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE WITH THE SURVEYS ACT, THE SURVEYORS ACT, THE LAND TITLES ACT, THE REGISTRY ACT AND THE REGULATIONS MADE UNDER THEM;
(2) THE SURVEY WAS COMPLETED ON THE 18th DAY OF OCTOBER, 2019.


KEVIN KUJALA
ONTARIO LAND SURVEYOR

OCTOBER 30, 2019

 TULLOCH ENGINEERING	TULLOCH GEOMATICS INC. 80 MAIN ST. W. HUNTSVILLE, ON P1H 1W9 T. 705.789.7851 F. 705.789.7891 877.535.0588 huntsville@tulloch.ca
	DRAWN BY: APB FILE: 19-2703
HWY 400 INDEXED UNDER TOWNSHIP OF VESPREA	P-2847-0225

ACAD FILE: 2019\19-2703 0-BARRIE-OPF\NOSURVEY\192703.dwg

Appendix G

Laboratory Certificates of Analysis



Client: GEI Consultants Inc.
75 Tiverton Court, Unit 100
Markham, ON
L3R 4M8
Attention: Ms. Aamna Arora
Invoice to: GEI Consultants Inc.
PO#:

Report Number: 3007019
Date Submitted: 2024-04-29
Date Reported: 2024-05-06
Project: 2305493 (20 Rose Street)
COC #: 914408
Temperature (C): 9
Custody Seal:

Page 1 of 39

Dear Aamna Arora:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

Emma-Dawn Ferguson, Chemist

All analysis is completed at Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) unless otherwise stated

Eurofins Environment Testing Canada Inc. is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on the scope of accreditation. The scope is available at <https://directory.cala.ca/>

Please note: Field data, where presented on the report, has been provided by the client and is presented for informational purposes only. Guideline or regulatory limits listed on this report are provided for ease of use (informational purposes) only. Eurofins recommends consulting the official guideline or regulation as required. Unless otherwise stated, measurement uncertainty is not taken into account when determining guideline or regulatory exceedances.

Client: GEI Consultants Inc.
75 Tiverton Court, Unit 100
Markham, ON
L3R 4M8
Attention: Ms. Aamna Arora
PO#:
Invoice to: GEI Consultants Inc.

Report Number: 3007019
Date Submitted: 2024-04-29
Date Reported: 2024-05-06
Project: 2305493 (20 Rose Street)
COC #: 914408

O.Reg 153-T2-Res/Park-Coarse

Exceedence Summary

Sample I.D.	Analyte	Result	Units	Criteria
Inorganics				
202 SS1	Sodium Adsorption Ratio	13.0		STD 5
203 SS2	Sodium Adsorption Ratio	8.42		STD 5
205 SS2	Sodium Adsorption Ratio	14.1		STD 5
205D SS2	Sodium Adsorption Ratio	16.0		STD 5

Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Client: GEI Consultants Inc.
75 Tiverton Court, Unit 100
Markham, ON
L3R 4M8
Attention: Ms. Aamna Arora
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Report Number: 3007019
Date Submitted: 2024-04-29
Date Reported: 2024-05-06
Project: 2305493 (20 Rose Street)
COC #: 914408

Guideline = O.Reg 153-T2-Res/Park-Coarse

Hydrocarbons

Lab I.D.
Sample Matrix
Sample Type
Sample Date
Sampling Time
Sample I.D.

1725639
Soil153

2024-04-24

TP7

Analyte	Batch No	MRL	Units	Guideline	
PHC's F1	459341	10	ug/g	STD 55	<10
PHC's F1-BTEX	459352	10	ug/g		<10
PHC's F2	459362	2	ug/g	STD 98	3
PHC's F3	459362	20	ug/g	STD 300	40
PHC's F4	459362	20	ug/g	STD 2800	30

Hydrocarbons

Lab I.D.
Sample Matrix
Sample Type
Sample Date
Sampling Time
Sample I.D.

1725647
Soil153
2024-04-24
207 SS3
1725649
Soil153
2024-04-25
209 SS1
1725650
Soil153
2024-04-25
209D- SS1
1725651
Soil153
2024-04-25
210 SS1

Analyte	Batch No	MRL	Units	Guideline				
PHC's F1	459341	10	ug/g	STD 55	<10	<10	<10	<10
PHC's F1-BTEX	459352	10	ug/g		<10	<10	<10	<10
PHC's F2	459362	2	ug/g	STD 98				<2
	459367	2	ug/g	STD 98	<2	<2	<2	
PHC's F2-Naphth	459489	2	ug/g		<2			
PHC's F3	459362	20	ug/g	STD 300				<20
	459367	20	ug/g	STD 300	<20	<20	<20	
PHC's F3-PAH	459490	20	ug/g		<20			
PHC's F4	459362	20	ug/g	STD 2800				<20
	459367	20	ug/g	STD 2800	<20	<20	<20	

Results relate only to the parameters tested on the samples submitted.
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MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

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COC #: 914408

Guideline = O.Reg 153-T2-Res/Park-Coarse

Hydrocarbons

Analyte	Batch No	MRL	Units	Guideline	Lab I.D.	Sample Matrix
					Sample Date	Sample Type
PHC's F1	459341	10	ug/g	STD 55	1725653	Soil153
PHC's F1-BTEX	459352	10	ug/g		2024-04-25	2024-04-25
PHC's F2	459362	2	ug/g	STD 98	212 SS4	214 SS1
PHC's F2-Naph	459489	2	ug/g			
PHC's F3	459362	20	ug/g	STD 300		
PHC's F3-PAH	459490	20	ug/g			
PHC's F4	459362	20	ug/g	STD 2800		

Metals

Analyte	Batch No	MRL	Units	Guideline	Lab I.D.	Sample Matrix	Sample Date	Sample Type
					Sample Date	Sample Type	Sample Date	Sample Type
Antimony	459441	1	ug/g	STD 7.5	1725632	Soil153	2024-04-24	TP1
	459512	1	ug/g	STD 7.5	1725633	Soil153	2024-04-24	TP101
Arsenic	459441	1	ug/g	STD 18	1725634	Soil153	2024-04-24	TP2
	459512	1	ug/g	STD 18	1725635	Soil153	2024-04-24	TP3
Barium	459441	1	ug/g	STD 390	1725636	Soil153	2024-04-24	TP4
	459512	1	ug/g	STD 390				
Beryllium	459441	1	ug/g	STD 4				
	459512	1	ug/g	STD 4				
Boron (Hot Water Soluble)	459447	0.5	ug/g	STD 1.5				
Boron (total)	459441	5	ug/g	STD 120				
	459512	5	ug/g	STD 120				
Cadmium	459441	0.4	ug/g	STD 1.2				

Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational
Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim
Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial
Water Quality Guideline, IPWQO = Interim Provincial Water Quality
Objective, TDR = Typical Desired Range

Client: GEI Consultants Inc.
75 Tiverton Court, Unit 100
Markham, ON
L3R 4M8
Attention: Ms. Aamna Arora
PO#:
Invoice to: GEI Consultants Inc.

Report Number: 3007019
Date Submitted: 2024-04-29
Date Reported: 2024-05-06
Project: 2305493 (20 Rose Street)
COC #: 914408

Guideline = O.Reg 153-T2-Res/Park-Coarse

Metals

Lab I.D.
Sample Matrix
Sample Type
Sample Date
Sampling Time
Sample I.D.

					1725632 Soil153	1725633 Soil153	1725634 Soil153	1725635 Soil153	1725636 Soil153
					2024-04-24	2024-04-24	2024-04-24	2024-04-24	2024-04-24
					TP1	TP101	TP2	TP3	TP4
Analyte	Batch No	MRL	Units	Guideline					
Cadmium	459512	0.4	ug/g	STD 1.2			<0.4	<0.4	<0.4
Chromium Total	459441	1	ug/g	STD 160	19	14			
	459512	1	ug/g	STD 160			23	27	14
Chromium VI	459392	0.20	ug/g	STD 8		<0.20	<0.20	<0.20	<0.20
	459479	0.20	ug/g	STD 8	<0.20				
Cobalt	459441	1	ug/g	STD 22	4	4			
	459512	1	ug/g	STD 22			5	4	4
Copper	459441	1	ug/g	STD 140	13	11			
	459512	1	ug/g	STD 140			14	10	13
Lead	459441	1	ug/g	STD 120	56	48			
	459512	1	ug/g	STD 120			41	43	44
Mercury	459441	0.1	ug/g	STD 0.27	<0.1	<0.1			
	459512	0.1	ug/g	STD 0.27			<0.1	<0.1	<0.1
Molybdenum	459441	1	ug/g	STD 6.9	<1	<1			
	459512	1	ug/g	STD 6.9			<1	<1	<1
Nickel	459441	1	ug/g	STD 100	9	7			
	459512	1	ug/g	STD 100			11	12	7
Selenium	459441	0.5	ug/g	STD 2.4	0.7	0.6			
	459512	0.5	ug/g	STD 2.4			0.8	0.8	0.7
Silver	459441	0.2	ug/g	STD 20	<0.2	<0.2			
	459512	0.2	ug/g	STD 20			<0.2	<0.2	<0.2
Thallium	459441	1	ug/g	STD 1	<1	<1			
	459512	1	ug/g	STD 1			<1	<1	<1

Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

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75 Tiverton Court, Unit 100
Markham, ON
L3R 4M8
Attention: Ms. Aamna Arora
PO#:
Invoice to: GEI Consultants Inc.

Report Number: 3007019
Date Submitted: 2024-04-29
Date Reported: 2024-05-06
Project: 2305493 (20 Rose Street)
COC #: 914408

Guideline = O.Reg 153-T2-Res/Park-Coarse

Metals

					Lab I.D. Sample Matrix Sample Type Sample Date Sampling Time Sample I.D.	1725632 Soil153 2024-04-24 TP1	1725633 Soil153 2024-04-24 TP101	1725634 Soil153 2024-04-24 TP2	1725635 Soil153 2024-04-24 TP3	1725636 Soil153 2024-04-24 TP4
Analyte	Batch No	MRL	Units	Guideline						
Uranium	459441	0.5	ug/g	STD 23		<0.5	<0.5			
	459512	0.5	ug/g	STD 23				<0.5	<0.5	<0.5
Vanadium	459441	2	ug/g	STD 86		34	29			
	459512	2	ug/g	STD 86				35	40	30
Zinc	459441	2	ug/g	STD 340		44	39			
	459512	2	ug/g	STD 340				50	39	37

Metals

					Lab I.D. Sample Matrix Sample Type Sample Date Sampling Time Sample I.D.	1725637 Soil153 2024-04-24 TP5	1725638 Soil153 2024-04-24 TP6	1725640 Soil153 2024-04-25 201 SS2	1725641 Soil153 2024-04-25 204 SS2
Analyte	Batch No	MRL	Units	Guideline					
Antimony	459512	1	ug/g	STD 7.5		<1	<1	<1	<1
Arsenic	459512	1	ug/g	STD 18		7	10	2	<1
Barium	459512	1	ug/g	STD 390		61	58	66	22
Beryllium	459512	1	ug/g	STD 4		<1	<1	<1	<1
Boron (Hot Water Soluble)	459447	0.5	ug/g	STD 1.5		<0.5			
	459513	0.5	ug/g	STD 1.5			<0.5	<0.5	<0.5
Boron (total)	459512	5	ug/g	STD 120		<5	<5	<5	<5
Cadmium	459512	0.4	ug/g	STD 1.2		<0.4	<0.4	<0.4	<0.4
Chromium Total	459512	1	ug/g	STD 160		20	18	26	10
Chromium VI	459392	0.20	ug/g	STD 8		<0.20	<0.20	<0.20	0.28
Cobalt	459512	1	ug/g	STD 22		5	4	5	2
Copper	459512	1	ug/g	STD 140		12	11	11	3
Lead	459512	1	ug/g	STD 120		28	30	4	2

Results relate only to the parameters tested on the samples submitted.
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MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Client: GEI Consultants Inc.
75 Tiverton Court, Unit 100
Markham, ON
L3R 4M8
Attention: Ms. Aamna Arora
PO#:
Invoice to: GEI Consultants Inc.

Report Number: 3007019
Date Submitted: 2024-04-29
Date Reported: 2024-05-06
Project: 2305493 (20 Rose Street)
COC #: 914408

Guideline = O.Reg 153-T2-Res/Park-Coarse

Metals

					Lab I.D. Sample Matrix Sample Type Sample Date Sampling Time Sample I.D.	1725637 Soil153 2024-04-24 TP5	1725638 Soil153 2024-04-24 TP6	1725640 Soil153 2024-04-25 201 SS2	1725641 Soil153 2024-04-25 204 SS2
Analyte	Batch No	MRL	Units	Guideline					
Mercury	459512	0.1	ug/g	STD 0.27		<0.1	<0.1	<0.1	<0.1
Molybdenum	459512	1	ug/g	STD 6.9		<1	<1	<1	<1
Nickel	459512	1	ug/g	STD 100		8	8	14	5
Selenium	459512	0.5	ug/g	STD 2.4		0.7	0.7	0.9	<0.5
Silver	459512	0.2	ug/g	STD 20		<0.2	<0.2	<0.2	<0.2
Thallium	459512	1	ug/g	STD 1		<1	<1	<1	<1
Uranium	459512	0.5	ug/g	STD 23		0.5	0.5	0.5	<0.5
Vanadium	459512	2	ug/g	STD 86		35	31	39	22
Zinc	459512	2	ug/g	STD 340		38	36	24	9

Metals

					Lab I.D. Sample Matrix Sample Type Sample Date Sampling Time Sample I.D.	1725646 Soil153 2024-04-25 206 SS2
Analyte	Batch No	MRL	Units	Guideline		
Antimony	459512	1	ug/g	STD 7.5		<1
Arsenic	459512	1	ug/g	STD 18		1
Barium	459512	1	ug/g	STD 390		27
Beryllium	459512	1	ug/g	STD 4		<1
Boron (Hot Water Soluble)	459513	0.5	ug/g	STD 1.5		<0.5
Boron (total)	459512	5	ug/g	STD 120		<5
Cadmium	459512	0.4	ug/g	STD 1.2		<0.4
Chromium Total	459512	1	ug/g	STD 160		13
Chromium VI	459479	0.20	ug/g	STD 8		<0.20
Cobalt	459512	1	ug/g	STD 22		3

Results relate only to the parameters tested on the samples submitted.
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MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Client: GEI Consultants Inc.
75 Tiverton Court, Unit 100
Markham, ON
L3R 4M8
Attention: Ms. Aamna Arora
PO#:
Invoice to: GEI Consultants Inc.

Report Number: 3007019
Date Submitted: 2024-04-29
Date Reported: 2024-05-06
Project: 2305493 (20 Rose Street)
COC #: 914408

Guideline = O.Reg 153-T2-Res/Park-Coarse

Metals

Lab I.D.
Sample Matrix
Sample Type
Sample Date
Sampling Time
Sample I.D.

1725646
Soil153

2024-04-25

206 SS2

Analyte	Batch No	MRL	Units	Guideline	
Copper	459512	1	ug/g	STD 140	6
Lead	459512	1	ug/g	STD 120	3
Mercury	459512	0.1	ug/g	STD 0.27	<0.1
Molybdenum	459512	1	ug/g	STD 6.9	<1
Nickel	459512	1	ug/g	STD 100	5
Selenium	459512	0.5	ug/g	STD 2.4	<0.5
Silver	459512	0.2	ug/g	STD 20	<0.2
Thallium	459512	1	ug/g	STD 1	<1
Uranium	459512	0.5	ug/g	STD 23	<0.5
Vanadium	459512	2	ug/g	STD 86	36
Zinc	459512	2	ug/g	STD 340	15

Metals

Lab I.D.
Sample Matrix
Sample Type
Sample Date
Sampling Time
Sample I.D.

1725647
Soil153
2024-04-24
207 SS3
1725648
Soil153
2024-04-24
208 SS2
1725649
Soil153
2024-04-25
209 SS1
1725650
Soil153
2024-04-25
209D- SS1
1725651
Soil153
2024-04-25
210 SS1

Analyte	Batch No	MRL	Units	Guideline					
Antimony	459512	1	ug/g	STD 7.5	<1	<1	<1	<1	<1
Arsenic	459512	1	ug/g	STD 18	2	1	2	2	3
Barium	459512	1	ug/g	STD 390	69	51	53	61	68
Beryllium	459512	1	ug/g	STD 4	<1	<1	<1	<1	<1
Boron (Hot Water Soluble)	459513	0.5	ug/g	STD 1.5	<0.5	<0.5	<0.5	<0.5	
Boron (total)	459512	5	ug/g	STD 120	6	<5	<5	<5	6
Cadmium	459512	0.4	ug/g	STD 1.2	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium Total	459512	1	ug/g	STD 160	18	16	18	18	22

Results relate only to the parameters tested on the samples submitted.
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MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Client: GEI Consultants Inc.
75 Tiverton Court, Unit 100
Markham, ON
L3R 4M8
Attention: Ms. Aamna Arora
PO#:
Invoice to: GEI Consultants Inc.

Report Number: 3007019
Date Submitted: 2024-04-29
Date Reported: 2024-05-06
Project: 2305493 (20 Rose Street)
COC #: 914408

Guideline = O.Reg 153-T2-Res/Park-Coarse

Metals

					Lab I.D. Sample Matrix Sample Type Sample Date Sampling Time Sample I.D.	1725647 Soil153 2024-04-24 207 SS3	1725648 Soil153 2024-04-24 208 SS2	1725649 Soil153 2024-04-25 209 SS1	1725650 Soil153 2024-04-25 209D- SS1	1725651 Soil153 2024-04-25 210 SS1
Analyte	Batch No	MRL	Units	Guideline						
Chromium VI	459479	0.20	ug/g	STD 8		<0.20	<0.20	<0.20	<0.20	
Cobalt	459512	1	ug/g	STD 22		5	4	4	5	6
Copper	459512	1	ug/g	STD 140		15	8	9	11	11
Lead	459512	1	ug/g	STD 120		3	3	4	5	7
Mercury	459512	0.1	ug/g	STD 0.27		<0.1	<0.1	<0.1	<0.1	
Molybdenum	459512	1	ug/g	STD 6.9		<1	<1	<1	<1	<1
Nickel	459512	1	ug/g	STD 100		11	8	11	10	11
Selenium	459512	0.5	ug/g	STD 2.4		1.1	0.7	0.6	0.9	1.0
Silver	459512	0.2	ug/g	STD 20		<0.2	<0.2	<0.2	<0.2	<0.2
Thallium	459512	1	ug/g	STD 1		<1	<1	<1	<1	<1
Uranium	459512	0.5	ug/g	STD 23		<0.5	<0.5	0.5	<0.5	<0.5
Vanadium	459512	2	ug/g	STD 86		32	31	28	34	39
Zinc	459512	2	ug/g	STD 340		27	19	25	26	27

Metals

					Lab I.D. Sample Matrix Sample Type Sample Date Sampling Time Sample I.D.	1725652 Soil153 2024-04-25 211 SS2	1725653 Soil153 2024-04-25 212 SS4	1725654 Soil153 2024-04-25 213 SS3
Analyte	Batch No	MRL	Units	Guideline				
Antimony	459512	1	ug/g	STD 7.5		<1	<1	<1
Arsenic	459512	1	ug/g	STD 18		<1	<1	1
Barium	459512	1	ug/g	STD 390		10	12	34
Beryllium	459512	1	ug/g	STD 4		<1	<1	<1
Boron (Hot Water Soluble)	459513	0.5	ug/g	STD 1.5		<0.5	<0.5	<0.5
Boron (total)	459512	5	ug/g	STD 120		<5	<5	<5

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Client: GEI Consultants Inc.
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L3R 4M8
Attention: Ms. Aamna Arora
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Invoice to: GEI Consultants Inc.

Report Number: 3007019
Date Submitted: 2024-04-29
Date Reported: 2024-05-06
Project: 2305493 (20 Rose Street)
COC #: 914408

Guideline = O.Reg 153-T2-Res/Park-Coarse

Metals

Lab I.D.
Sample Matrix
Sample Type
Sample Date
Sampling Time
Sample I.D.

1725652 Soil153	1725653 Soil153	1725654 Soil153
2024-04-25	2024-04-25	2024-04-25
211 SS2	212 SS4	213 SS3

Analyte	Batch No	MRL	Units	Guideline			
Cadmium	459512	0.4	ug/g	STD 1.2	<0.4	<0.4	<0.4
Chromium Total	459512	1	ug/g	STD 160	6	6	14
Chromium VI	459479	0.20	ug/g	STD 8	<0.20	<0.20	<0.20
Cobalt	459512	1	ug/g	STD 22	2	2	3
Copper	459512	1	ug/g	STD 140	4	4	7
Lead	459512	1	ug/g	STD 120	1	2	2
Mercury	459512	0.1	ug/g	STD 0.27	<0.1	<0.1	<0.1
Molybdenum	459512	1	ug/g	STD 6.9	<1	<1	<1
Nickel	459512	1	ug/g	STD 100	3	3	6
Selenium	459512	0.5	ug/g	STD 2.4	<0.5	<0.5	<0.5
Silver	459512	0.2	ug/g	STD 20	<0.2	<0.2	<0.2
Thallium	459512	1	ug/g	STD 1	<1	<1	<1
Uranium	459512	0.5	ug/g	STD 23	<0.5	<0.5	<0.5
Vanadium	459512	2	ug/g	STD 86	18	15	29
Zinc	459512	2	ug/g	STD 340	6	7	18

Results relate only to the parameters tested on the samples submitted.
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MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

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Report Number: 3007019
Date Submitted: 2024-04-29
Date Reported: 2024-05-06
Project: 2305493 (20 Rose Street)
COC #: 914408

Guideline = O.Reg 153-T2-Res/Park-Coarse

OCP/PCB

Guideline = O.Reg 153-T2-Res/Park-Coarse					1725632 Soil153	1725633 Soil153	1725634 Soil153	1725635 Soil153	1725636 Soil153
<u>OCP/PCB</u>					2024-04-24	2024-04-24	2024-04-24	2024-04-24	2024-04-24
Analyte	Batch No	MRL	Units	Guideline	TP1	TP101	TP2	TP3	TP4
Aldrin	459407	0.002	ug/g	STD 0.05	<0.002	<0.002	<0.002	<0.002	<0.002
Chlordane	459407	0.006	ug/g	STD 0.05	<0.006	<0.006	<0.006	<0.006	<0.006
Chlordane, alpha-	459407	0.002	ug/g		<0.002	<0.002	<0.002	<0.002	<0.002
Chlordane, gamma-	459407	0.002	ug/g		<0.002	<0.002	<0.002	<0.002	<0.002
DDD	459407	0.002	ug/g	STD 3.3	<0.002	<0.002	<0.002	<0.002	<0.002
DDE	459407	0.002	ug/g	STD 0.26	<0.002	<0.002	<0.002	<0.002	<0.002
DDT	459407	0.002	ug/g	STD 1.4	<0.002	<0.002	<0.002	<0.002	<0.002
Dieldrin	459407	0.002	ug/g	STD 0.05	<0.002	<0.002	<0.002	<0.002	<0.002
Endosulfan	459407	0.004	ug/g	STD 0.04	<0.004	<0.004	<0.004	<0.004	<0.004
Endosulfan I	459407	0.002	ug/g		<0.002	<0.002	<0.002	<0.002	<0.002
Endosulfan II	459407	0.002	ug/g		<0.002	<0.002	<0.002	<0.002	<0.002
Endrin	459407	0.002	ug/g	STD 0.04	<0.002	<0.002	<0.002	<0.002	<0.002
Heptachlor	459407	0.002	ug/g	STD 0.15	<0.002	<0.002	<0.002	<0.002	<0.002
Heptachlor Epoxide	459407	0.002	ug/g	STD 0.05	<0.002	<0.002	<0.002	<0.002	<0.002
Hexachlorobenzene	459407	0.002	ug/g	STD 0.52	<0.002	<0.002	<0.002	<0.002	<0.002
Hexachlorobutadiene	459407	0.002	ug/g	STD 0.012	<0.002	<0.002	<0.002	<0.002	<0.002
Hexachlorocyclohexane Gamma-	459407	0.002	ug/g	STD 0.056	<0.002	<0.002	<0.002	<0.002	<0.002
Hexachloroethane	459407	0.002	ug/g	STD 0.089	<0.002	<0.002	<0.002	<0.002	<0.002
Methoxychlor	459407	0.002	ug/g	STD 0.13	<0.002	<0.002	<0.002	<0.002	<0.002

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L3R 4M8
Attention: Ms. Aamna Arora
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Invoice to: GEI Consultants Inc.

Report Number: 3007019
Date Submitted: 2024-04-29
Date Reported: 2024-05-06
Project: 2305493 (20 Rose Street)
COC #: 914408

Guideline = O.Reg 153-T2-Res/Park-Coarse

OCP/PCB

Lab I.D.
Sample Matrix
Sample Type
Sample Date
Sampling Time
Sample I.D.

1725637
Soil153

2024-04-24

TP5

1725638
Soil153

2024-04-24

TP6

Analyte	Batch No	MRL	Units	Guideline		
Aldrin	459407	0.002	ug/g	STD 0.05	<0.002	<0.002
Chlordane	459407	0.006	ug/g	STD 0.05	<0.006	<0.006
Chlordane, alpha-	459407	0.002	ug/g		<0.002	<0.002
Chlordane, gamma-	459407	0.002	ug/g		<0.002	<0.002
DDD	459407	0.002	ug/g	STD 3.3	<0.002	<0.002
DDE	459407	0.002	ug/g	STD 0.26	<0.002	<0.002
DDT	459407	0.002	ug/g	STD 1.4	<0.002	<0.002
Dieldrin	459407	0.002	ug/g	STD 0.05	<0.002	<0.002
Endosulfan	459407	0.004	ug/g	STD 0.04	<0.004	<0.004
Endosulfan I	459407	0.002	ug/g		<0.002	<0.002
Endosulfan II	459407	0.002	ug/g		<0.002	<0.002
Endrin	459407	0.002	ug/g	STD 0.04	<0.002	<0.002
Heptachlor	459407	0.002	ug/g	STD 0.15	<0.002	<0.002
Heptachlor Epoxide	459407	0.002	ug/g	STD 0.05	<0.002	<0.002
Hexachlorobenzene	459407	0.002	ug/g	STD 0.52	<0.002	<0.002
Hexachlorobutadiene	459407	0.002	ug/g	STD 0.012	<0.002	<0.002
Hexachlorocyclohexane Gamma-	459407	0.002	ug/g	STD 0.056	<0.002	<0.002
Hexachloroethane	459407	0.002	ug/g	STD 0.089	<0.002	<0.002
Methoxychlor	459407	0.002	ug/g	STD 0.13	<0.002	<0.002

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Markham, ON
L3R 4M8
Attention: Ms. Aamna Arora
PO#:
Invoice to: GEI Consultants Inc.

Report Number: 3007019
Date Submitted: 2024-04-29
Date Reported: 2024-05-06
Project: 2305493 (20 Rose Street)
COC #: 914408

Guideline = O.Reg 153-T2-Res/Park-Coarse

PAH

Lab I.D. 1725640
Sample Matrix Soil153
Sample Type
Sample Date 2024-04-25
Sampling Time
Sample I.D. 201 SS2

Analyte	Batch No	MRL	Units	Guideline	
1+2-methylnaphthalene	459380	0.05	ug/g	STD 0.99	<0.05
Acenaphthene	459245	0.05	ug/g	STD 7.9	<0.05
Acenaphthylene	459245	0.05	ug/g	STD 0.15	<0.05
Anthracene	459245	0.05	ug/g	STD 0.67	<0.05
Benz[a]anthracene	459245	0.05	ug/g	STD 0.5	<0.05
Benzo[a]pyrene	459245	0.05	ug/g	STD 0.3	<0.05
Benzo[b]fluoranthene	459245	0.05	ug/g	STD 0.78	<0.05
Benzo[ghi]perylene	459245	0.05	ug/g	STD 6.6	<0.05
Benzo[k]fluoranthene	459245	0.05	ug/g	STD 0.78	<0.05
Chrysene	459245	0.05	ug/g	STD 7	<0.05
Dibenz[a h]anthracene	459245	0.05	ug/g	STD 0.1	<0.05
Fluoranthene	459245	0.05	ug/g	STD 0.69	<0.05
Fluorene	459245	0.05	ug/g	STD 62	<0.05
Indeno[1 2 3-cd]pyrene	459245	0.05	ug/g	STD 0.38	<0.05
Methylnaphthalene, 1-	459245	0.05	ug/g	STD 0.99	<0.05
Methylnaphthalene, 2-	459245	0.05	ug/g	STD 0.99	<0.05
Naphthalene	459245	0.013	ug/g	STD 0.6	<0.013
Phenanthrene	459245	0.05	ug/g	STD 6.2	<0.05
Pyrene	459245	0.05	ug/g	STD 78	<0.05

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Date Reported: 2024-05-06
Project: 2305493 (20 Rose Street)
COC #: 914408

Guideline = O.Reg 153-T2-Res/Park-Coarse

PAH

Lab I.D. 1725647
Sample Matrix Soil153
Sample Type
Sample Date 2024-04-24
Sampling Time
Sample I.D. 207 SS3

Analyte	Batch No	MRL	Units	Guideline	
1+2-methylnaphthalene	459380	0.05	ug/g	STD 0.99	<0.05
Acenaphthene	459245	0.05	ug/g	STD 7.9	<0.05
Acenaphthylene	459245	0.05	ug/g	STD 0.15	<0.05
Anthracene	459245	0.05	ug/g	STD 0.67	<0.05
Benz[a]anthracene	459245	0.05	ug/g	STD 0.5	<0.05
Benzo[a]pyrene	459245	0.05	ug/g	STD 0.3	<0.05
Benzo[b]fluoranthene	459245	0.05	ug/g	STD 0.78	<0.05
Benzo[ghi]perylene	459245	0.05	ug/g	STD 6.6	<0.05
Benzo[k]fluoranthene	459245	0.05	ug/g	STD 0.78	<0.05
Chrysene	459245	0.05	ug/g	STD 7	<0.05
Dibenz[a h]anthracene	459245	0.05	ug/g	STD 0.1	<0.05
Fluoranthene	459245	0.05	ug/g	STD 0.69	<0.05
Fluorene	459245	0.05	ug/g	STD 62	<0.05
Indeno[1 2 3-cd]pyrene	459245	0.05	ug/g	STD 0.38	<0.05
Methylnaphthalene, 1-	459245	0.05	ug/g	STD 0.99	<0.05
Methylnaphthalene, 2-	459245	0.05	ug/g	STD 0.99	<0.05
Naphthalene	459245	0.013	ug/g	STD 0.6	<0.013
Phenanthrene	459245	0.05	ug/g	STD 6.2	<0.05
Pyrene	459245	0.05	ug/g	STD 78	<0.05

Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

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Invoice to: GEI Consultants Inc.

Report Number: 3007019
Date Submitted: 2024-04-29
Date Reported: 2024-05-06
Project: 2305493 (20 Rose Street)
COC #: 914408

Guideline = O.Reg 153-T2-Res/Park-Coarse

PAH

Lab I.D. 1725653
Sample Matrix Soil153
Sample Type
Sample Date 2024-04-25
Sampling Time
Sample I.D. 212 SS4

Analyte	Batch No	MRL	Units	Guideline	
1+2-methylnaphthalene	459380	0.05	ug/g	STD 0.99	<0.05
Acenaphthene	459245	0.05	ug/g	STD 7.9	0.06
Acenaphthylene	459245	0.05	ug/g	STD 0.15	<0.05
Anthracene	459245	0.05	ug/g	STD 0.67	0.13
Benz[a]anthracene	459245	0.05	ug/g	STD 0.5	0.22
Benzo[a]pyrene	459245	0.05	ug/g	STD 0.3	0.21
Benzo[b]fluoranthene	459245	0.05	ug/g	STD 0.78	0.18
Benzo[ghi]perylene	459245	0.05	ug/g	STD 6.6	0.07
Benzo[k]fluoranthene	459245	0.05	ug/g	STD 0.78	0.11
Chrysene	459245	0.05	ug/g	STD 7	0.23
Dibenz[a h]anthracene	459245	0.05	ug/g	STD 0.1	<0.05
Fluoranthene	459245	0.05	ug/g	STD 0.69	0.48
Fluorene	459245	0.05	ug/g	STD 62	0.06
Indeno[1 2 3-cd]pyrene	459245	0.05	ug/g	STD 0.38	0.07
Methylnaphthalene, 1-	459245	0.05	ug/g	STD 0.99	<0.05
Methylnaphthalene, 2-	459245	0.05	ug/g	STD 0.99	<0.05
Naphthalene	459245	0.013	ug/g	STD 0.6	0.040
Phenanthrene	459245	0.05	ug/g	STD 6.2	0.48
Pyrene	459245	0.05	ug/g	STD 78	0.41

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Date Submitted: 2024-04-29
Date Reported: 2024-05-06
Project: 2305493 (20 Rose Street)
COC #: 914408

Guideline = O.Reg 153-T2-Res/Park-Coarse

Volatiles

Lab I.D.
Sample Matrix
Sample Type
Sample Date
Sampling Time
Sample I.D.

1725639
Soil153

2024-04-24

TP7

Analyte	Batch No	MRL	Units	Guideline	
Benzene	459339	0.0068	ug/g	STD 0.21	<0.0068
Ethylbenzene	459339	0.018	ug/g	STD 1.1	<0.018
Toluene	459339	0.08	ug/g	STD 2.3	<0.08
Xylene Mixture	459351	0.05	ug/g	STD 3.1	<0.05
Xylene, m/p-	459339	0.05	ug/g		<0.05
Xylene, o-	459339	0.05	ug/g		<0.05

Volatiles

Lab I.D.
Sample Matrix
Sample Type
Sample Date
Sampling Time
Sample I.D.

1725647
Soil153
2024-04-24
207 SS3
1725649
Soil153
2024-04-25
209 SS1
1725650
Soil153
2024-04-25
209D- SS1
1725651
Soil153
2024-04-25
210 SS1

Analyte	Batch No	MRL	Units	Guideline				
Acetone	459339	0.50	ug/g	STD 16	<0.50	<0.50	<0.50	
Benzene	459339	0.0068	ug/g	STD 0.21	<0.0068	<0.0068	<0.0068	<0.0068
Bromodichloromethane	459339	0.05	ug/g	STD 1.5	<0.05	<0.05	<0.05	
Bromoform	459339	0.05	ug/g	STD 0.27	<0.05	<0.05	<0.05	
Bromomethane	459339	0.05	ug/g	STD 0.05	<0.05	<0.05	<0.05	
Carbon Tetrachloride	459339	0.05	ug/g	STD 0.05	<0.05	<0.05	<0.05	
Chlorobenzene	459339	0.05	ug/g	STD 2.4	<0.05	<0.05	<0.05	
Chloroform	459339	0.05	ug/g	STD 0.05	<0.05	<0.05	<0.05	
Dibromochloromethane	459339	0.05	ug/g	STD 2.3	<0.05	<0.05	<0.05	
Dichlorobenzene, 1,2-	459339	0.05	ug/g	STD 1.2	<0.05	<0.05	<0.05	
Dichlorobenzene, 1,3-	459339	0.05	ug/g	STD 4.8	<0.05	<0.05	<0.05	
Dichlorobenzene, 1,4-	459339	0.05	ug/g	STD 0.083	<0.05	<0.05	<0.05	
Dichlorodifluoromethane	459339	0.05	ug/g	STD 16	<0.05	<0.05	<0.05	

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L3R 4M8
Attention: Ms. Aamna Arora
PO#:
Invoice to: GEI Consultants Inc.

Report Number: 3007019
Date Submitted: 2024-04-29
Date Reported: 2024-05-06
Project: 2305493 (20 Rose Street)
COC #: 914408

Guideline = O.Reg 153-T2-Res/Park-Coarse

Volatiles

Lab I.D.
Sample Matrix
Sample Type
Sample Date
Sampling Time
Sample I.D.

1725647 Soil153	1725649 Soil153	1725650 Soil153	1725651 Soil153
2024-04-24	2024-04-25	2024-04-25	2024-04-25
207 SS3	209 SS1	209D- SS1	210 SS1

Analyte	Batch No	MRL	Units	Guideline				
Dichloroethane, 1,1-	459339	0.05	ug/g	STD 0.47	<0.05	<0.05	<0.05	
Dichloroethane, 1,2-	459339	0.05	ug/g	STD 0.05	<0.05	<0.05	<0.05	
Dichloroethylene, 1,1-	459339	0.05	ug/g	STD 0.05	<0.05	<0.05	<0.05	
Dichloroethylene, 1,2-cis-	459339	0.05	ug/g	STD 1.9	<0.05	<0.05	<0.05	
Dichloroethylene, 1,2-trans-	459339	0.05	ug/g	STD 0.084	<0.05	<0.05	<0.05	
Dichloropropane, 1,2-	459339	0.05	ug/g	STD 0.05	<0.05	<0.05	<0.05	
Dichloropropene,1,3-	459353	0.05	ug/g	STD 0.05	<0.05	<0.05	<0.05	
Dichloropropene,1,3-cis-	459339	0.05	ug/g		<0.05	<0.05	<0.05	
Dichloropropene,1,3-trans-	459339	0.05	ug/g		<0.05	<0.05	<0.05	
Ethylbenzene	459339	0.018	ug/g	STD 1.1	<0.018	<0.018	<0.018	<0.018
Ethylene dibromide	459339	0.05	ug/g	STD 0.05	<0.05	<0.05	<0.05	
Hexane (n)	459339	0.05	ug/g	STD 2.8	<0.05	<0.05	<0.05	
Methyl Ethyl Ketone	459339	0.50	ug/g	STD 16	<0.50	<0.50	<0.50	
Methyl Isobutyl Ketone	459339	0.50	ug/g	STD 1.7	<0.50	<0.50	<0.50	
Methyl tert-Butyl Ether (MTBE)	459339	0.05	ug/g	STD 0.75	<0.05	<0.05	<0.05	
Methylene Chloride	459339	0.05	ug/g	STD 0.1	<0.05	<0.05	<0.05	
Styrene	459339	0.05	ug/g	STD 0.7	<0.05	<0.05	<0.05	
Tetrachloroethane, 1,1,1,2-	459339	0.05	ug/g	STD 0.058	<0.05	<0.05	<0.05	
Tetrachloroethane, 1,1,2,2-	459339	0.05	ug/g	STD 0.05	<0.05	<0.05	<0.05	
Tetrachloroethylene	459339	0.05	ug/g	STD 0.28	<0.05	<0.05	<0.05	
Toluene	459339	0.08	ug/g	STD 2.3	<0.08	<0.08	<0.08	<0.08
Trichloroethane, 1,1,1-	459339	0.05	ug/g	STD 0.38	<0.05	<0.05	<0.05	
Trichloroethane, 1,1,2-	459339	0.05	ug/g	STD 0.05	<0.05	<0.05	<0.05	

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Date Reported: 2024-05-06
Project: 2305493 (20 Rose Street)
COC #: 914408

Guideline = O.Reg 153-T2-Res/Park-Coarse

Volatiles

					Lab I.D. 1725647 Soil153	1725649 Soil153	1725650 Soil153	1725651 Soil153
					Sample Matrix	2024-04-24	2024-04-25	2024-04-25
					Sample Type	207 SS3	209 SS1	209D- SS1
					Sample Date			210 SS1
					Sampling Time			
					Sample I.D.			
Analyte	Batch No	MRL	Units	Guideline				
Trichloroethylene	459339	0.01	ug/g	STD 0.061	<0.01	<0.01	<0.01	
Trichlorofluoromethane	459339	0.05	ug/g	STD 4	<0.05	<0.05	<0.05	
Vinyl Chloride	459339	0.02	ug/g	STD 0.02	<0.02	<0.02	<0.02	
Xylene Mixture	459351	0.05	ug/g	STD 3.1	<0.05	<0.05	<0.05	0.12
Xylene, m/p-	459339	0.05	ug/g		<0.05	<0.05	<0.05	0.06
Xylene, o-	459339	0.05	ug/g		<0.05	<0.05	<0.05	0.06

Volatiles

					Lab I.D. 1725653 Soil153	1725655 Soil153
					Sample Matrix	2024-04-25
					Sample Type	2024-04-25
					Sample Date	
					Sampling Time	
					Sample I.D.	
Analyte	Batch No	MRL	Units	Guideline		
Benzene	459339	0.0068	ug/g	STD 0.21	<0.0068	<0.0068
Ethylbenzene	459339	0.018	ug/g	STD 1.1	<0.018	<0.018
Toluene	459339	0.08	ug/g	STD 2.3	<0.08	<0.08
Xylene Mixture	459351	0.05	ug/g	STD 3.1	<0.05	<0.05
Xylene, m/p-	459339	0.05	ug/g		<0.05	<0.05
Xylene, o-	459339	0.05	ug/g		<0.05	<0.05

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Inorganics

Analyte	Batch No	MRL	Units	Guideline	Lab I.D.	Sample Matrix	Sample Type	Sample Date	Sampling Time	Sample I.D.
					1725632	Soil153	TP1	2024-04-24		
Cyanide (CN-)	459445	0.005	ug/g	STD 0.051	<0.005					
Electrical Conductivity	459444	0.05	mS/cm	STD 0.7	0.08					
pH - CaCl2	459429	2.00			5.75					
Sodium Adsorption Ratio	459449	0.01		STD 5	0.72					

Inorganics

Analyte	Batch No	MRL	Units	Guideline	Lab I.D.	Sample Matrix	Sample Type	Sample Date	Sampling Time	Sample I.D.
					1725637	Soil153	TP5	2024-04-24		
Cyanide (CN-)	459445	0.005	ug/g	STD 0.051	<0.005					
Electrical Conductivity	459444	0.05	mS/cm	STD 0.7	0.10					
pH - CaCl2	459429	2.00			6.42					
Sodium Adsorption Ratio	459449	0.01		STD 5	0.36					

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Inorganics

Analyte	Batch No	MRL	Units	Guideline	Lab I.D.	Sample Matrix	Sample Type	Sample Date	Sampling Time	Sample I.D.
					1725642	Soil153	1725643	Soil153	1725644	Soil153
					2024-04-25		2024-04-25		2024-04-25	
					202 SS1		203 SS2		205 SS2	
									205D SS2	
										206 SS2
Cyanide (CN-)	459445	0.005	ug/g	STD 0.051						<0.005
Electrical Conductivity	459444	0.05	mS/cm	STD 0.7	0.37		0.66		0.57	0.69
pH - CaCl2	459487	2.00								7.79
Sodium Adsorption Ratio	459449	0.01		STD 5	13.0*		8.42*		14.1*	16.0*

Inorganics

Analyte	Batch No	MRL	Units	Guideline	Lab I.D.	Sample Matrix	Sample Type	Sample Date	Sampling Time	Sample I.D.
					1725647	Soil153	1725648	Soil153	1725649	Soil153
					2024-04-24		2024-04-24		2024-04-25	
					207 SS3		208 SS2		209 SS1	
									209D- SS1	
Cyanide (CN-)	459445	0.005	ug/g	STD 0.051	<0.005		<0.005		<0.005	<0.005
Electrical Conductivity	459444	0.05	mS/cm	STD 0.7	0.17		0.18		0.14	0.13
pH - CaCl2	459487	2.00			7.80		7.66		7.67	7.73
Sodium Adsorption Ratio	459449	0.01		STD 5	3.01		0.41		1.86	1.83

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Inorganics

Analyte	Batch No	MRL	Units	Guideline	Lab I.D.	Sample Matrix	Sample Type	Sample Date	Sampling Time	Sample I.D.
					1725652	Soil153	1725653	Soil153	1725654	Soil153
Cyanide (CN-)	459445	0.005	ug/g	STD 0.051	2024-04-25	2024-04-25	2024-04-25	211 SS2	212 SS4	213 SS3
Electrical Conductivity	459444	0.05	mS/cm	STD 0.7	<0.005	<0.005	<0.005			
pH - CaCl2	459487	2.00			0.06	0.08	0.08			
Sodium Adsorption Ratio	459449	0.01		STD 5	7.78	7.85	7.84			
					0.22	0.21	0.46			

Moisture

Analyte	Batch No	MRL	Units	Guideline	Lab I.D.	Sample Matrix	Sample Type	Sample Date	Sampling Time	Sample I.D.
					1725639	Soil153	2024-04-24			
Moisture-Humidite	459362	0.1	%		TP7					
					10.4					

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Guideline = O.Reg 153-T2-Res/Park-Coarse

Moisture

Guideline = O.Reg 153-T2-Res/Park-Coarse					Lab I.D.	1725647	1725649	1725650	1725651
<u>Moisture</u>					Sample Matrix	Soil153	Soil153	Soil153	Soil153
					Sample Type	2024-04-24	2024-04-25	2024-04-25	2024-04-25
					Sample Date				
					Sampling Time				
					Sample I.D.	207 SS3	209 SS1	209D- SS1	210 SS1
Analyte	Batch No	MRL	Units	Guideline					
Moisture-Humidite	459362	0.1	%						9.5
	459367	0.1	%		12.1	9.8	8.7		

Moisture

					Lab I.D.	1725653	1725655
					Sample Matrix	Soil153	Soil153
					Sample Type	2024-04-25	2024-04-25
					Sample Date		
					Sampling Time		
					Sample I.D.	212 SS4	214 SS1
Analyte	Batch No	MRL	Units	Guideline			
Moisture-Humidite	459362	0.1	%			5.3	5.2

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Guideline = O.Reg 153-T2-Res/Park-Coarse

PCBs

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sample Date Sampling Time Sample I.D.	
					1725632 Soil153	1725636 Soil153
					2024-04-24	2024-04-24
					TP1	TP4
Aroclor 1242	459405	0.02	ug/g		<0.02	<0.02
Aroclor 1248	459405	0.02	ug/g		<0.02	<0.02
Aroclor 1254	459405	0.02	ug/g		<0.02	<0.02
Aroclor 1260	459405	0.02	ug/g		<0.02	<0.02
Polychlorinated Biphenyls	459405	0.02	ug/g	STD 0.35	<0.02	<0.02

PCBs

Analyte	Batch No	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sample Date Sampling Time Sample I.D.	
					1725638 Soil153	1725639 Soil153
					2024-04-24	2024-04-24
					TP6	TP7
Aroclor 1242	459405	0.02	ug/g		<0.02	<0.02
Aroclor 1248	459405	0.02	ug/g		<0.02	<0.02
Aroclor 1254	459405	0.02	ug/g		<0.02	<0.02
Aroclor 1260	459405	0.02	ug/g		<0.02	<0.02
Polychlorinated Biphenyls	459405	0.02	ug/g	STD 0.35	<0.02	<0.02

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Guideline = O.Reg 153-T2-Res/Park-Coarse

PCBs

					Lab I.D. Sample Matrix Sample Type Sample Date Sampling Time Sample I.D.
					1725656 Soil153 2024-04-24 TP107
Analyte	Batch No	MRL	Units	Guideline	
Aroclor 1242	459405	0.02	ug/g		<0.02
Aroclor 1248	459405	0.02	ug/g		<0.02
Aroclor 1254	459405	0.02	ug/g		<0.02
Aroclor 1260	459405	0.02	ug/g		<0.02
Polychlorinated Biphenyls	459405	0.02	ug/g	STD 0.35	<0.02

PCB Surrogate

					Lab I.D. Sample Matrix Sample Type Sample Date Sampling Time Sample I.D.				
					1725632 Soil153 2024-04-24 TP1	1725633 Soil153 2024-04-24 TP101	1725634 Soil153 2024-04-24 TP2	1725635 Soil153 2024-04-24 TP3	1725636 Soil153 2024-04-24 TP4
Analyte	Batch No	MRL	Units	Guideline					
Decachlorobiphenyl	459409	0	%		63	60	72	68	64

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PCB Surrogate

Guideline = O.Reg 153-T2-Res/Park-Coarse					Lab I.D. Sample Matrix Sample Type Sample Date Sampling Time Sample I.D.	1725637 Soil153 2024-04-24 TP5	1725638 Soil153 2024-04-24 TP6	1725639 Soil153 2024-04-24 TP7
<u>PCB Surrogate</u>								
Analyte	Batch No	MRL	Units	Guideline				
Decachlorobiphenyl	459409	0	%					

PCB Surrogate

<u>PCB Surrogate</u>					Lab I.D.	1725656
					Sample Matrix	Soil153
					Sample Type	
					Sample Date	2024-04-24
					Sampling Time	
					Sample I.D.	TP107
Analyte	Batch No	MRL	Units	Guideline		
Decachlorobiphenyl	459409	0	%			113

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PHC Surrogate

Lab I.D. 1725639
Sample Matrix Soil153
Sample Type
Sample Date 2024-04-24
Sampling Time
Sample I.D. TP7

Analyte	Batch No	MRL	Units	Guideline
Alpha-androstrane	459362	0	%	97

PHC Surrogate

Lab I.D. 1725647
Sample Matrix Soil153
Sample Type
Sample Date 2024-04-24
Sampling Time
Sample I.D. 207 SS3

1725649
Soil153
2024-04-25
209 SS1

1725650
Soil153
2024-04-25
209D- SS1

1725651
Soil153
2024-04-25
210 SS1

Analyte	Batch No	MRL	Units	Guideline
Alpha-androstrane	459362	0	%	
	459367	0	%	
				85
				84
				76
				80

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PHC Surrogate

Lab I.D.
Sample Matrix
Sample Type
Sample Date
Sampling Time
Sample I.D.

1725653 Soil153	1725655 Soil153
2024-04-25	2024-04-25
212 SS4	214 SS1

Analyte	Batch No	MRL	Units	Guideline
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Alpha-androstrane	459362	0	%	103	97
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VOCs Surrogates

Lab I.D.
Sample Matrix
Sample Type
Sample Date
Sampling Time
Sample I.D.

1725639 Soil153
2024-04-24
TP7

Analyte	Batch No	MRL	Units	Guideline
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Toluene-d8	459339	0	%	100
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VOCs Surrogates

Analyte	Batch No	MRL	Units	Guideline	Lab I.D.	Sample Matrix	Sample Type	Sample Date	Sampling Time	Sample I.D.
					1725647	Soil153	1725649	Soil153	1725650	Soil153
1,2-dichloroethane-d4	459339	0	%		2024-04-24	2024-04-25	2024-04-25	2024-04-25	207 SS3	209 SS1
4-bromofluorobenzene	459339	0	%							
Toluene-d8	459339	0	%		106	108	117			

VOCs Surrogates

Analyte	Batch No	MRL	Units	Guideline	Lab I.D.	Sample Matrix	Sample Type	Sample Date	Sampling Time	Sample I.D.
					1725653	Soil153	1725655	Soil153		
Toluene-d8	459339	0	%		2024-04-25	2024-04-25	212 SS4	214 SS1	97	106

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75 Tiverton Court, Unit 100
Markham, ON
L3R 4M8
Attention: Ms. Aamna Arora
PO#:
Invoice to: GEI Consultants Inc.

Report Number: 3007019
Date Submitted: 2024-04-29
Date Reported: 2024-05-06
Project: 2305493 (20 Rose Street)
COC #: 914408

Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
459245	Methlynaphthalene, 1-	<0.05 ug/g	59	50-140	74	50-140	0	0-40
459245	Methlynaphthalene, 2-	<0.05 ug/g	58	50-140	74	50-140	0	0-40
459245	Acenaphthene	<0.05 ug/g	66	50-140	82	50-140	0	0-40
459245	Acenaphthylene	<0.05 ug/g	70	50-140	86	50-140	0	0-40
459245	Anthracene	<0.05 ug/g	70	50-140	83	50-140	0	0-40
459245	Benz[a]anthracene	<0.05 ug/g	78	50-140	81	50-140	0	0-40
459245	Benzo[a]pyrene	<0.05 ug/g	79	50-140	86	50-140	0	0-40
459245	Benzo[b]fluoranthene	<0.05 ug/g	92	50-140	91	50-140	0	0-40
459245	Benzo[ghi]perylene	<0.05 ug/g	62	50-140	73	50-140	0	0-40
459245	Benzo[k]fluoranthene	<0.05 ug/g	94	50-140	94		0	0-40
459245	Chrysene	<0.05 ug/g	74	50-140	80	50-140	0	0-40
459245	Dibenz[a h]anthracene	<0.05 ug/g	53	50-140	52	50-140	0	0-40
459245	Fluoranthene	<0.05 ug/g	72	50-140	81	50-140	0	0-40
459245	Fluorene	<0.05 ug/g	66	50-140	78	50-140	0	0-40
459245	Indeno[1 2 3-cd]pyrene	<0.05 ug/g	54	50-140	50	50-140	0	0-40
459245	Naphthalene	<0.013 ug/g	60	50-140	79	50-140	0	0-40
459245	Phenanthrene	<0.05 ug/g	68	50-140	83	50-140	0	0-40
459245	Pyrene	<0.05 ug/g	83	50-140	85	50-140	0	0-40
459339	Tetrachloroethane, 1,1,1,2-	<0.05 ug/g	91	60-130	107	50-140	0	0-50
459339	Trichloroethane, 1,1,1-	<0.05 ug/g	101	60-130	111	50-140	0	0-50
459339	Tetrachloroethane, 1,1,2,2-	<0.05 ug/g	92	60-130	91	50-140	0	0-30
459339	Trichloroethane, 1,1,2-	<0.05 ug/g	94	60-130	115	50-140	0	0-50
459339	Dichloroethane, 1,1-	<0.05 ug/g	99	60-130	112	50-140	0	0-50
459339	Dichloroethylene, 1,1-	<0.05 ug/g	100	60-130	87	50-140	0	0-50
459339	Dichlorobenzene, 1,2-	<0.05 ug/g	95	60-130	111	50-140	0	0-50
459339	Dichloroethane, 1,2-	<0.05 ug/g	105	60-130	114	50-140	0	0-50
459339	Dichloropropane, 1,2-	<0.05 ug/g	91	60-130	119	50-140	0	0-50
459339	Dichlorobenzene, 1,3-	<0.05 ug/g	93	60-130	112	50-140	0	0-50
459339	Dichlorobenzene, 1,4-	<0.05 ug/g	93	60-130	112	50-140	0	0-50
459339	Acetone	<0.50 ug/g	99	60-130	112	50-140	0	0-50
459339	Benzene	<0.0068	96	60-130	114	50-140	0	0-50
459339	Bromodichloromethane	<0.05 ug/g	94	60-130	110	50-140	0	0-50

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Date Submitted: 2024-04-29
Date Reported: 2024-05-06
Project: 2305493 (20 Rose Street)
COC #: 914408

Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
459339	Bromoform	<0.05 ug/g	86	60-130	109	50-140	0	0-50
459339	Bromomethane	<0.05 ug/g	107	60-130	105	50-140	0	0-50
459339	Dichloroethylene, 1,2-cis-	<0.05 ug/g	92	60-130	115	50-140	0	0-50
459339	Dichloropropene, 1,3-cis-	<0.05 ug/g	92	60-130	115	50-140	0	0-50
459339	Carbon Tetrachloride	<0.05 ug/g	100	60-130	107	50-140	0	0-50
459339	Chloroform	<0.05 ug/g	102	60-130	115	50-140	0	0-50
459339	Dibromochloromethane	<0.05 ug/g	93	60-130	101	50-140	0	0-50
459339	Dichlorodifluoromethane	<0.05 ug/g	91	60-130	106	50-140	0	0-50
459339	Methylene Chloride	<0.05 ug/g	106	60-130	95	50-140	0	0-50
459339	Ethylbenzene	<0.018 ug/g	92	60-130	121	50-140	0	0-50
459339	Ethylene dibromide	<0.05 ug/g	92	60-130	113	50-140	0	0-50
459339	Hexane (n)	<0.05 ug/g	91	60-130	112	50-140	0	0-50
459339	Xylene, m/p-	<0.05 ug/g	98	60-130	112	50-140	0	0-50
459339	Methyl Ethyl Ketone	<0.50 ug/g	97	60-130	116	50-140	0	0-50
459339	Methyl Isobutyl Ketone	<0.50 ug/g	97	60-130	114	50-140	0	0-50
459339	Methyl tert-Butyl Ether (MTBE)	<0.05 ug/g	93	60-130	114	50-140	0	0-50
459339	Chlorobenzene	<0.05 ug/g	94	60-130	115	50-140	0	0-50
459339	Xylene, o-	<0.05 ug/g	92	60-130	118	50-140	0	0-50
459339	Styrene	<0.05 ug/g	95	60-130	117	50-140	0	0-50
459339	Dichloroethylene, 1,2-trans-	<0.05 ug/g	95	60-130	110	50-140	0	0-50
459339	Dichloropropene, 1,3-trans-	<0.05 ug/g	93	60-130	115	50-140	0	0-50
459339	Tetrachloroethylene	<0.05 ug/g	97	60-130	119	50-140	0	0-50
459339	Toluene	<0.08 ug/g	94	60-130	114	50-140	0	0-50
459339	Trichloroethylene	<0.01 ug/g	91	60-130	115	50-140	0	0-50
459339	Trichlorofluoromethane	<0.05 ug/g	92	60-130	98	50-140	0	0-50
459339	Vinyl Chloride	<0.02 ug/g	97	60-130	92	50-140	0	0-50
459341	PHC's F1	<10 ug/g	89	80-120	82	60-140	0	0-30
459351	Xylene Mixture							
459352	PHC's F1-BTEX							
459353	Dichloropropene, 1,3-							
459362	PHC's F2	<2 ug/g	92	80-120	113	60-140	0	0-30
459362	PHC's F3	<20 ug/g	92	80-120	113	60-140	0	0-30
459362	PHC's F4	<20 ug/g	92	80-120	113	60-140	0	0-30

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Project: 2305493 (20 Rose Street)
COC #: 914408

Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
459362	Moisture-Humidite	<0.1 %	100	80-120			3	
459367	PHC's F2	<2 ug/g	83	80-120	90	60-140	0	0-30
459367	PHC's F3	<20 ug/g	83	80-120	90	60-140	0	0-30
459367	PHC's F4	<20 ug/g	83	80-120	90	60-140	0	0-30
459367	Moisture-Humidite	<0.1 %	100	80-120			12	
459380	1+2-methylnaphthalene							
459392	Chromium VI	<0.20 ug/g	101	70-130	98	70-130	0	0-35
459405	Aroclor 1242	<0.02 ug/g	114	60-140	90	60-140	0	0-40
459405	Aroclor 1248	<0.02 ug/g	114	60-140	90	60-140	0	0-40
459405	Aroclor 1254	<0.02 ug/g	126	60-140	94	60-140	0	0-40
459405	Aroclor 1260	<0.02 ug/g	126	60-140	94	60-140	0	0-40
459405	Polychlorinated Biphenyls	<0.02 ug/g	119	60-140	92	60-140	0	0-40
459407	Chlordane, alpha-	<0.002 ug/g	76	50-140	84	50-140	0	0-40
459407	Aldrin	<0.002 ug/g	78	50-140	87	50-140	0	0-40
459407	Chlordane	<0.006 ug/g					0	
459407	Dieldrin	<0.002 ug/g	75	50-140	85	50-140	0	0-40
459407	Endosulfan	<0.004 ug/g					0	
459407	Endosulfan I	<0.002 ug/g	75	50-140	87	50-140	0	0-40
459407	Endosulfan II	<0.002 ug/g	75	50-140	86	50-140	0	0-40
459407	Endrin	<0.002 ug/g	78	50-140	84	50-140	0	0-40
459407	Hexachlorocyclohexane Gamma-	<0.002 ug/g	77	50-140	86	50-140	0	0-40
459407	Chlordane, gamma-	<0.002 ug/g	78	50-140	86	50-140	0	0-40
459407	Heptachlor	<0.002 ug/g	78	50-140	85	50-140	0	0-40
459407	Heptachlor Epoxide	<0.002 ug/g	78	50-140	88	50-140	0	0-40
459407	Hexachlorobenzene	<0.002 ug/g	102	50-140	80	50-140	0	0-40
459407	Hexachlorobutadiene	<0.002 ug/g	95	50-140	76	50-140	0	0-40
459407	Hexachloroethane	<0.002 ug/g	93	50-140	83	50-140	0	0-40
459407	Methoxychlor	<0.002 ug/g	76	50-140	84	50-140	0	0-40
459407	DDD	<0.002 ug/g	74	50-140	86	50-140	0	0-40
459407	DDE	<0.002 ug/g	78	50-140	85	50-140	0	0-40
459407	DDT	<0.002 ug/g	78	50-140	88	50-140	0	0-40
459429	pH - CaCl2	5.33	99	90-110			0	
459441	Silver	<0.2 ug/g	104	70-130	102	70-130	0	0-20

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Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
459441	Arsenic	<1 ug/g	98	70-130	88	70-130	4	0-20
459441	Boron (total)	<5 ug/g	105	70-130	116	70-130	0	0-20
459441	Barium	<1 ug/g	96	70-130	70	70-130	4	0-20
459441	Beryllium	<1 ug/g	105	70-130	100	70-130	0	0-20
459441	Cadmium	<0.4 ug/g	99	70-130	103	70-130	0	0-20
459441	Cobalt	<1 ug/g	101	70-130	96	70-130	0	0-20
459441	Chromium Total	<1 ug/g	102	70-130	88	70-130	4	0-20
459441	Copper	<1 ug/g	105	70-130	88	70-130	2	0-20
459441	Mercury	<0.1 ug/g	90	70-130	91	70-130	0	0-20
459441	Molybdenum	<1 ug/g	102	70-130	94	70-130	0	0-20
459441	Nickel	<1 ug/g	102	70-130	90	70-130	7	0-20
459441	Lead	<1 ug/g	105	70-130	72	70-130	5	0-20
459441	Antimony	<1 ug/g	93	70-130	97	70-130	0	0-20
459441	Selenium	<0.5 ug/g	106	70-130	110	70-130	0	0-20
459441	Thallium	<1 ug/g	105	70-130	98	70-130	0	0-20
459441	Uranium	<0.5 ug/g	98	70-130	96	70-130	0	0-20
459441	Vanadium	<2 ug/g	99	70-130	89	70-130	6	0-20
459441	Zinc	<2 ug/g	107	70-130	101	70-130	4	0-20
459444	Electrical Conductivity	<0.05	99	90-110			1	0-10
459445	Cyanide (CN-)	<0.005 ug/g	88	75-125	98	70-130	0	0-20
459447	Boron (Hot Water Soluble)	<0.5 ug/g	97	70-130	107	60-140	0	0-30
459449	Sodium Adsorption Ratio	<0.01					5	
459479	Chromium VI	<0.20 ug/g	101	70-130	95	70-130	0	0-35
459487	pH - CaCl2	5.41	99	90-110			0	
459489	PHC's F2-Naph							
459490	PHC's F3-PAH							
459512	Silver	<0.2 ug/g	90	70-130	111	70-130	0	0-20
459512	Arsenic	<1 ug/g	101	70-130	110	70-130	0	0-20
459512	Boron (total)	<5 ug/g	116	70-130	108	70-130	0	0-20
459512	Barium	<1 ug/g	100	70-130	112	70-130	5	0-20
459512	Beryllium	<1 ug/g	114	70-130	107	70-130	0	0-20
459512	Cadmium	<0.4 ug/g	103	70-130	110	70-130	0	0-20
459512	Cobalt	<1 ug/g	104	70-130	107	70-130	0	0-20

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Quality Assurance Summary

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459512	Chromium Total	<1 ug/g	105	70-130	109	70-130	1	0-20
459512	Copper	<1 ug/g	108	70-130	99	70-130	15	0-20
459512	Mercury	<0.1 ug/g	100	70-130	97	70-130	0	0-20
459512	Molybdenum	<1 ug/g	106	70-130	109	70-130	0	0-20
459512	Nickel	<1 ug/g	106	70-130	105	70-130	0	0-20
459512	Lead	<1 ug/g	109	70-130	103	70-130	0	0-20
459512	Antimony	<1 ug/g	88	70-130	109	70-130	0	0-20
459512	Selenium	<0.5 ug/g	109	70-130	120	70-130	0	0-20
459512	Thallium	<1 ug/g	108	70-130	106	70-130	0	0-20
459512	Uranium	<0.5 ug/g	101	70-130	108	70-130	0	0-20
459512	Vanadium	<2 ug/g	103	70-130	91	70-130	9	0-20
459512	Zinc	<2 ug/g	110	70-130	105	70-130	0	0-20
459513	Boron (Hot Water Soluble)	<0.5 ug/g	101	70-130	103	60-140	0	0-30

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Test Summary

Batch No	Analyte	Instrument	Preparation Date	Analysis Date	Analyst	Method
459245	Methlynaphthalene, 1-	GC-MS	2024-05-01	2024-05-02	C_M	P 8270
459245	Methlynaphthalene, 2-	GC-MS	2024-05-01	2024-05-02	C_M	P 8270
459245	Acenaphthene	GC-MS	2024-05-01	2024-05-02	C_M	P 8270
459245	Acenaphthylene	GC-MS	2024-05-01	2024-05-02	C_M	P 8270
459245	Anthracene	GC-MS	2024-05-01	2024-05-02	C_M	P 8270
459245	Benz[a]anthracene	GC-MS	2024-05-01	2024-05-02	C_M	P 8270
459245	Benzo[a]pyrene	GC-MS	2024-05-01	2024-05-02	C_M	P 8270
459245	Benzo[b]fluoranthene	GC-MS	2024-05-01	2024-05-02	C_M	P 8270
459245	Benzo[ghi]perylene	GC-MS	2024-05-01	2024-05-02	C_M	P 8270
459245	Benzo[k]fluoranthene	GC-MS	2024-05-01	2024-05-02	C_M	P 8270
459245	Chrysene	GC-MS	2024-05-01	2024-05-02	C_M	P 8270
459245	Dibenz[a h]anthracene	GC-MS	2024-05-01	2024-05-02	C_M	P 8270
459245	Fluoranthene	GC-MS	2024-05-01	2024-05-02	C_M	P 8270
459245	Fluorene	GC-MS	2024-05-01	2024-05-02	C_M	P 8270
459245	Indeno[1 2 3-cd]pyrene	GC-MS	2024-05-01	2024-05-02	C_M	P 8270
459245	Naphthalene	GC-MS	2024-05-01	2024-05-02	C_M	P 8270
459245	Phenanthrene	GC-MS	2024-05-01	2024-05-02	C_M	P 8270
459245	Pyrene	GC-MS	2024-05-01	2024-05-02	C_M	P 8270
459339	Tetrachloroethane, 1,1,1,2-	GC-MS	2024-05-01	2024-05-01	SS	V 8260B
459339	Trichloroethane, 1,1,1-	GC-MS	2024-05-01	2024-05-01	SS	V 8260B
459339	Tetrachloroethane, 1,1,2,2-	GC-MS	2024-05-01	2024-05-01	SS	V 8260B
459339	Trichloroethane, 1,1,2-	GC-MS	2024-05-01	2024-05-01	SS	V 8260B
459339	Dichloroethane, 1,1-	GC-MS	2024-05-01	2024-05-01	SS	V 8260B
459339	Dichloroethylene, 1,1-	GC-MS	2024-05-01	2024-05-01	SS	V 8260B
459339	Dichlorobenzene, 1,2-	GC-MS	2024-05-01	2024-05-01	SS	V 8260B
459339	Dichloroethane, 1,2-	GC-MS	2024-05-01	2024-05-01	SS	V 8260B
459339	Dichloropropane, 1,2-	GC-MS	2024-05-01	2024-05-01	SS	V 8260B
459339	Dichlorobenzene, 1,3-	GC-MS	2024-05-01	2024-05-01	SS	V 8260B
459339	Dichlorobenzene, 1,4-	GC-MS	2024-05-01	2024-05-01	SS	V 8260B
459339	Acetone	GC-MS	2024-05-01	2024-05-01	SS	V 8260B
459339	Benzene	GC-MS	2024-05-01	2024-05-01	SS	V 8260B
459339	Bromodichloromethane	GC-MS	2024-05-01	2024-05-01	SS	V 8260B

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Attention: Ms. Aamna Arora
PO#:
Invoice to: GEI Consultants Inc.

Report Number: 3007019
Date Submitted: 2024-04-29
Date Reported: 2024-05-06
Project: 2305493 (20 Rose Street)
COC #: 914408

Test Summary

Batch No	Analyte	Instrument	Preparation Date	Analysis Date	Analyst	Method
459339	Bromoform	GC-MS	2024-05-01	2024-05-01	SS	V 8260B
459339	Bromomethane	GC-MS	2024-05-01	2024-05-01	SS	V 8260B
459339	Dichloroethylene, 1,2-cis-	GC-MS	2024-05-01	2024-05-01	SS	V 8260B
459339	Dichloropropene, 1,3-cis-	GC-MS	2024-05-01	2024-05-01	SS	V 8260B
459339	Carbon Tetrachloride	GC-MS	2024-05-01	2024-05-01	SS	V 8260B
459339	Chloroform	GC-MS	2024-05-01	2024-05-01	SS	V 8260B
459339	Dibromochloromethane	GC-MS	2024-05-01	2024-05-01	SS	V 8260B
459339	Dichlorodifluoromethane	GC-MS	2024-05-01	2024-05-01	SS	V 8260B
459339	Methylene Chloride	GC-MS	2024-05-01	2024-05-01	SS	V 8260B
459339	Ethylbenzene	GC-MS	2024-05-01	2024-05-01	SS	V 8260B
459339	Ethylene dibromide	GC-MS	2024-05-01	2024-05-01	SS	V 8260B
459339	Hexane (n)	GC-MS	2024-05-01	2024-05-01	SS	V 8260B
459339	Xylene, m/p-	GC-MS	2024-05-01	2024-05-01	SS	V 8260B
459339	Methyl Ethyl Ketone	GC-MS	2024-05-01	2024-05-01	SS	V 8260B
459339	Methyl Isobutyl Ketone	GC-MS	2024-05-01	2024-05-01	SS	V 8260B
459339	Methyl tert-Butyl Ether (MTBE)	GC-MS	2024-05-01	2024-05-01	SS	V 8260B
459339	Chlorobenzene	GC-MS	2024-05-01	2024-05-01	SS	V 8260B
459339	Xylene, o-	GC-MS	2024-05-01	2024-05-01	SS	V 8260B
459339	Styrene	GC-MS	2024-05-01	2024-05-01	SS	V 8260B
459339	Dichloroethylene, 1,2-trans-	GC-MS	2024-05-01	2024-05-01	SS	V 8260B
459339	Dichloropropene, 1,3-trans-	GC-MS	2024-05-01	2024-05-01	SS	V 8260B
459339	Tetrachloroethylene	GC-MS	2024-05-01	2024-05-01	SS	V 8260B
459339	Toluene	GC-MS	2024-05-01	2024-05-01	SS	V 8260B
459339	Trichloroethylene	GC-MS	2024-05-01	2024-05-01	SS	V 8260B
459339	Trichlorofluoromethane	GC-MS	2024-05-01	2024-05-01	SS	V 8260B
459339	Vinyl Chloride	GC-MS	2024-05-01	2024-05-01	SS	V 8260B
459341	PHC's F1	GC/FID	2024-05-01	2024-05-02	SS	CCME
459351	Xylene Mixture	GC-MS	2024-05-02	2024-05-02	SS	V 8260B
459352	PHC's F1-BTEX	GC/FID	2024-05-02	2024-05-02	SS	CCME
459353	Dichloropropene, 1,3-	GC-MS	2024-05-02	2024-05-02	SS	V 8260B
459362	PHC's F2	GC/FID	2024-05-02	2024-05-02	H_S	CCME
459362	PHC's F3	GC/FID	2024-05-02	2024-05-02	H_S	CCME
459362	PHC's F4	GC/FID	2024-05-02	2024-05-02	H_S	CCME

Results relate only to the parameters tested on the samples submitted.
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75 Tiverton Court, Unit 100
Markham, ON
L3R 4M8
Attention: Ms. Aamna Arora
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Report Number: 3007019
Date Submitted: 2024-04-29
Date Reported: 2024-05-06
Project: 2305493 (20 Rose Street)
COC #: 914408

Test Summary

Batch No	Analyte	Instrument	Preparation Date	Analysis Date	Analyst	Method
459362	Moisture-Humidite	Oven	2024-05-02	2024-05-02	H_S	ASTM 2216
459367	PHC's F2	GC/FID	2024-05-02	2024-05-02	H_S	CCME
459367	PHC's F3	GC/FID	2024-05-02	2024-05-02	H_S	CCME
459367	PHC's F4	GC/FID	2024-05-02	2024-05-02	H_S	CCME
459367	Moisture-Humidite	Oven	2024-05-02	2024-05-02	H_S	ASTM 2216
459380	1+2-methylnaphthalene	GC-MS	2024-05-03	2024-05-03	C_M	P 8270
459392	Chromium VI	FAA	2024-05-03	2024-05-03	MW	M US EPA 3060A
459405	Aroclor 1242	GC/ECD	2024-05-02	2024-05-03	PJ	EPA 8081B/8082A
459405	Aroclor 1248	GC/ECD	2024-05-02	2024-05-03	PJ	EPA 8081B/8082A
459405	Aroclor 1254	GC/ECD	2024-05-02	2024-05-03	PJ	EPA 8081B/8082A
459405	Aroclor 1260	GC/ECD	2024-05-02	2024-05-03	PJ	EPA 8081B/8082A
459405	Polychlorinated Biphenyls	GC/ECD	2024-05-02	2024-05-03	PJ	EPA 8081B/8082A
459407	Chlordane, alpha-	GC/ECD	2024-05-02	2024-05-03	PJ	EPA 8081B/8082A
459407	Aldrin	GC/ECD	2024-05-02	2024-05-03	PJ	EPA 8081B/8082A
459407	Chlordane	GC/ECD	2024-05-02	2024-05-03	PJ	EPA 8081B/8082A
459407	Dieldrin	GC/ECD	2024-05-02	2024-05-03	PJ	EPA 8081B/8082A
459407	Endosulfan	GC/ECD	2024-05-02	2024-05-03	PJ	EPA 8081B/8082A
459407	Endosulfan I	GC/ECD	2024-05-02	2024-05-03	PJ	EPA 8081B/8082A
459407	Endosulfan II	GC/ECD	2024-05-02	2024-05-03	PJ	EPA 8081B/8082A
459407	Endrin	GC/ECD	2024-05-02	2024-05-03	PJ	EPA 8081B/8082A
459407	Hexachlorocyclohexane Gamma-	GC/ECD	2024-05-02	2024-05-03	PJ	EPA 8081B/8082A
459407	Chlordane, gamma-	GC/ECD	2024-05-02	2024-05-03	PJ	EPA 8081B/8082A
459407	Heptachlor	GC/ECD	2024-05-02	2024-05-03	PJ	EPA 8081B/8082A
459407	Heptachlor Epoxide	GC/ECD	2024-05-02	2024-05-03	PJ	EPA 8081B/8082A
459407	Hexachlorobenzene	GC/ECD	2024-05-02	2024-05-03	PJ	EPA 8081B/8082A
459407	Hexachlorobutadiene	GC/ECD	2024-05-02	2024-05-03	PJ	EPA 8081B/8082A
459407	Hexachloroethane	GC/ECD	2024-05-02	2024-05-03	PJ	EPA 8081B/8082A
459407	Methoxychlor	GC/ECD	2024-05-02	2024-05-03	PJ	EPA 8081B/8082A
459407	DDD	GC/ECD	2024-05-02	2024-05-03	PJ	EPA 8081B/8082A
459407	DDE	GC/ECD	2024-05-02	2024-05-03	PJ	EPA 8081B/8082A
459407	DDT	GC/ECD	2024-05-02	2024-05-03	PJ	EPA 8081B/8082A
459429	pH - CaCl2	pH Meter	2024-05-03	2024-05-03	IP	AG Soil
459441	Silver	ICAPQ-MS	2024-05-03	2024-05-03	AaN	EPA 200.8/6020

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Date Submitted: 2024-04-29
Date Reported: 2024-05-06
Project: 2305493 (20 Rose Street)
COC #: 914408

Test Summary

Batch No	Analyte	Instrument	Preparation Date	Analysis Date	Analyst	Method
459441	Arsenic	ICAPQ-MS	2024-05-03	2024-05-03	AaN	EPA 200.8/6020
459441	Boron (total)	ICAPQ-MS	2024-05-03	2024-05-03	AaN	EPA 200.8/6020
459441	Barium	ICAPQ-MS	2024-05-03	2024-05-03	AaN	EPA 200.8/6020
459441	Beryllium	ICAPQ-MS	2024-05-03	2024-05-03	AaN	EPA 200.8/6020
459441	Cadmium	ICAPQ-MS	2024-05-03	2024-05-03	AaN	EPA 200.8/6020
459441	Cobalt	ICAPQ-MS	2024-05-03	2024-05-03	AaN	EPA 200.8/6020
459441	Chromium Total	ICAPQ-MS	2024-05-03	2024-05-03	AaN	EPA 200.8/6020
459441	Copper	ICAPQ-MS	2024-05-03	2024-05-03	AaN	EPA 200.8/6020
459441	Mercury	ICAPQ-MS	2024-05-03	2024-05-03	AaN	EPA 200.8/6020
459441	Molybdenum	ICAPQ-MS	2024-05-03	2024-05-03	AaN	EPA 200.8/6020
459441	Nickel	ICAPQ-MS	2024-05-03	2024-05-03	AaN	EPA 200.8/6020
459441	Lead	ICAPQ-MS	2024-05-03	2024-05-03	AaN	EPA 200.8/6020
459441	Antimony	ICAPQ-MS	2024-05-03	2024-05-03	AaN	EPA 200.8/6020
459441	Selenium	ICAPQ-MS	2024-05-03	2024-05-03	AaN	EPA 200.8/6020
459441	Thallium	ICAPQ-MS	2024-05-03	2024-05-03	AaN	EPA 200.8/6020
459441	Uranium	ICAPQ-MS	2024-05-03	2024-05-03	AaN	EPA 200.8/6020
459441	Vanadium	ICAPQ-MS	2024-05-03	2024-05-03	AaN	EPA 200.8/6020
459441	Zinc	ICAPQ-MS	2024-05-03	2024-05-03	AaN	EPA 200.8/6020
459444	Electrical Conductivity	Electrical Conductivity Meter	2024-05-03	2024-05-03	Z_S	Cond-Soil
459445	Cyanide (CN-)	Skalar CN Analyzer	2024-05-03	2024-05-03	Z_S	MOECC E3015
459447	Boron (Hot Water Soluble)	iCAP OES	2024-05-03	2024-05-03	Z_S	MOECC E3470
459449	Sodium Adsorption Ratio	iCAP OES	2024-05-03	2024-05-03	Z_S	Ag Soil
459479	Chromium VI	FAA	2024-05-03	2024-05-06	MW	M US EPA 3060A
459487	pH - CaCl2	pH Meter	2024-05-06	2024-05-06	IP	AG Soil
459489	PHC's F2-Naphth	GC/FID	2024-05-06	2024-05-06	H_S	CCME
459490	PHC's F3-PAH	GC/FID	2024-05-06	2024-05-06	H_S	CCME
459512	Silver	ICAPQ-MS	2024-05-06	2024-05-06	AaN	EPA 200.8/6020
459512	Arsenic	ICAPQ-MS	2024-05-06	2024-05-06	AaN	EPA 200.8/6020
459512	Boron (total)	ICAPQ-MS	2024-05-06	2024-05-06	AaN	EPA 200.8/6020
459512	Barium	ICAPQ-MS	2024-05-06	2024-05-06	AaN	EPA 200.8/6020
459512	Beryllium	ICAPQ-MS	2024-05-06	2024-05-06	AaN	EPA 200.8/6020
459512	Cadmium	ICAPQ-MS	2024-05-06	2024-05-06	AaN	EPA 200.8/6020
459512	Cobalt	ICAPQ-MS	2024-05-06	2024-05-06	AaN	EPA 200.8/6020

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Date Submitted: 2024-04-29
Date Reported: 2024-05-06
Project: 2305493 (20 Rose Street)
COC #: 914408

Test Summary

Batch No	Analyte	Instrument	Preparation Date	Analysis Date	Analyst	Method
459512	Chromium Total	ICAPQ-MS	2024-05-06	2024-05-06	AaN	EPA 200.8/6020
459512	Copper	ICAPQ-MS	2024-05-06	2024-05-06	AaN	EPA 200.8/6020
459512	Mercury	ICAPQ-MS	2024-05-06	2024-05-06	AaN	EPA 200.8/6020
459512	Molybdenum	ICAPQ-MS	2024-05-06	2024-05-06	AaN	EPA 200.8/6020
459512	Nickel	ICAPQ-MS	2024-05-06	2024-05-06	AaN	EPA 200.8/6020
459512	Lead	ICAPQ-MS	2024-05-06	2024-05-06	AaN	EPA 200.8/6020
459512	Antimony	ICAPQ-MS	2024-05-06	2024-05-06	AaN	EPA 200.8/6020
459512	Selenium	ICAPQ-MS	2024-05-06	2024-05-06	AaN	EPA 200.8/6020
459512	Thallium	ICAPQ-MS	2024-05-06	2024-05-06	AaN	EPA 200.8/6020
459512	Uranium	ICAPQ-MS	2024-05-06	2024-05-06	AaN	EPA 200.8/6020
459512	Vanadium	ICAPQ-MS	2024-05-06	2024-05-06	AaN	EPA 200.8/6020
459512	Zinc	ICAPQ-MS	2024-05-06	2024-05-06	AaN	EPA 200.8/6020
459513	Boron (Hot Water Soluble)	iCAP OES	2024-05-06	2024-05-06	Z_S	MOECC E3470

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Date Submitted: 2024-04-29
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COC #: 914408

CWS for Petroleum Hydrocarbons in Soil - Tier 1**Notes:**

1. The laboratory method complies with CCME Tier 1 reference method for PHC in soil. It is validated for laboratory use.
2. Where the F1 fraction (C6 to C10) and BTEX are both measured, F1-BTEX is reported.
3. Where the F2 fraction (C10 to C16) and naphthalene are both measured, F2-naphthalene is reported.
4. Where the F3 fraction (C16 to C34) and PAHs* are both measured, F3-PAH is reported.
5. F4G is analyzed if the chromatogram does not descend to baseline before C50. Where F4 (C34 to C50) and F4G are both reported, the higher result is compared to the standard.
6. Unless otherwise stated in the sample comments, the following criteria have been met where applicable:
 - nC6 and nC10 response factors within 30% of response factor for toluene;
 - nC10, nC16, and nC34 response factors within 10% of each other;
 - C50 response factors within 70% of nC10 + nC16 + nC34 average; and,
 - Linearity is within 15%.
7. Unless otherwise stated in the sample comments, sampling requirements and analytical holding times have been met.
8. Gravimetric heavy hydrocarbons (F4G) cannot be added to the C6 and C50 hydrocarbons.
9. *PAHs = phenanthrene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-c,d)pyrene and pyrene.

[illegible]

401 Magnetic Drive, Unit #1, North York, ON, M3J 3H9 - Telephone: 416-661-5287 • 380 Vansickle Road, Unit #630, St. Catharines, ON, L2S 0B5 - Telephone: 905-680-8887 • 608 Norris Court, Kingston, ON, K7P 2R9 - Telephone: 613-634-9307

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75 Tiverton Court, Unit 100
Markham, ON
L3R 4M8
Attention: Ms. Aamna Arora
Invoice to: GEI Consultants Inc.
PO#:

Report Number: 3007450
Date Submitted: 2024-05-14
Date Reported: 2024-05-22
Project: 2305493
COC #: 914630
Temperature (C): 10
Custody Seal:

Page 1 of 16

Dear Aamna Arora:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

Emma-Dawn Ferguson, Chemist

All analysis is completed at Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) unless otherwise stated

Eurofins Environment Testing Canada Inc. is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on the scope of accreditation. The scope is available at <https://directory.cala.ca/>

Please note: Field data, where presented on the report, has been provided by the client and is presented for informational purposes only. Guideline or regulatory limits listed on this report are provided for ease of use (informational purposes) only. Eurofins recommends consulting the official guideline or regulation as required. Unless otherwise stated, measurement uncertainty is not taken into account when determining guideline or regulatory exceedances.

Client: GEI Consultants Inc.
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Attention: Ms. Aamna Arora
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Invoice to: GEI Consultants Inc.

Report Number: 3007450
Date Submitted: 2024-05-14
Date Reported: 2024-05-22
Project: 2305493
COC #: 914630

O.Reg 153-T1-Groundwater

Exceedence Summary

Sample I.D.	Analyte	Result	Units	Criteria
Inorganics				
MW 102	Chloride	896000	ug/L	STD 790000
Metals				
MW 102	Sodium	596000	ug/L	STD 490000

Results relate only to the parameters tested on the samples submitted.
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Report Number: 3007450
Date Submitted: 2024-05-14
Date Reported: 2024-05-22
Project: 2305493
COC #: 914630

Guideline = O.Reg 153-T1-Groundwater

Hydrocarbons

Analyte	Batch No	MRL	Units	Guideline	Lab I.D.	Sample Matrix	Sample Type	Sample Date	Sampling Time	Sample I.D.
					1727549	GW153	1727551	GW153	1727552	GW153
PHC's F1	460097	20	ug/L	STD 420	2024-05-13	MW 101	2024-05-13	MW 105	2024-05-13	MW 207
PHC's F1-BTEX	460102	20	ug/L		<20		<20		<20	
PHC's F2	460178	20	ug/L	STD 150	<20		<20		<20	
PHC's F2-Napth	460235	20	ug/L				<20		<20	
PHC's F3	460178	50	ug/L	STD 500	<50		<50		<50	
PHC's F3-PAH	460239	50	ug/L				<50			
	460241	50	ug/L					<50		
PHC's F4	460178	50	ug/L	STD 500	<50		<50		<50	

Metals

Analyte	Batch No	MRL	Units	Guideline	Lab I.D.	Sample Matrix	Sample Type	Sample Date	Sampling Time	Sample I.D.
					1727549	GW153	1727550	GW153	1727551	GW153
Antimony	460182	0.5	ug/L	STD 1.5	2024-05-13	MW 101	2024-05-13	MW 102	2024-05-13	MW 207
Arsenic	460182	1	ug/L	STD 13	<1				<1	
Barium	460182	10	ug/L	STD 610	170				70	80
Beryllium	460182	0.5	ug/L	STD 0.5	<0.5				<0.5	<0.5
Boron (total)	460182	10	ug/L	STD 1700	10				<10	<10
Cadmium	460182	0.1	ug/L	STD 0.5	<0.1				<0.1	<0.1
Chromium Total	460182	1	ug/L	STD 11	<1				2	2
Cobalt	460182	0.2	ug/L	STD 3.8	0.2				<0.2	<0.2
Copper	460182	1	ug/L	STD 5	2				<1	<1
Lead	460182	1	ug/L	STD 1.9	<1				<1	<1
Molybdenum	460182	5	ug/L	STD 23	<5				<5	<5

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Report Number: 3007450
Date Submitted: 2024-05-14
Date Reported: 2024-05-22
Project: 2305493
COC #: 914630

Guideline = O.Reg 153-T1-Groundwater

Metals

Analyte	Batch No	MRL	Units	Guideline	Lab I.D.	Sample Matrix	Sample Type	Sample Date	Sampling Time	Sample I.D.
					1727549	GW153	1727550	GW153	1727551	GW153
Nickel	460182	5	ug/L	STD 14	2024-05-13	MW 101	2024-05-13	MW 102	2024-05-13	MW 105
Selenium	460182	1	ug/L	STD 5	<1		<1		<1	
Silver	460182	0.1	ug/L	STD 0.3	<0.1		<0.1		<0.1	
Sodium	460161	1000	ug/L	STD 490000	345000	596000*	18000	17000	66000	
Thallium	460182	0.1	ug/L	STD 0.5	<0.1		<0.1		<0.1	
Uranium	460182	1	ug/L	STD 8.9	<1		<1		<1	
Vanadium	460182	1	ug/L	STD 3.9	1		2	2	1	
Zinc	460182	10	ug/L	STD 160	<10		<10		<10	

PAH

Analyte	Batch No	MRL	Units	Guideline	Lab I.D.	Sample Matrix	Sample Type	Sample Date	Sampling Time	Sample I.D.
					1727551	GW153	1727552	GW153		
1+2-methylnaphthalene	460249	0.1	ug/L	STD 2	2024-05-13	MW 105	2024-05-13	MW 105	DUP	
Acenaphthene	458726	0.1	ug/L	STD 4.1	<0.1		<0.1			
Acenaphthylene	458726	0.1	ug/L	STD 1	<0.1		<0.1			
Anthracene	458726	0.1	ug/L	STD 0.1	<0.1		<0.1			
Benz[a]anthracene	458726	0.1	ug/L	STD 0.2	<0.1		<0.1			
Benzo[a]pyrene	458726	0.01	ug/L	STD 0.01	<0.01		<0.01			
Benzo[b]fluoranthene	458726	0.05	ug/L	STD 0.1	<0.05		<0.05			
Benzo[ghi]perylene	458726	0.1	ug/L	STD 0.2	<0.1		<0.1			
Benzo[k]fluoranthene	458726	0.05	ug/L	STD 0.1	<0.05		<0.05			
Chrysene	458726	0.05	ug/L	STD 0.1	<0.05		<0.05			
Dibenz[a h]anthracene	458726	0.1	ug/L	STD 0.2	<0.1		<0.1			

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Client: GEI Consultants Inc.
75 Tiverton Court, Unit 100
Markham, ON
L3R 4M8
Attention: Ms. Aamna Arora
PO#:
Invoice to: GEI Consultants Inc.

Report Number: 3007450
Date Submitted: 2024-05-14
Date Reported: 2024-05-22
Project: 2305493
COC #: 914630

Guideline = O.Reg 153-T1-Groundwater

PAH

Lab I.D.
Sample Matrix
Sample Type
Sample Date
Sampling Time
Sample I.D.

1727551
GW153
2024-05-13
MW 105

1727552
GW153
2024-05-13
MW 105
DUP

Analyte Batch No MRL Units Guideline

Fluoranthene	458726	0.1	ug/L	STD 0.4	<0.1	<0.1
Fluorene	458726	0.1	ug/L	STD 120	<0.1	<0.1
Indeno[1 2 3-cd]pyrene	458726	0.1	ug/L	STD 0.2	<0.1	<0.1
Methlynaphthalene, 1-	458726	0.1	ug/L	STD 2	<0.1	<0.1
Methlynaphthalene, 2-	458726	0.1	ug/L	STD 2	<0.1	<0.1
Naphthalene	458726	0.1	ug/L	STD 7	<0.1	<0.1
Phenanthrene	458726	0.1	ug/L	STD 0.1	<0.1	<0.1
Pyrene	458726	0.1	ug/L	STD 0.2	<0.1	<0.1

PAH

Lab I.D.
Sample Matrix
Sample Type
Sample Date
Sampling Time
Sample I.D.

1727554
GW153
2024-05-13
MW 208

Analyte Batch No MRL Units Guideline

1+2-methylnaphthalene	460249	0.1	ug/L	STD 2	<0.1
Acenaphthene	458726	0.1	ug/L	STD 4.1	<0.1
Acenaphthylene	458726	0.1	ug/L	STD 1	<0.1
Anthracene	458726	0.1	ug/L	STD 0.1	<0.1
Benz[a]anthracene	458726	0.1	ug/L	STD 0.2	<0.1
Benzo[a]pyrene	458726	0.01	ug/L	STD 0.01	<0.01
Benzo[b]fluoranthene	458726	0.05	ug/L	STD 0.1	<0.05
Benzo[ghi]perylene	458726	0.1	ug/L	STD 0.2	<0.1
Benzo[k]fluoranthene	458726	0.05	ug/L	STD 0.1	<0.05
Chrysene	458726	0.05	ug/L	STD 0.1	<0.05
Dibenz[a h]anthracene	458726	0.1	ug/L	STD 0.2	<0.1

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Date Submitted: 2024-05-14
Date Reported: 2024-05-22
Project: 2305493
COC #: 914630

Guideline = O.Reg 153-T1-Groundwater

PAH

Lab I.D.
Sample Matrix
Sample Type
Sample Date
Sampling Time
Sample I.D.

1727554
GW153

2024-05-13

MW 208

Analyte	Batch No	MRL	Units	Guideline	
Fluoranthene	458726	0.1	ug/L	STD 0.4	<0.1
Fluorene	458726	0.1	ug/L	STD 120	<0.1
Indeno[1 2 3-cd]pyrene	458726	0.1	ug/L	STD 0.2	<0.1
Methlynaphthalene, 1-	458726	0.1	ug/L	STD 2	<0.1
Methlynaphthalene, 2-	458726	0.1	ug/L	STD 2	<0.1
Naphthalene	458726	0.1	ug/L	STD 7	<0.1
Phenanthrene	458726	0.1	ug/L	STD 0.1	<0.1
Pyrene	458726	0.1	ug/L	STD 0.2	<0.1

Volatiles

Lab I.D.
Sample Matrix
Sample Type
Sample Date
Sampling Time
Sample I.D.

1727549
GW153
2024-05-13
MW 101
1727551
GW153
2024-05-13
MW 105
1727552
GW153
2024-05-13
MW 105
DUP
1727553
GW153
2024-05-13
MW 207

Analyte	Batch No	MRL	Units	Guideline				
Acetone	460081	5	ug/L	STD 2700	<5	<5	<5	<5
Benzene	460081	0.5	ug/L	STD 0.5	<0.5	<0.5	<0.5	<0.5
Bromodichloromethane	460081	0.3	ug/L	STD 2	<0.3	<0.3	<0.3	<0.3
Bromoform	460081	0.4	ug/L	STD 5	<0.4	<0.4	<0.4	<0.4
Bromomethane	460081	0.5	ug/L	STD 0.89	<0.5	<0.5	<0.5	<0.5
Carbon Tetrachloride	460081	0.2	ug/L	STD 0.2	<0.2	<0.2	<0.2	<0.2
Chlorobenzene	460081	0.5	ug/L	STD 0.5	<0.5	<0.5	<0.5	<0.5
Chloroform	460081	0.5	ug/L	STD 2	<0.5	<0.5	<0.5	<0.5
Dibromochloromethane	460081	0.3	ug/L	STD 2	<0.3	<0.3	<0.3	<0.3
Dichlorobenzene, 1,2-	460081	0.4	ug/L	STD 0.5	<0.4	<0.4	<0.4	<0.4
Dichlorobenzene, 1,3-	460081	0.4	ug/L	STD 0.5	<0.4	<0.4	<0.4	<0.4

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COC #: 914630

Guideline = O.Reg 153-T1-Groundwater

Volatiles

Lab I.D.
Sample Matrix
Sample Type
Sample Date
Sampling Time
Sample I.D.

Analyte	Batch No	MRL	Units	Guideline	1727549 GW153 2024-05-13 MW 101	1727551 GW153 2024-05-13 MW 105	1727552 GW153 2024-05-13 MW 105 DUP	1727553 GW153 2024-05-13 MW 207
Dichlorobenzene, 1,4-	460081	0.4	ug/L	STD 0.5	<0.4	<0.4	<0.4	<0.4
Dichlorodifluoromethane	460081	0.5	ug/L	STD 590	<0.5	<0.5	<0.5	<0.5
Dichloroethane, 1,1-	460081	0.4	ug/L	STD 0.5	<0.4	<0.4	<0.4	<0.4
Dichloroethane, 1,2-	460081	0.5	ug/L	STD 0.5	<0.5	<0.5	<0.5	<0.5
Dichloroethylene, 1,1-	460081	0.5	ug/L	STD 0.5	<0.5	<0.5	<0.5	<0.5
Dichloroethylene, 1,2-cis-	460081	0.4	ug/L	STD 1.6	<0.4	<0.4	<0.4	<0.4
Dichloroethylene, 1,2-trans-	460081	0.4	ug/L	STD 1.6	<0.4	<0.4	<0.4	<0.4
Dichloropropane, 1,2-	460081	0.5	ug/L	STD 0.5	<0.5	<0.5	<0.5	<0.5
Dichloropropene, 1,3-	460099	0.5	ug/L	STD 0.5	<0.5	<0.5	<0.5	<0.5
Dichloropropene, 1,3-cis-	460081	0.5	ug/L		<0.5	<0.5	<0.5	<0.5
Dichloropropene, 1,3-trans-	460081	0.5	ug/L		<0.5	<0.5	<0.5	<0.5
Ethylbenzene	460081	0.5	ug/L	STD 0.5	<0.5	<0.5	<0.5	<0.5
Ethylene dibromide	460081	0.2	ug/L	STD 0.2	<0.2	<0.2	<0.2	<0.2
Hexane (n)	460081	5	ug/L	STD 5	<5	<5	<5	<5
Methyl Ethyl Ketone	460081	2	ug/L	STD 400	<2	<2	<2	<2
Methyl Isobutyl Ketone	460081	5	ug/L	STD 640	<5	<5	<5	<5
Methyl tert-Butyl Ether (MTBE)	460081	2	ug/L	STD 15	<2	<2	<2	<2
Methylene Chloride	460081	4.0	ug/L	STD 5	<4.0	<4.0	<4.0	<4.0
Styrene	460081	0.5	ug/L	STD 0.5	<0.5	<0.5	<0.5	<0.5
Tetrachloroethane, 1,1,1,2-	460081	0.5	ug/L	STD 1.1	<0.5	<0.5	<0.5	<0.5
Tetrachloroethane, 1,1,2,2-	460081	0.5	ug/L	STD 0.5	<0.5	<0.5	<0.5	<0.5
Tetrachloroethylene	460081	0.3	ug/L	STD 0.5	<0.3	<0.3	<0.3	<0.3
Toluene	460081	0.4	ug/L	STD 0.8	<0.4	<0.4	<0.4	<0.4

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L3R 4M8
Attention: Ms. Aamna Arora
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Report Number: 3007450
Date Submitted: 2024-05-14
Date Reported: 2024-05-22
Project: 2305493
COC #: 914630

Guideline = O.Reg 153-T1-Groundwater

Volatiles

Guideline = O.Reg 153-T1-Groundwater					Lab I.D. Sample Matrix Sample Type Sample Date Sampling Time Sample I.D.	1727549 GW153 2024-05-13 MW 101	1727551 GW153 2024-05-13 MW 105	1727552 GW153 2024-05-13 MW 105 DUP	1727553 GW153 2024-05-13 MW 207
Analyte	Batch No	MRL	Units	Guideline					
Trichloroethane, 1,1,1,-	460081	0.4	ug/L	STD 0.5	<0.4	<0.4	<0.4	<0.4	
Trichloroethane, 1,1,2,-	460081	0.4	ug/L	STD 0.5	<0.4	<0.4	<0.4	<0.4	
Trichloroethylene	460081	0.3	ug/L	STD 0.5	<0.3	<0.3	<0.3	<0.3	
Trichlorofluoromethane	460081	0.5	ug/L	STD 150	<0.5	<0.5	<0.5	<0.5	
Vinyl Chloride	460081	0.2	ug/L	STD 0.5	<0.2	<0.2	<0.2	<0.2	
Xylene Mixture	460101	0.5	ug/L	STD 72	<0.5	<0.5	<0.5	<0.5	
Xylene, m/p-	460081	0.4	ug/L		<0.4	<0.4	<0.4	<0.4	
Xylene, o-	460081	0.4	ug/L		<0.4	<0.4	<0.4	<0.4	

Inorganics

<u>Inorganics</u>					Lab I.D. Sample Matrix Sample Type Sample Date Sampling Time Sample I.D.	1727550 GW153 2024-05-13 MW 102
Analyte	Batch No	MRL	Units	Guideline		
Chloride	460083	1000	ug/L	STD 790000	896000*	

896000*

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Guideline = O.Reg 153-T1-Groundwater

PHC Surrogate

Guideline = O.Reg 153-T1-Groundwater					Lab I.D. Sample Matrix Sample Type Sample Date Sampling Time Sample I.D.	1727549 GW153 2024-05-13 MW 101	1727551 GW153 2024-05-13 MW 105	1727552 GW153 2024-05-13 MW 105 DUP	1727553 GW153 2024-05-13 MW 207
<u>PHC Surrogate</u>									
Analyte	Batch No	MRL	Units	Guideline					
Alpha-androstrane	460178	0	%						

VOCs Surrogates

<u>VOCs Surrogates</u>					Lab I.D. Sample Matrix Sample Type Sample Date Sampling Time Sample I.D.	1727549 GW153 2024-05-13 MW 101	1727551 GW153 2024-05-13 MW 105	1727552 GW153 2024-05-13 MW 105 DUP	1727553 GW153 2024-05-13 MW 207
Analyte	Batch No	MRL	Units	Guideline					
1,2-dichloroethane-d4	460081	0	%		120	87	116	116	
4-bromofluorobenzene	460081	0	%		80	82	80	79	
Toluene-d8	460081	0	%		95	92	96	97	

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COC #: 914630

Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
458726	Methlynaphthalene, 1-	<0.1 ug/L	66	50-140		50-140		0-30
458726	Methlynaphthalene, 2-	<0.1 ug/L	64	50-140		50-140		0-30
458726	Acenaphthene	<0.1 ug/L	72	50-140		50-140		0-30
458726	Acenaphthylene	<0.1 ug/L	72	50-140		50-140		0-30
458726	Anthracene	<0.1 ug/L	74	50-140		50-140		0-30
458726	Benz[a]anthracene	<0.1 ug/L	80	50-140		50-140		0-30
458726	Benzo[a]pyrene	<0.01 ug/L	78	50-140		50-140		0-30
458726	Benzo[b]fluoranthene	<0.05 ug/L	74	50-140		50-140		0-30
458726	Benzo[ghi]perylene	<0.1 ug/L	79	50-140		50-140		0-30
458726	Benzo[k]fluoranthene	<0.05 ug/L	54	50-140		50-140		0-30
458726	Chrysene	<0.05 ug/L	79	50-140		50-140		0-30
458726	Dibenz[a h]anthracene	<0.1 ug/L	78	50-140		50-140		0-30
458726	Fluoranthene	<0.1 ug/L	79	50-140		50-140		0-30
458726	Fluorene	<0.1 ug/L	70	50-140		50-140		0-30
458726	Indeno[1 2 3-cd]pyrene	<0.1 ug/L	78	50-140		50-140		0-30
458726	Naphthalene	<0.1 ug/L	71	50-140		50-140		0-30
458726	Phenanthrene	<0.1 ug/L	76	50-140		50-140		0-30
458726	Pyrene	<0.1 ug/L	79	50-140		50-140		0-30
460081	Tetrachloroethane, 1,1,1,2-	<0.5 ug/L	91	60-130	109	50-140	0	0-30
460081	Trichloroethane, 1,1,1-	<0.4 ug/L	101	60-130	113	50-140	0	0-30
460081	Tetrachloroethane, 1,1,2,2-	<0.5 ug/L	92	60-130	110	50-140	0	0-30
460081	Trichloroethane, 1,1,2-	<0.4 ug/L	94	60-130	107	50-140	0	0-30
460081	Dichloroethane, 1,1-	<0.4 ug/L	99	60-130	119	50-140	0	0-30
460081	Dichloroethylene, 1,1-	<0.5 ug/L	100	60-130	112	50-140	0	0-30
460081	Dichlorobenzene, 1,2-	<0.4 ug/L	95	60-130	102	50-140	0	0-30
460081	Dichloroethane, 1,2-	<0.5 ug/L	105	60-130	124	50-140	0	0-30
460081	Dichloropropane, 1,2-	<0.5 ug/L	91	60-130	120	50-140	0	0-30
460081	Dichlorobenzene, 1,3-	<0.4 ug/L	93	60-130	101	50-140	0	0-30
460081	Dichlorobenzene, 1,4-	<0.4 ug/L	93	60-130	101	50-140	0	0-30
460081	Acetone	<5 ug/L	99	60-130	92	50-140	0	0-30
460081	Benzene	<0.5 ug/L	96	60-130	120	50-140	0	0-30
460081	Bromodichloromethane	<0.3 ug/L	94	60-130	121	50-140	0	0-30

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Date Reported: 2024-05-22
Project: 2305493
COC #: 914630

Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
460081	Bromoform	<0.4 ug/L	86	60-130	101	50-140	0	0-30
460081	Bromomethane	<0.5 ug/L	107	60-130	112	50-140	0	0-30
460081	Dichloroethylene, 1,2-cis-	<0.4 ug/L	92	60-130	120	50-140	0	0-30
460081	Dichloropropene, 1,3-cis-	<0.5 ug/L	92	60-130	112	50-140	0	0-30
460081	Carbon Tetrachloride	<0.2 ug/L	100	60-130	113	50-140	0	0-30
460081	Chloroform	<0.5 ug/L	102	60-130	119	50-140	0	0-30
460081	Dibromochloromethane	<0.3 ug/L	93	60-130	103	50-140	0	0-30
460081	Dichlorodifluoromethane	<0.5 ug/L	91	60-130	101	50-140	0	0-30
460081	Methylene Chloride	<4.0 ug/L	106	60-130	122	50-140	0	0-30
460081	Ethylbenzene	<0.5 ug/L	92	60-130	112	50-140	0	0-30
460081	Ethylene dibromide	<0.2 ug/L	92	60-130	100	50-140	0	0-30
460081	Hexane (n)	<5 ug/L	91	60-130	109	50-140	0	0-30
460081	Xylene, m/p-	<0.4 ug/L	98	60-130	112	50-140	0	0-30
460081	Methyl Ethyl Ketone	<2 ug/L	97	60-130	121	50-140	0	0-30
460081	Methyl Isobutyl Ketone	<5 ug/L	97	60-130	107	50-140	0	0-30
460081	Methyl tert-Butyl Ether (MTBE)	<2 ug/L	93	60-130	119	50-140	0	0-30
460081	Chlorobenzene	<0.5 ug/L	94	60-130	109	50-140	0	0-30
460081	Xylene, o-	<0.4 ug/L	92	60-130	113	50-140	0	0-30
460081	Styrene	<0.5 ug/L	95	60-130	111	50-140	0	0-30
460081	Dichloroethylene, 1,2-trans-	<0.4 ug/L	95	60-130	118	50-140	0	0-30
460081	Dichloropropene, 1,3-trans-	<0.5 ug/L	93	60-130	111	50-140	0	0-30
460081	Tetrachloroethylene	<0.3 ug/L	97	60-130	112	50-140	0	0-30
460081	Toluene	<0.4 ug/L	94	60-130	126	50-140	0	0-30
460081	Trichloroethylene	<0.3 ug/L	91	60-130	112	50-140	0	0-30
460081	Trichlorofluoromethane	<0.5 ug/L	92	60-130	105	50-140	0	0-30
460081	Vinyl Chloride	<0.2 ug/L	97	60-130	111	50-140	0	0-30
460083	Chloride	<1000 ug/L	100	90-110	98	80-120	0	0-20
460097	PHC's F1	<20 ug/L	80	60-140	95	60-140	0	0-30
460099	Dichloropropene, 1,3-							
460101	Xylene Mixture							
460102	PHC's F1-BTEX							
460161	Sodium	<1000 ug/L	101	82-118		80-120	0	0-20
460178	PHC's F2	<20 ug/L	89	60-140		60-140		0-30

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L3R 4M8
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PO#:
Invoice to: GEI Consultants Inc.

Report Number: 3007450
Date Submitted: 2024-05-14
Date Reported: 2024-05-22
Project: 2305493
COC #: 914630

Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
460178	PHC's F3	<50 ug/L	89	60-140		60-140		0-30
460178	PHC's F4	<50 ug/L	89	60-140		60-140		0-30
460182	Silver	<0.1 ug/L	119	80-120	69	70-130	0	0-20
460182	Arsenic	<1 ug/L	98	80-120	100	70-130	0	0-20
460182	Boron (total)	<10 ug/L	99	80-120	97	80-120	0	0-20
460182	Barium	<10 ug/L	96	80-120	91	70-130	0	0-20
460182	Beryllium	<0.5 ug/L	102	80-120	103	70-130	0	0-20
460182	Cadmium	<0.1 ug/L	101	80-120	95	70-130	0	0-20
460182	Cobalt	<0.2 ug/L	104	80-120	95	70-130	0	0-20
460182	Chromium Total	<1 ug/L	105	80-120	100	70-130	0	0-20
460182	Copper	<1 ug/L	109	80-120	78	70-130	1	0-20
460182	Molybdenum	<5 ug/L	96	80-120	96	70-130	0	0-20
460182	Nickel	<5 ug/L	109	80-120	96	70-130	0	0-20
460182	Lead	<1 ug/L	104	80-120	91	70-130	0	0-20
460182	Antimony	<0.5 ug/L	80	80-120	94	70-130	0	0-20
460182	Selenium	<1 ug/L	100	80-120	94	70-130	0	0-20
460182	Thallium	<0.1 ug/L	105	80-120	91	70-130	0	0-20
460182	Uranium	<1 ug/L	97	80-120	94	70-130	0	0-20
460182	Vanadium	<1 ug/L	100	80-120	100	70-130	0	0-20
460182	Zinc	<10 ug/L	109	80-120	93	70-130	0	0-20
460235	PHC's F2-Napth							
460239	PHC's F3-PAH							
460241	PHC's F3-PAH							
460249	1+2-methylnaphthalene							

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Project: 2305493
COC #: 914630

Test Summary

Batch No	Analyte	Instrument	Preparation Date	Analysis Date	Analyst	Method
458726	Methlynaphthalene, 1-	GC-MS	2024-05-17	2024-05-17	C_M	P 8270
458726	Methlynaphthalene, 2-	GC-MS	2024-05-17	2024-05-17	C_M	P 8270
458726	Acenaphthene	GC-MS	2024-05-17	2024-05-17	C_M	P 8270
458726	Acenaphthylene	GC-MS	2024-05-17	2024-05-17	C_M	P 8270
458726	Anthracene	GC-MS	2024-05-17	2024-05-17	C_M	P 8270
458726	Benz[a]anthracene	GC-MS	2024-05-17	2024-05-17	C_M	P 8270
458726	Benzo[a]pyrene	GC-MS	2024-05-17	2024-05-17	C_M	P 8270
458726	Benzo[b]fluoranthene	GC-MS	2024-05-17	2024-05-17	C_M	P 8270
458726	Benzo[ghi]perylene	GC-MS	2024-05-17	2024-05-17	C_M	P 8270
458726	Benzo[k]fluoranthene	GC-MS	2024-05-17	2024-05-17	C_M	P 8270
458726	Chrysene	GC-MS	2024-05-17	2024-05-17	C_M	P 8270
458726	Dibenz[a h]anthracene	GC-MS	2024-05-17	2024-05-17	C_M	P 8270
458726	Fluoranthene	GC-MS	2024-05-17	2024-05-17	C_M	P 8270
458726	Fluorene	GC-MS	2024-05-17	2024-05-17	C_M	P 8270
458726	Indeno[1 2 3-cd]pyrene	GC-MS	2024-05-17	2024-05-17	C_M	P 8270
458726	Naphthalene	GC-MS	2024-05-17	2024-05-17	C_M	P 8270
458726	Phenanthrene	GC-MS	2024-05-17	2024-05-17	C_M	P 8270
458726	Pyrene	GC-MS	2024-05-17	2024-05-17	C_M	P 8270
460081	Tetrachloroethane, 1,1,1,2-	GC-MS	2024-05-16	2024-05-17	SS	EPA 8260
460081	Trichloroethane, 1,1,1-	GC-MS	2024-05-16	2024-05-17	SS	EPA 8260
460081	Tetrachloroethane, 1,1,2,2-	GC-MS	2024-05-16	2024-05-17	SS	EPA 8260
460081	Trichloroethane, 1,1,2-	GC-MS	2024-05-16	2024-05-17	SS	EPA 8260
460081	Dichloroethane, 1,1-	GC-MS	2024-05-16	2024-05-17	SS	EPA 8260
460081	Dichloroethylene, 1,1-	GC-MS	2024-05-16	2024-05-17	SS	EPA 8260
460081	Dichlorobenzene, 1,2-	GC-MS	2024-05-16	2024-05-17	SS	EPA 8260
460081	Dichloroethane, 1,2-	GC-MS	2024-05-16	2024-05-17	SS	EPA 8260
460081	Dichloropropane, 1,2-	GC-MS	2024-05-16	2024-05-17	SS	EPA 8260
460081	Dichlorobenzene, 1,3-	GC-MS	2024-05-16	2024-05-17	SS	EPA 8260
460081	Dichlorobenzene, 1,4-	GC-MS	2024-05-16	2024-05-17	SS	EPA 8260
460081	Acetone	GC-MS	2024-05-16	2024-05-17	SS	EPA 8260
460081	Benzene	GC-MS	2024-05-16	2024-05-17	SS	EPA 8260
460081	Bromodichloromethane	GC-MS	2024-05-16	2024-05-17	SS	EPA 8260

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Date Submitted: 2024-05-14
Date Reported: 2024-05-22
Project: 2305493
COC #: 914630

Test Summary

Batch No	Analyte	Instrument	Preparation Date	Analysis Date	Analyst	Method
460081	Bromoform	GC-MS	2024-05-16	2024-05-17	SS	EPA 8260
460081	Bromomethane	GC-MS	2024-05-16	2024-05-17	SS	EPA 8260
460081	Dichloroethylene, 1,2-cis-	GC-MS	2024-05-16	2024-05-17	SS	EPA 8260
460081	Dichloropropene, 1,3-cis-	GC-MS	2024-05-16	2024-05-17	SS	EPA 8260
460081	Carbon Tetrachloride	GC-MS	2024-05-16	2024-05-17	SS	EPA 8260
460081	Chloroform	GC-MS	2024-05-16	2024-05-17	SS	EPA 8260
460081	Dibromochloromethane	GC-MS	2024-05-16	2024-05-17	SS	EPA 8260
460081	Dichlorodifluoromethane	GC-MS	2024-05-16	2024-05-17	SS	EPA 8260
460081	Methylene Chloride	GC-MS	2024-05-16	2024-05-17	SS	EPA 8260
460081	Ethylbenzene	GC-MS	2024-05-16	2024-05-17	SS	EPA 8260
460081	Ethylene dibromide	GC-MS	2024-05-16	2024-05-17	SS	EPA 8260
460081	Hexane (n)	GC-MS	2024-05-16	2024-05-17	SS	EPA 8260
460081	Xylene, m/p-	GC-MS	2024-05-16	2024-05-17	SS	EPA 8260
460081	Methyl Ethyl Ketone	GC-MS	2024-05-16	2024-05-17	SS	EPA 8260
460081	Methyl Isobutyl Ketone	GC-MS	2024-05-16	2024-05-17	SS	EPA 8260
460081	Methyl tert-Butyl Ether (MTBE)	GC-MS	2024-05-16	2024-05-17	SS	EPA 8260
460081	Chlorobenzene	GC-MS	2024-05-16	2024-05-17	SS	EPA 8260
460081	Xylene, o-	GC-MS	2024-05-16	2024-05-17	SS	EPA 8260
460081	Styrene	GC-MS	2024-05-16	2024-05-17	SS	EPA 8260
460081	Dichloroethylene, 1,2-trans-	GC-MS	2024-05-16	2024-05-17	SS	EPA 8260
460081	Dichloropropene, 1,3-trans-	GC-MS	2024-05-16	2024-05-17	SS	EPA 8260
460081	Tetrachloroethylene	GC-MS	2024-05-16	2024-05-17	SS	EPA 8260
460081	Toluene	GC-MS	2024-05-16	2024-05-17	SS	EPA 8260
460081	Trichloroethylene	GC-MS	2024-05-16	2024-05-17	SS	EPA 8260
460081	Trichlorofluoromethane	GC-MS	2024-05-16	2024-05-17	SS	EPA 8260
460081	Vinyl Chloride	GC-MS	2024-05-16	2024-05-17	SS	EPA 8260
460083	Chloride	IC	2024-05-17	2024-05-17	IP	SM 4110
460097	PHC's F1	GC/FID	2024-05-17	2024-05-17	SS	CCME O.Reg 153/04
460099	Dichloropropene, 1,3-	GC-MS	2024-05-17	2024-05-17	SS	EPA 8260
460101	Xylene Mixture	GC-MS	2024-05-17	2024-05-17	SS	EPA 8260
460102	PHC's F1-BTEX	GC/FID	2024-05-17	2024-05-17	SS	CCME O.Reg 153/04
460161	Sodium	ICP-OES	2024-05-18	2024-05-18	Z_S	M SM3120B-3500C
460178	PHC's F2	GC/FID	2024-05-21	2024-05-21	H_S	CCME O.Reg 153/04

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Test Summary

Batch No	Analyte	Instrument	Preparation Date	Analysis Date	Analyst	Method
460178	PHC's F3	GC/FID	2024-05-21	2024-05-21	H_S	CCME O.Reg 153/04
460178	PHC's F4	GC/FID	2024-05-21	2024-05-21	H_S	CCME O.Reg 153/04
460182	Silver	ICAPQ-MS	2024-05-21	2024-05-21	AaN	EPA 200.8
460182	Arsenic	ICAPQ-MS	2024-05-21	2024-05-21	AaN	EPA 200.8
460182	Boron (total)	ICAPQ-MS	2024-05-21	2024-05-21	AaN	EPA 200.8
460182	Barium	ICAPQ-MS	2024-05-21	2024-05-21	AaN	EPA 200.8
460182	Beryllium	ICAPQ-MS	2024-05-21	2024-05-21	AaN	EPA 200.8
460182	Cadmium	ICAPQ-MS	2024-05-21	2024-05-21	AaN	EPA 200.8
460182	Cobalt	ICAPQ-MS	2024-05-21	2024-05-21	AaN	EPA 200.8
460182	Chromium Total	ICAPQ-MS	2024-05-21	2024-05-21	AaN	EPA 200.8
460182	Copper	ICAPQ-MS	2024-05-21	2024-05-21	AaN	EPA 200.8
460182	Molybdenum	ICAPQ-MS	2024-05-21	2024-05-21	AaN	EPA 200.8
460182	Nickel	ICAPQ-MS	2024-05-21	2024-05-21	AaN	EPA 200.8
460182	Lead	ICAPQ-MS	2024-05-21	2024-05-21	AaN	EPA 200.8
460182	Antimony	ICAPQ-MS	2024-05-21	2024-05-21	AaN	EPA 200.8
460182	Selenium	ICAPQ-MS	2024-05-21	2024-05-21	AaN	EPA 200.8
460182	Thallium	ICAPQ-MS	2024-05-21	2024-05-21	AaN	EPA 200.8
460182	Uranium	ICAPQ-MS	2024-05-21	2024-05-21	AaN	EPA 200.8
460182	Vanadium	ICAPQ-MS	2024-05-21	2024-05-21	AaN	EPA 200.8
460182	Zinc	ICAPQ-MS	2024-05-21	2024-05-21	AaN	EPA 200.8
460235	PHC's F2-Napth	GC/FID	2024-05-22	2024-05-22	H_S	CCME O.Reg 153/04
460239	PHC's F3-PAH	GC/FID	2024-05-22	2024-05-22	H_S	CCME O.Reg 153/04
460241	PHC's F3-PAH	GC/FID	2024-05-22	2024-05-22	H_S	CCME O.Reg 153/04
460249	1+2-methylnaphthalene	GC-MS	2024-05-22	2024-05-22	C_M	P 8270

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CWS for Petroleum Hydrocarbons in Soil - Tier 1

Notes:

1. The laboratory method complies with CCME Tier 1 reference method for PHC in soil. It is validated for laboratory use.
2. Where the F1 fraction (C6 to C10) and BTEX are both measured, F1-BTEX is reported.
3. Where the F2 fraction (C10 to C16) and naphthalene are both measured, F2-naphthalene is reported.
4. Where the F3 fraction (C16 to C34) and PAHs* are both measured, F3-PAH is reported.
5. F4G is analyzed if the chromatogram does not descend to baseline before C50. Where F4 (C34 to C50) and F4G are both reported, the higher result is compared to the standard.
6. Unless otherwise stated in the sample comments, the following criteria have been met where applicable:
 - nC6 and nC10 response factors within 30% of response factor for toluene;
 - nC10, nC16, and nC34 response factors within 10% of each other;
 - C50 response factors within 70% of nC10 + nC16 + nC34 average; and,
 - Linearity is within 15%.
7. Unless otherwise stated in the sample comments, sampling requirements and analytical holding times have been met.
8. Gravimetric heavy hydrocarbons (F4G) cannot be added to the C6 and C50 hydrocarbons.
9. *PAHs = phenanthrene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-c,d)pyrene and pyrene.

