

**BRAMALEA ROAD CORRIDOR IMPROVEMENTS, MUNICIPAL CLASS
ENVIRONMENTAL ASSESSMENT STUDY**

Appendix G Geotechnical Assessment

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GeoPro Consulting Limited

Geotechnical-Hydrogeology-Environmental-Materials-Inspection

Geotechnical Investigation

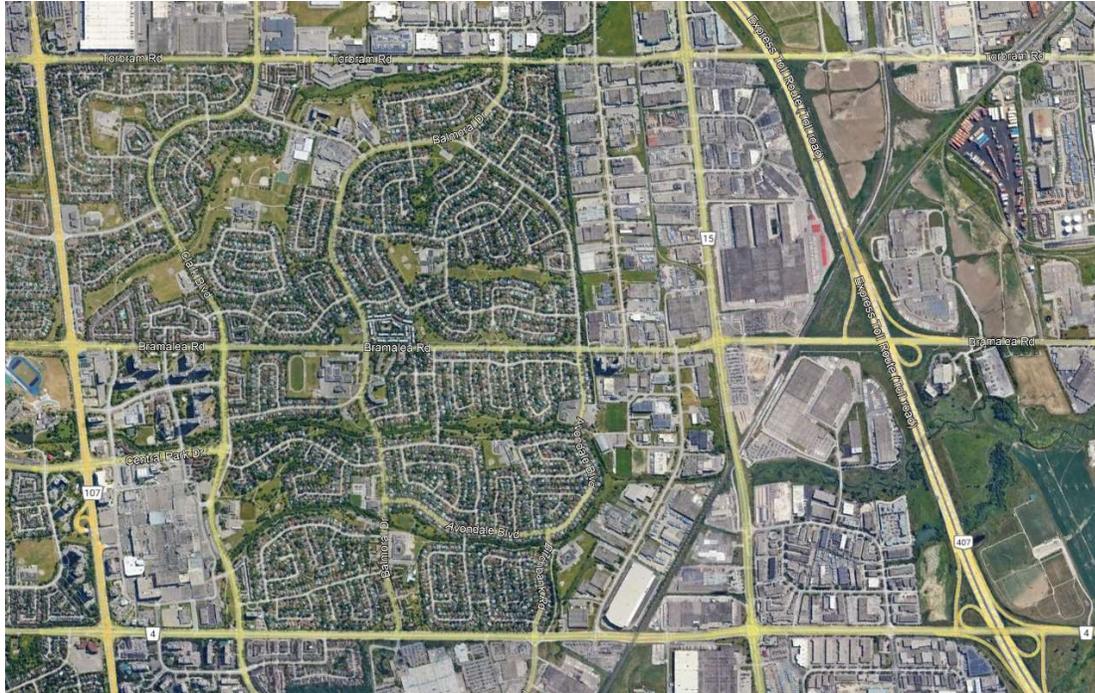
Proposed Road Improvements

Bramalea Road from Queen Street to South City Limit

City of Brampton, Ontario

Prepared For:

Stantec Consulting Limited



GeoPro Project No.: 18-2325GHE

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Limitations to the Report

1. INTRODUCTION

GeoPro Consulting Limited (GeoPro) was retained by Stantec Consulting Limited (the Client) to conduct a geotechnical investigation for the proposed road improvements on Bramalea Road from Queen Street to South City Limit, City of Brampton, Ontario.

The purpose of this geotechnical investigation was to obtain information on the existing subsurface conditions by means of a limited number of boreholes, test pits, in-situ tests and laboratory tests of soil samples to provide required geotechnical design information. Based on GeoPro's interpretation of the data obtained, geotechnical comments and recommendations related to the project designs are provided.

The report is prepared with the condition that the design will be in accordance with all applicable standards and codes, regulations of authorities having jurisdiction, and good engineering practice. Further, the recommendations and opinions in this report are applicable only to the proposed project as described above. On-going liaison and communication with GeoPro during the design stage and construction phase of the project are strongly recommended to confirm that the recommendations in this report are applicable and/or correctly interpreted and implemented. Also, any queries concerning the geotechnical aspects of the proposed project shall be directed to GeoPro for further elaboration and/or clarification.

This report is provided on the basis of the terms of reference presented in our approved proposal prepared based on our understanding of the project. If there are any changes in the design features relevant to the geotechnical analyses, or if any questions arise concerning the geotechnical aspects of the codes and standards, this office should be contacted to review the design. It may then be necessary to carry out additional borings and reporting before the recommendations of this report can be relied upon.

This report deals with geotechnical issues only. The geo-environmental (chemical) aspects of the subsurface conditions, including the consequences of possible surface and/or subsurface contamination resulting from previous activities or uses of the site and/or resulting from the introduction onto the site of materials from off-site sources, were not investigated and were beyond the scope of this assignment.

The site investigation and recommendations follow generally accepted practice for geotechnical consultants in Ontario. Laboratory testing follows ASTM or CSA Standards or modifications of these standards that have become standard practice in Ontario.

This report has been prepared for the Client. Third party use of this report without GeoPro's consent is prohibited. The limitations to the report presented in this report form an integral part of the report and they must be considered in conjunction with this report.

2. PROJECT DESCRIPTION

It is understood that the project is for the road improvements of Bramalea Road from Queen Street to South City Limit, City of Brampton, Ontario.

3. INVESTIGATION PROCEDURE

3.1 Existing Pavement Condition Survey

The section of Bramalea Road from Queen Street to South City Limit was visited on May 6, 10, and June 16, 2022 by a GeoPro pavement engineer who carried out a detailed visual pavement condition survey of the existing pavement. The survey was conducted in general accordance with MTO SP-022 Flexible Pavement Condition Rating Guidelines for Municipalities. During the site visit, key pavement distresses were observed (noting the type, severity and general density of surface distresses); the general site and pavement drainage conditions were also noted. Photographs, including descriptions of the typical pavement distresses, are enclosed in Appendix A.

3.2 Borehole and Core Investigation

Field work for the geotechnical investigation was carried out on November 25, December 3, 10, 13, 23, 29, 2021, January 7, 13, 14, February 10, 11, March 2, 7 to 10, 14 to 17, 21, 22, 29, April 18, 20, 26, 28, May 13, 20, 21, June 2, 3, 8, 23, 24, and July 4, 19, 22, 2022 during which time one hundred two (102) boreholes (Boreholes BH101 to BH142, BH144 to BH147, BH201 to BH220, BH223 to BH238, BH240 to BH243, BH301 to BH308, and BH401 to BH408) were advanced to depths ranging from about 1.4 m to 8.1 m below the existing ground surface. Based on the discussion with the Client, Boreholes BH143 and BH239 were canceled due to conflict with the underground utilities. The pavement was cored at twenty (20) locations (Coreholes CH1 to CH20) using a core drill in order to measure the existing asphalt/concrete thickness. In addition, thirty-nine (39) test pits (Test Pits TP1 to TP39) were excavated. The borehole/corehole/test pit locations are shown on the attached Drawings.

A proposed borehole/corehole/test pit location plan prepared by GeoPro was provided to Client for review prior to the field investigation work. The approved borehole/corehole/test pit locations were staked in the field by GeoPro; the borehole locations in the field were adjusted according to the drill rig accessibility and the underground utility conditions. The field work for this investigation was monitored by a member of our engineering staff who logged the boreholes/corehole/test pits and cared for the recovered samples.

The boreholes were advanced using an MB-23 Rotary Drill Rig supplied and operated by Straton Prime, a drilling specialist subcontracted to GeoPro. Samples were retrieved with a 51 mm (2 inches) O.D. split-barrel (split spoon) sampler driven with a hammer weighing 624 N and dropping 760 mm (30 inches) in accordance with the Standard Penetration Test (SPT) method. The types

and approximate depths of the subgrade soil in some boreholes were obtained using an auger sampling technique.

Groundwater condition observations were made in the boreholes during drilling and upon completion of drilling. A monitoring well (51 mm in diameter) was installed in selected borehole(s) to measure the groundwater tables as well as to facilitate the in-situ hydrogeological testing. The remaining borehole(s) were backfilled and sealed upon completion of drilling.

All soil samples obtained during this investigation were brought to our laboratory for further examination. These soil samples will be stored for a period of three (3) months after the day of issuing draft report, after which time they will be discarded unless we are advised otherwise in writing. Geotechnical classification testing (including water content, grain size distribution and Atterberg Limits, when applicable) was carried out on selected soil samples. The laboratory test results are provided in the attached Figures.

The ground surface elevations at the as-drilled borehole locations were not available at the time of preparing this report. Therefore, the stratigraphy at each borehole location has been referenced to the current grade level. Contractors performing the work should confirm the elevations prior to construction. The borehole/corehole/test pit locations plotted on the Borehole/Corehole/Test Pit Location Plan were based on the measurements of the site features and should be considered to be approximate.

4. PAVEMENT AND SUBSURFACE CONDITIONS

4.1 Existing Pavement Condition Survey

Based on the geotechnical investigation carried out by GeoPro, the existing pavement structures on Bramalea Road from Queen Street to South City Limit consist of flexible pavement structure.

In general, the existing pavement along Bramalea Road from Queen Street to South City Limit was observed to be mainly in fair to poor condition with localized relatively newly paved asphalt concrete and very poor areas. The major distresses were extensive slight to severe longitudinal and transverse cracking, extensive slight to severe random cracking, extensive slight to severe pavement raveling, frequent to intermittent slight to severe pavement edge cracking, intermittent slight to severe alligator cracking, intermittent slight to severe block cracking, few slight to moderate pavement depressions, few slight longitudinal construction joints, few slight to moderate potholes and few slight pavement patching. In addition, severe random cracking, moderate to severe alligator cracking and patching around catch basins, patching around manholes, sections of patching, and utility patching were noted.

The existing road along Bramalea Road from Queen Street to South City Limit has an urban cross-section (curb and catch basins). The overall surface drainage was generally considered to be fair to poor. Observations along the roadway within the project limits indicated that pavement

surface water generally flowed along the existing pavement grades and was being directed to catch basins. However, the drainage was impaired by poor grading and surface distresses with unsealed cracks and potholes allowing surface water to infiltrate into the underlying pavement and subgrade. The catch basins were observed to be in a poor to fair condition.

4.2 Soil Conditions

Notes on sample descriptions are presented in Enclosure 1A. Explanations of terms used in the borehole logs are presented in Enclosure 1B. The subsurface conditions in the boreholes are presented in the individual borehole logs. Detailed descriptions of the major soil strata encountered in the boreholes drilled at the site are provided as follows.

Bramalea Road

Topsoil

Topsoil was encountered surficially in Boreholes BH201 to BH203, BH205 to BH210, BH213, BH223, BH225, BH227, BH230 to BH236, BH238, BH240, BH242, BH401, BH406, BH407 and Test Pits TP1 to TP39. The topsoil thickness at borehole/test pit locations are summarized in the following table.

BH/TP No.	Topsoil Thickness (mm)
BH201	180
BH202	175
BH203	250
BH205	170
BH206	175
BH207	200
BH208	200
BH209	200
BH210	165
BH213	240
BH223	190
BH225	240
BH227	300

BH230	230
BH231	230
BH232	200
BH233	380
BH234	250
BH235	200
BH236	240
BH238	150
BH240	200
BH242	250
BH401	270
BH406	150
BH407	140
TP1	200
TP2	190
TP3	160
TP4	160
TP5	160
TP6	180
TP7	190
TP8	170
TP9	160
TP10	180
TP11	180
TP12	180
TP13	170
TP14	150
TP15	170
TP16	200
TP17	200

TP18	200
TP19	200
TP20	160
TP21	240
TP22	200
TP23	290
TP24	210
TP25	190
TP26	230
TP27	190
TP28	190
TP29	260
TP30	190
TP31	260
TP32	180
TP33	190
TP34	230
TP35	170
TP36	290
TP37	180
TP38	180
TP39	200

Note: in general, the topsoil consists of high contents of organics with trace to some rootlets. It should be noted that the thickness of the topsoil explored at the borehole/test pit locations may not be representative for the site and should not be relied on to calculate the amount of topsoil at the site.

Bramalea Road Pavement Structure

The composition thicknesses of pavement structure at borehole/corehole locations are summarized in the following table.

BH/CH No.	Pavement Structure (mm)		
	Asphalt	Granular Base	Granular Subbase
BH101	200	470	
BH102	140	350	380
BH103	150	430	
BH104	130	400	
BH105	170	370	
BH106	150	180	210
BH107	175	130	430
BH108	170	90	500
BH109	160	300	420
BH110	190	300	230
BH111	180	370	470
BH112	250	250	330
BH113	170	270	530
BH114	220	290	470
BH115	135	460	
BH116	120	240	410
BH117	170	270	520
BH118	170	290	380
BH119	180	230	510
BH120	150	300	210
BH121	145	500	
BH122	120	190	380
BH123	180	270	470
BH124	170	650	

BH125	220	220	490
BH126	210	190	400
BH127	320	200	230
BH128	230	80	430
BH129	230	120	450
BH130	185	210	390
BH131	195	100	470
BH132	165	100	500
BH133	350	250	160
BH134	170	630	
BH135	125	200	460
BH136	140	260	500
BH137	170	260	470
BH138	170	200	440
BH139	150	230	410
BH140	145	280	300
BH141	155	300	340
BH142	185	580	
BH144	170	530	
BH145	120	180	620
BH146	130	370	300
BH147	155	150	490
BH204	150	380	
BH211	170	270	600
BH212	140	290	370
BH214	170	310	460
BH215	210	470	
BH217	170	150	300
BH218	150	330	330
BH219	135	250	430

BH220	115	200	500
BH224	135	290	360
BH226	170	210	300
BH228	270	180	360
BH229	220	300	420
BH237	170	130	430
BH241	160	340	400
BH243	140	360	350
BH402	165	160	380
BH403	145	110	420
BH404	140	280	430
BH405	190	260	290
BH408	165	160	400
CH1	210	-	-
CH2	175	-	-
CH3	160	-	-
CH4	140	-	-
CH5	220	-	-
CH6	155	-	-
CH7	155	-	-
CH8	120	-	-
CH9	215	-	-
CH10	190	-	-
CH11	230	-	-
CH12	195	-	-
CH13	160	-	-
CH14	150	-	-
CH15	170	-	-
CH16	170	-	-
CH17	175	-	-

CH18	135	-	-
CH19	160	-	-
CH20	210	-	-
Range (Average)	115 – 350 (175)	370 – 870 (610)	

Note: due to the generally silty/sandy/gravelly nature of the subgrade soils, the exact depth of granular subbase was difficult to distinguish in some boreholes; due to likely previous pavement restoration/rehabilitations, variation of pavement structure/thickness should be anticipated between and beyond the borehole/corehole locations.

(Probable) Fill Materials

(Probable) fill materials consisting of organic silt, clayey silt, silt, sandy silt, sand and silt, silty sand, (fine) sand, silty gravelly sand, gravelly sand, and sand and gravel were encountered below the topsoil or granular base/subbase materials in Boreholes BH101 to BH142, BH144 to BH147, BH201 to BH215, BH217 to BH220, BH223 to BH238, BH240 to BH243, and BH401 to BH408, and extended to depths ranging from about 1.0 m to 6.6 m below the existing ground surface. Boreholes BH101, BH102, BH104, BH106 to BH108, BH110 to BH142, BH146, BH201, BH211, BH213, BH215, BH220, BH223, BH224, BH227 to BH229, BH231, BH233 to BH235, BH237, BH238, BH240, BH241, and BH407 were terminated in the (probable) fill materials.

The cohesive (probable) fill materials were encountered in Boreholes BH129, BH139, BH141, BH142, BH208, BH211, BH214, BH217, BH219, BH231, BH233, BH235, BH241, BH242, BH405 to BH408. The SPT N values of the cohesive fill materials in boreholes BH404 to BH408 ranging from 7 to 47 blows per 300 mm penetration indicated a firm to hard consistency.

The cohesionless (probable) fill materials were encountered in Boreholes BH101 to BH142, BH144 to BH147, BH201 to BH215, BH217, BH218, BH220, BH223 to BH238, BH240 to BH243, and BH401 to BH408. The SPT N values of the cohesionless fill materials in boreholes BH401 to BH408 ranging from 3 to greater than 100 blows per 300 mm penetration indicated a very loose to very dense compactness.

The in-situ moisture content measured in the soil samples ranged from approximately 1% to 43%.

Clayey Silt

Clayey silt deposit was encountered below the fill materials, sandy silt to silt and/or sandy silt till deposits in Boreholes BH103, BH144, BH210, BH219, BH225 and BH408, and extended to depths ranging from about 2.1 m to 3.0 m below the existing ground surface. Boreholes BH210 and BH225 were terminated in this deposit. SPT N values ranging from 43 to 46 blows per 300 mm penetration indicated a hard consistency. The natural moisture content measured in the soil samples ranged from approximately 5% to 20%.

Silt, (Fine) Sandy Silt and Silty Sand

Silt, (fine) sandy silt and silty sand deposits were encountered below the fill materials, clayey silt and/or sandy silt till deposits in Boreholes BH103, BH109, BH144, BH145, BH147, BH202 to BH209, BH212, BH214, BH218, BH226, BH230, BH232, BH236, BH242, BH243, BH402 to BH405, and BH408, and extended to depths ranging from about 2.0 m to 4.8 m below the existing ground surface. Boreholes BH103, BH109, BH144, BH145, BH147, BH202 to BH209, BH212, BH214, BH218, BH226, BH230, BH232, BH236, BH242, BH243 and BH405 were terminated in these deposits. SPT N values ranging from 35 to greater than 100 blows per 300 mm penetration indicated a dense to very dense compactness. The natural moisture content measured in the soil samples ranged from approximately 8% to 31%.

Clayey Silt Till

Clayey silt till deposit was encountered below the fill materials in Borehole BH406, and extended to a depth of about 7.1 m below the existing ground surface. An SPT N value of 32 blows per 300 mm penetration indicated a hard consistency. The natural moisture content measured in the soil sample was approximately 10%.

Sandy Silt Till

Sandy silt till deposit was encountered below the fill materials and/or clayey silt deposit in Boreholes BH105, BH219, BH401, BH402, BH404, BH405 and BH408, and extended to depths ranging from about 1.4 m to 5.0 m below the existing ground surface. Boreholes BH105 and BH408 were terminated in this deposit. SPT N values ranging from 14 to greater than 100 blows per 300 mm penetration indicated a compact to very dense compactness. The natural moisture content measured in the soil samples ranged from approximately 7% to 12%.

Silt/Shale Complex, Sandy Silt/Shale Complex and Silty Sand/Shale Complex

Silt/shale complex, sandy silt/shale complex and silty sand/shale complex deposits were encountered below the clayey silt, silt, sandy silt, clayey silt till, and sand and silt till/shale complex deposits in Boreholes BH219, BH401, BH403, BH404 and BH406, and extended to depths ranging from about 2.4 m to 8.1 m below the existing ground surface. Boreholes BH401 and BH406 were terminated in these deposits.

The “silt/shale complex, sandy silt/shale complex and silty sand/shale complex” consist of a heterogeneous silt, sandy silt and silty sand matrix, containing extensive broken bedrock (shale and limestone) slabs and fragments. SPT N values ranging from 67 to greater than 100 blows per 300 mm penetration indicated a very dense compactness. The natural moisture content measured in the soil samples ranged from approximately 5% to 18%.

The “silt/shale complex, sandy silt/shale complex and silty sand/shale complex” exists as a transitional deposit between the bedrock and the overlying soils. These deposits have characteristics of both the silt, sandy silt and silty sand and of the shale/limestone bedrock. The deposits are very difficult to auger through due to the fragmented shale/limestone content and the anticipated very high density/hardness conditions. The bedrock slabs anticipated within the soil complex may be quite large (over 1 m in length/thickness).

Sand and Silt Till/Shale Complex

Sand and silt till/shale complex deposit was encountered below the sandy silt till deposit in Borehole BH401, and extended to a depth of about 5.2 m below the existing ground surface.

The “sand and silt till/shale complex” consists of a heterogeneous sand and silt till matrix, containing extensive broken bedrock (shale and limestone) slabs and fragments. An SPT N value of 54 blows per 300 mm penetration indicated a very dense compactness. The natural moisture content measured in the soil sample was approximately 6%.

The “sand and silt till/shale complex” exists as a transitional deposit between the bedrock and the overlying soils. This deposit has characteristics of both the sand and silt till and of the shale/limestone bedrock. The deposits are very difficult to auger through due to the fragmented shale/limestone content and the anticipated very high density/hardness conditions. The bedrock slabs anticipated within the soil complex may be quite large (over 1 m in length/thickness).

Probable Weathered Shale

As best could be practically determined, shale presumed to coincide with the bedrock surface was encountered in Boreholes BH219 and BH402 to BH404 below the native soils at depths ranging from about 2.4 m to 3.1 m below the existing ground surface. The probable shale bedrock or cobbles/boulders or concrete block/slab may have also been encountered at depths ranging from about 1.4 m to 5.6 m below ground surface in Boreholes BH115, BH213, BH215, BH217, BH220, BH225, BH231, BH232, BH237, BH401, BH405 and BH408. Boreholes BH115, BH213, BH215, BH217, BH220, BH225, BH231, BH232, BH237, BH401, BH405 and BH408 were terminated at depths ranging from about 1.4 m to 5.6 m below ground surface due to auger/spoon refusal on probable shale bedrock or cobbles/boulders or concrete block/slab. Exploration of the bedrock was not carried out as part of this assignment, however based on samples recovered from the penetration testing, the bedrock beneath the site appeared to consist of weathered brown to grey shale interbedded with limestone. It should be noted that it is often difficult to distinguish where the “soil/shale” complex ends and bedrock begins, particularly where the bedrock surface is weathered. As such, a variation of greater than ± 2 m may be expected for the inferred bedrock surface depths/elevations.

Balmoral Drive (Borehole BH216)

Topsoil

Topsoil with a thickness of about 200 mm was encountered surficially in Borehole BH216. In general, the topsoil consists of high contents of organics with trace to some rootlets. It should be noted that the thickness of the topsoil explored at the borehole locations may not be representative for the site and should not be relied on to calculate the amount of topsoil at the site.

Fill Materials

Fill materials consisting of sandy silt, and sand and silt were encountered below the topsoil in Borehole BH216, and extended to a depth about 2.8 m below the existing ground surface. Borehole BH216 was terminated in the fill materials. Borehole BH216 was terminated at a depth of about 2.8 m below ground surface due to auger refusal on probable shale bedrock or cobbles/boulders or concrete block/slab. The in-situ moisture content measured in the soil samples ranged from approximately 13% to 25%.

Queen Street East (Boreholes BH301 to BH304)

Queen Street East Pavement Structure

The composition thicknesses of pavement structure at borehole locations are summarized in the following table.

BH No.	Pavement Structure (mm)		
	Asphalt	Granular Base	Granular Subbase
BH301	335	180	240
BH302	340	180	360
BH303	390	190	410
BH304	375	210	310
Range (Average)	335 – 390 (360)	420 – 600 (520)	

Note: due to the generally silty/sandy nature of the subgrade soils, the exact depth of granular subbase was difficult to distinguish in some boreholes; due to likely previous pavement restoration/rehabilitations, variation of pavement structure/thickness should be anticipated between and beyond the borehole locations.

Fill Materials

Fill materials consisting of organic silt, silt, sandy silt, and silty sand were encountered below the granular base/subbase materials in Boreholes BH301 to BH304, and extended to a depth of about 1.5 m below the existing ground surface. Boreholes BH301 to BH304 were terminated in the fill materials. The in-situ moisture content measured in the soil samples ranged from approximately 9% to 25%.

Steeles Avenue East (Boreholes BH305 to BH308)

Steeles Avenue East Pavement Structure

The composition thicknesses of pavement structure at borehole locations are summarized in the following table.

BH No.	Pavement Structure (mm)		
	Asphalt	Granular Base	Granular Subbase
BH305	270	230	410
BH306	400	250	300
BH307	230	270	300
BH308	210	280	330
Range (Average)	210 – 400 (280)	550 – 640 (590)	

Note: due to the generally silty/sandy/gravelly nature of the subgrade soils, the exact depth of granular subbase was difficult to distinguish in some boreholes; due to likely previous pavement restoration/rehabilitations, variation of pavement structure/thickness should be anticipated between and beyond the borehole locations.

Fill Materials

Fill materials consisting of sandy silt, sand and silt, and sand and gravel were encountered below the granular base/subbase materials in Boreholes BH305 to BH308, and extended to a depth of about 1.5 m below the existing ground surface. Boreholes BH307 and BH308 were terminated in the fill materials. The in-situ moisture content measured in the soil samples ranged from approximately 2% to 17%.

Sandy Silt, and Sand and Silt

Sandy silt, and sand and silt deposits were encountered below the fill materials in Boreholes BH305 and BH306, and extended to a depth of about 2.3 m below the existing ground surface.

Boreholes BH305 and BH306 were terminated in these deposits. The natural moisture content measured in the soil samples ranged from approximately 9% to 11%.

4.3 Groundwater Conditions

Groundwater condition observations were made in the boreholes during and immediately upon completion of drilling are shown in the borehole logs and are also summarized in the following table.

Borehole No.	BH Depth (m)	Depth of Water Encountered during Drilling (mBGS)	Water Level upon Completion of Drilling (mBGS)	Cave-in Depth upon Completion of Drilling (mBGS)
BH101	2.1	-	-	1.8
BH102	2.0	-	-	1.2
BH103	2.3	-	-	2.1
BH104	2.3	-	-	2.1
BH105	2.0	-	-	1.7
BH106	2.0	1.1	1.1	1.7
BH107	1.8	1.4	-	1.7
BH108	2.0	-	-	1.8
BH109	2.3	-	-	2.1
BH110	1.5	-	-	1.4
BH111	1.5	-	-	1.3
BH112	1.5	-	-	1.4
BH113	1.5	-	-	1.4
BH114	1.5	-	-	1.4
BH115	1.6	-	-	1.5
BH116	1.5	-	-	1.3
BH117	2.3	-	-	2.1
BH118	1.5	-	-	1.3
BH119	1.5	-	-	1.3
BH120	1.5	-	-	1.4
BH121	1.5	-	-	1.4
BH122	1.5	-	-	1.3
BH123	1.5	-	-	1.4
BH124	1.5	-	-	1.3
BH125	1.5	0.6	1.4	1.4

BH126	2.3	-	-	2.1
BH127	2.3	-	-	2.1
BH128	1.5	-	-	1.3
BH129	1.5	-	-	1.2
BH130	1.5	-	-	1.4
BH131	1.5	0.9	0.5	0.9
BH132	1.8	-	-	1.4
BH133	2.3	-	-	2.1
BH134	1.5	-	-	1.3
BH135	1.5	-	-	1.3
BH136	2.3	-	-	2.0
BH137	2.0	-	-	1.4
BH138	1.5	-	-	1.2
BH139	1.5	-	-	1.4
BH140	1.5	-	-	1.3
BH141	2.3	-	-	2.1
BH142	3.0	2.3	-	2.8
BH144	3.0	-	-	2.8
BH145	2.3	-	-	2.0
BH146	2.3	-	-	2.0
BH147	2.0	-	-	1.7
BH201	3.0	0.8	-	2.7
BH202	3.0	-	-	2.7
BH203	3.0	-	-	2.7
BH204	3.0	-	-	2.7
BH205	3.0	-	-	2.8
BH206	3.0	-	-	2.8
BH207	3.0	-	-	2.7
BH208	3.0	0.2	2.8	2.8
BH209	3.0	-	-	2.7
BH210	3.0	-	-	2.6
BH211	3.0	-	-	2.6
BH212	3.0	-	-	2.8
BH213	1.5	-	-	1.3
BH214	3.0	-	-	2.9

BH215	1.5	-	-	1.4
BH216	2.8	2.0	2.3	2.5
BH217	2.2	-	-	1.9
BH218	3.0	-	-	2.7
BH219	2.7	-	-	2.5
BH220	1.4	-	-	1.2
BH223	3.0	2.4	-	2.7
BH224	3.0	0.9	2.0	2.5
BH225	2.9	-	-	2.7
BH226	3.0	-	-	2.7
BH227	3.0	-	-	2.7
BH228	3.0	-	-	2.3
BH229	3.0	0.9	2.1	2.5
BH230	3.0	-	-	2.4
BH231	2.7	0.2	-	2.0
BH232	2.7	-	-	2.5
BH233	3.0	-	-	2.7
BH234	3.0	-	-	2.6
BH235	3.0	-	-	2.8
BH236	3.0	-	-	2.7
BH237	1.8	-	-	1.6
BH238	3.0	-	-	2.7
BH240	3.0	-	-	2.8
BH241	3.0	-	-	2.7
BH242	3.0	-	-	2.7
BH243	3.0	-	-	2.7
BH301	1.5	-	-	1.3
BH302	1.5	-	-	1.4
BH303	1.5	-	-	1.3
BH304	1.5	-	-	1.4
BH305	2.3	-	-	2.0
BH306	2.3	-	-	1.8
BH307	1.5	-	-	1.3
BH308	1.5	-	-	1.4
BH401	5.6	0.7	-	5.0

BH402	4.3	2.7	3.0	4.1
BH403	4.6	2.3	-	4.3
BH404	2.5	1.5	2.0	2.3
BH405	4.8	4.0	4.6	4.6
BH406	8.1	7.6	-	7.7
BH407	6.6	4.6	5.6	6.1
BH408	5.0	5.0	-	4.0

Note: mBGS = meters below ground surface

Monitoring well construction details and measured groundwater levels are shown in the borehole logs and are also summarized in the following table.

Monitoring Well ID	Screen Interval (mBGS)	Water Level (mBGS)	
		August 2, 2022	August 19, 2022
BH401	3.9 – 5.4	1.45	-
BH402	2.6 – 4.1	2.53	-
BH403	1.0 – 4.0	3.10	-
BH404	0.6 – 2.1	dry	2.05
BH405	3.2 – 4.7	2.67	-
BH406	4.7 – 7.7	-	5.56
BH407	4.9 – 6.4	-	5.04
BH408	2.7 – 4.2	-	3.47

Note: mBGS = meters below ground surface

It should be noted that the groundwater levels can vary and are subject to seasonal fluctuations in response to weather events.

4.4 Geotechnical Classification Testing Results

In the laboratory, each soil sample was examined as to its visual and textural characteristics by the Project Engineer. Moisture content determinations were carried out on all granular base/subbase and subgrade soil samples.

Sieve analyses were carried out on selected samples of the recovered granular base/subbase materials, and the results were compared to OPSS 1010 Granular A and Granular B Type I specifications. The gradation distribution curves are presented in the attached Figures and a summary of the results is provided in the following table.

Sample	OPSS 1010 Granular A	OPSS 1010 Granular B Type I
BH101 AS1A	Does not meet requirements due to excessive percentages passing most sieves	Does not meet requirements due to excessive fines (11.6% passing 0.075 mm sieve)
BH114 AS1A	Does not meet requirements due to excessive percentages passing all sieves	Does not meet requirements due to excessive fines (13.9% passing 0.075 mm sieve)
BH116 AS1B	Does not meet requirements due to excessive percentages passing all sieves	Does not meet requirements due to excessive fines (21.1% passing 0.075 mm sieve)
BH117 AS1B	Does not meet requirements due to excessive percentages passing all sieves	Does not meet requirements due to excessive fines (17.0% passing 0.075 mm sieve)
BH124 AS1	Does not meet requirements due to excessive percentages passing all sieves	Does not meet requirements due to excessive fines (26.3% passing 0.075 mm sieve)
BH139 AS1A	Does not meet requirements due to excessive percentages passing most sieves	Does not meet requirements due to excessive fines (13.7% passing 0.075 mm sieve)
BH306 AS1A	Does not meet requirements due to excessive percentages passing all sieves	Does not meet requirements due to excessive fines (12.3% passing 0.075 mm sieve)

Grain size analysis was carried out on a selected sample to confirm the visual description of the subgrade soil. The grain size distribution curve is presented in the attached Figures and a summary of the grain size analysis result is provided the following table.

Soil Sample ID	Soil Depth (m)	Description	Susceptibility of Frost Heaving
BH103 AS3	1.5 – 2.0	Clayey Silt	Low
BH144 AS3	1.5 – 2.0	Clayey Silt	Low
BH201 AS3	1.5 – 2.0	Fill: Silty Sand	Low
BH207 AS2	0.8 – 1.5	Fill: Silty Sand	Low
BH210 AS4	2.3 – 2.7	Clayey Silt	Low
BH212 AS3	1.5 – 2.0	Sandy Silt	Moderate
BH225 AS4B	2.6 – 2.9	Clayey Silt	Moderate
BH306 AS3	1.5 – 2.3	Sand and Silt	Low
BH406 SS6A	4.57 – 4.65	Fill: Silty Sand	Low
BH408 SS4	2.3 – 2.7	Clayey Silt	Low

5. ASBESTOS ANALYTICAL TEST RESULTS

Asphalt concrete samples were submitted to an environmental laboratory to determine if asbestos fibres are present in the existing asphalt concrete samples using PLM visual estimation in accordance with EPA 600/R-93/116 method.

A copy of asbestos analytical testing results with the Laboratory Certificates are provided in Appendix C. The results of asphalt concrete containing asbestos are presented in the following Table:

Core ID	Asbestos Detected	Asbestos Percentage (%)	Asbestos-Containing Material
BH101	No	-	No
BH104	Yes	0.5 to 1	Yes
BH113	No	-	No
BH119	No	-	No
BH125	No	-	No
BH133	No	-	No
BH136	Yes	0.5 to 1	Yes
BH141	No	-	No
BH147	No	-	No

Note: "asbestos-containing material" means material that contains 0.5 percent or more asbestos by dry weight (Ontario Regulation 278/05).

6. DISCUSSION AND RECOMMENDATIONS

This report contains the findings of GeoPro's geotechnical investigation, together with the geotechnical engineering recommendations and comments. These recommendations and comments are based on factual information and are intended only for use by the design engineers. The number of boreholes and test pits may not be sufficient to determine all the factors that may affect construction methods and costs. Subsurface conditions between and beyond the boreholes may differ from those encountered at the borehole locations, and conditions may become apparent during construction, which could not be detected or anticipated at the time of the site investigation. The anticipated construction conditions are also discussed, but only to the extent that they may influence design decisions. Construction methods discussed, however, express GeoPro's opinion only and are not intended to direct the contractors on how to carry out the construction. Contractors should also be aware that the data and their interpretation presented in this report may not be sufficient to assess all the factors that may have an effect on the construction.

The design drawings of the project were not available at the time of preparing this report. Once the design drawings and detailed site plan are available, this report should be reviewed by GeoPro and further recommendations be provided as appropriate.

6.1 Pavement Structure Designs

6.1.1 Traffic Data Analysis

Bramalea Road from Queen Street to South City Limit is currently a four-lane major arterial road. Annual Average Daily Traffic (AADT) data, commercial vehicle percentage and annual growth rate within the project limits were provided by the Client in an email sent on June 7, 2022.

The above-mentioned traffic data were used to estimate the design Equivalent Single Axle Loads (ESALs). The traffic volumes were determined for a 20-year pavement design life, which is considered typical for pavements of this type. On this basis, the ESAL applications during design period were calculated in accordance with the MTO MI-183 Adaption and Verification of AASHTO Pavement Design Guide for Ontario Conditions. The total design ESALs anticipated over the 20-year design life period are summarized in the following table. The detailed traffic analysis and estimated ESALs for the 20-year pavement design life is attached in Appendix D.

Parameters	Traffic Data
	Bramalea Road from Queen Street to South City Limit
AADT (Year of 2016)	24,000
Commercial Vehicle Percentage	7%
Annual Growth Rate	1%
Estimated Total Design ESALs (20-Year)	11,175,300

6.1.2 Pavement Design

Based on the borehole information, the subgrade soils along the length of the proposed roadway section generally consisted of clayey silt and silty/sandy/gravelly soils. The resilient modulus of subgrade has been assumed to be 30 MPa. The pavement designs were developed based on the 1993 AASHTO Guide for Design of Pavement Structures and MTO MI-183 Adaption and Verification of AASHTO Pavement Design Guide for Ontario Conditions. The pavement design parameters are summarized in the following table.

Design Parameters	Values
Design Life	20 Years
ESALs over Analysis Period	11,175,300

Initial Serviceability Index	4.5
Terminal Serviceability Index	2.5
Reliability Level, %	90
Overall Standard Deviation	0.46
Design Subgrade Resilient Modulus, MPa	30
Design Structure Number	146
Existing Pavement	
Layer Coefficient of Hot Mix Asphalt	0.26
Layer Coefficient of Granular Base/Subbase Course	0.09
Drainage Coefficients of Base and Subbase Courses	0.9
Reconstructed/Widening Pavements	
Layer Coefficient of Hot Mix Asphalt	0.42
Layer Coefficient of Pulverized Materials	0.12
Layer Coefficient of Granular Base Course	0.14
Layer Coefficient of Granular Subbase Course	0.09
Drainage Coefficients of Base and Subbase Courses	1.0

6.1.3 Pavement Rehabilitation/Reconstruction Recommendations

Based on the anticipated traffic volumes, type and strength of subgrade soil, and the existing average pavement thicknesses, the effective Structural Number (SN_{eff}) of the existing pavement structure is 95, which is less than the Structural Number ($SN = 146$) required for the anticipated ESALs in a 20-year pavement design life. As such, this section of pavement is structurally inadequate, and strengthening is required to increase the structural capacity for the anticipated traffic.

In order to eliminate pavement distresses and improve the roadway structural capacity, full-depth reclamation (pulverization) with hot-mix asphalt (HMA), partial-depth reconstruction and full-depth reconstruction may be considered to extend its overall service life. It should be noted that adoption of full-depth reclamation (pulverization) with hot-mix asphalt (HMA) will result in a grade raise of 140 mm. The recommended pavement rehabilitation strategies are as follows:

Option 1: Full-Depth Reclamation (Pulverization) with HMA Overlay for Existing Lanes with Grade Raise

Consideration may be given to full-depth reclamation (pulverization) with HMA overlay for the pavement rehabilitation. The full-depth reclamation pavement structure is shown in the following table:

Material		Thickness of Pavement (mm)
Hot-Mix Asphalt (OPSS 1150/ OPSS 1151)	HL 1/SP12.5 FC2D Surface Course	40 (1 lift)
	HDBC/SP19.0 D Binder Course	140 (2 lifts)
Pulverized Materials		270
Remaining Granular Base/Subbase		475

The construction procedure may be considered as follows:

- Mill and remove 40 mm existing asphalt concrete by milling and dispose off-site;
- Pulverize remaining asphalt concrete including the underlying granular base/subbase material to a depth of 270 mm from the pavement centreline to the edge of the pavement; grade and compact to 100 percent of SPMDD;
- The exposed pulverized base should be carefully proofrolled using a heavily loaded truck in conjunction with the inspection by the geotechnical engineer from GeoPro; any soft, segregated or wet spots shall be repaired in accordance with the instructions provided in the section “Full-Depth Base Repairs”; and
- Place thickness of hot-mix asphalt (HMA) with the thickness and type of HMA specified in the table above, produced and placed in accordance with OPSS 310. The surface of the completed pavement should be provided with a grade of 2 percent.

Adoption of this pavement rehabilitation option will result in a grade raise of about 140 mm. The grade raise will impact the intersection roads and side entrances, which should be considered by the design engineer.

The constructed pavement Structural Number is 146 which is equal to the Design Structural Number 146 of the subject road. The recommended pavement structure in the above table is structurally adequate for the expected traffic load over the 20-year design life with regular maintenance.

Option 2: Partial-Depth Reconstruction

Consideration may be given to removing and replacing the existing asphalt and upper portion of the granular materials for the pavement rehabilitation; the proposed pavement structure is shown in the following table.

Material		Thickness of Pavement (mm)
Hot-Mix Asphalt (OPSS 1150/ OPSS 1151)	HL 1/SP12.5 FC2D Surface Course	40 (1 lift)
	HDBC/SP19.0 D Binder Course	160 (2 lifts)
Granular Material (OPSS 1010)	Granular A Native Base (or 20 mm Crusher Run Limestone)	250
Remaining Granular Base/Subbase		

The construction procedure may be considered as follows:

- Completely remove the existing asphalt, and upper portion of the granular materials to depths in accordance with the above table;
- The exposed granular base/subbase surface should be graded and compacted to 100 percent of SPMDD;
- The exposed granular base/subbase should be proof rolled using a heavily loaded truck in conjunction with the inspection by the geotechnical engineer from GeoPro; any soft, segregated or wet spots shall be repaired in accordance with the instructions provided in the section “Full-Depth Base Repairs”;
- Place Granular A Native base with the thickness and materials specified in the table above compacted to 100 percent of SPMDD; and
- Place thickness of hot-mix asphalt (HMA) with the thickness and type of HMA specified in the table above, produced and placed in accordance with OPSS 310. The surface of the completed pavement should be provided with a grade of 2 percent.

The Structural Number of the recommended pavement structure as shown in the table above is 146 which is equal to the Design Structural Number 146 of the subject road. The recommended pavement structure in the above table is structurally adequate for the expected traffic loads over the 20-year design period with regular maintenance.

Option 3: Full-Depth Reconstruction

As an alternative, consideration may be given to a full-depth reconstruction. Based on the existing pavement condition, anticipated traffic volumes on this road section, type and strength of subgrade soils, and City of Brampton design requirements for pavement structure, the recommended minimum new pavement structure is shown in the following table.

Material		Thickness of Pavement (mm)
Hot-Mix Asphalt (OPSS 1150/ OPSS 1151)	HL 1/SP12.5 FC2D Surface Course	40 (1 lift)
	HDBC/SP19.0 D Binder Course	140 (2 lifts)
Granular Material (OPSS 1010)	Granular A Native Base (or 20 mm Crusher Run Limestone)	150
	Granular B Type I Subbase	550
Prepared and Approved Subgrade		

The construction procedure may be considered as follows:

- Completely remove the existing asphalt concrete, concrete slab, granular materials, subgrade soils, organic matters and any other obviously deleterious materials to the depth required to accommodate the new pavement structure in the above table;
- The exposed subgrade surface should be graded and compacted to 98 percent of Standard Proctor Maximum Dry Density (SPMDD);
- The prepared subgrade should be carefully proofrolled using a heavily loaded truck in conjunction with the inspection by the geotechnical engineer from GeoPro; any soft/loose or wet areas or other obviously deleterious materials or organic soils must be excavated and properly replaced with material similar to the existing subgrade soils or other granular soils approved by the geotechnical engineer;
- All backfill materials should be placed in uniform loose lifts not exceeding 200 mm thickness and compacted to at least 98 percent of SPMDD. The finished subgrade should be provided with a grade of 3 percent towards the positive drainages;
- Place Granular B subbase with a minimum thickness and material specified in the table above in loose lifts not exceeding 200 mm in thickness, compacted to 100 percent of SPMDD;
- Place Granular A Native base with the thickness and materials specified in the table above compacted to 100 percent of SPMDD; and

- Place thickness of hot-mix asphalt (HMA) with the thickness and type of HMA specified in the table above, produced and placed in accordance with OPSS 310. The surface of the completed pavement should be provided with a grade of 2 percent.

The Structural Number of the recommended minimum new pavement structure as shown in the table above is 146 which is equal to the Design Structural Number 146 of the subject road. The recommended minimum new pavement structure in the above table is structurally adequate for the expected traffic loads over the 20-year design period with regular maintenance.

6.1.4 Drainage Improvements

Control of surface water is an important factor in achieving a good pavement service life. Therefore, we recommend that provisions be made to drain the new pavement subgrade and its granular layers. It is understood that the proposed road widening is anticipated to consist of typical urban section (concrete curb/gutter and catch basins). To provide positive drainage across the pavement platform, the pavement surface should be sloped at a grade of 2 percent and the pavement subgrade should be sloped at a grade of 3 percent towards the subdrains. Subdrains should be designed and constructed in accordance with OPSS or local municipality specifications, and the subdrain pipe should be connected to a positive outlet.

6.1.5 General Pavement Recommendations

6.1.5.1 Pavement Materials

The following hot-mix asphalt mix types should be selected:

- HL 1/SP12.5 FC2D Surface Course; and
- HDBC/SP19.0 D Binder Course

These hot mix asphalt mixes should be designed and produced in conformance with OPSS 1150/1151 requirements.

Granular A and Granular B materials should be used as base course and subbase course, respectively. Both the Granular A and Granular B materials should meet OPSS 1010 specifications.

6.1.5.2 Asphalt Cement Grade

Performance graded asphalt cement PG 64-28 conforming to OPSS 1101 requirements is recommended for the HMA binder and surface courses.

6.1.5.3 Tack Coat

A tack coat (SS1) should be applied to all construction joints prior to placing hot mix asphalt to create an adhesive bond. Prior to placing hot mix asphalt, SS1 tack coat must also be applied to all existing surfaces and between all new lifts in accordance with OPSS 308 requirements.

6.1.5.4 Compaction

All granular base and subbase materials should be placed in uniform lifts not exceeding 200 mm loose thickness and compacted to 100 percent of the material's SPMDD at ± 2 percent of the materials Optimum Moisture Content (OMC). Hot mix asphalt should be placed and compacted in accordance with OPSS 310 specifications.

6.1.5.5 Pavement Tapers

At the limits of construction, appropriate tapering of the pavement thickness to match the existing pavement structure should be implemented in accordance with OPSS and the applicable local municipality specifications.

6.1.5.6 Subgrade Preparation

All topsoil, and any organic or other unsuitable soils should be stripped from the subgrade area. Following stripping, the site should be graded to the subgrade level and approved. The subgrade should then be proofrolled by a heavily loaded truck, in the presence of the geotechnical engineer from GeoPro. Any soft spots exposed during the proofroll should be completely removed and replaced by selected fill materials, similar to the existing subgrade soils and approved by the geotechnical engineer from GeoPro. The subgrade should then be re-compacted from the surface to at least 98% of its SPMDD. If the moisture contents of the local soil materials cannot be maintained at $\pm 2\%$ of the OMC, imported select materials may need to be used.

The final subgrade should be shaped properly to facilitate rapid drainage and to prevent the formation of local depressions in which water could accumulate. Proper shaping which allows the water to escape towards the sides (where it can be removed by means of subdrains or ditches) should be considered for the project. Otherwise, any water trapped in the granular base material may cause problems due to softened subgrade, and differential frost heave, etc.

Any fill materials required for re-grading the site or backfill should be free of topsoil, organic or any other unsuitable matter and must be approved by the geotechnical engineer from GeoPro. The approved fill materials should be placed in thin layers not exceeding 300 mm (uncompacted loose lift thickness) and compacted to at least 98% of its SPMDD or as per local municipal standards. The placing, spreading and rolling of the subgrade should be in accordance with OPSS or local municipal standards.

Frequent field density tests or full-time inspection should be carried out by the geotechnical engineer from GeoPro based on the project specifications or follow OPSS or local municipal standards.

6.1.5.7 Reuse and Disposal of Existing Pavement Materials

It should be noted that gradation analyses of the selected samples of the existing granular base and subbase materials do not meet the OPSS 1010 granular A and B Type I gradation specifications with excessive content of fines. Therefore, the existing excavated granular materials could not be reused as subbase/base materials, however, they can be reused as subgrade material to replace soft, wet or otherwise disturbed areas identified during proofrolling subject to the environmental quality.

6.1.5.8 Maintenance

Systematic routine preventative maintenance is strongly recommended for all newly constructed pavements. Crack routing and sealing will generally be required within 2 to 3 years after pavement construction. As the pavement ages, it will also be necessary to patch areas of medium to high severity distresses, such as potholes and ravelling. Routine maintenance should also be considered to extend the life of the pavement.

6.1.5.9 Additional Comments

Variation of subsurface conditions and pavement structure type/thickness should be anticipated, any organic soils, soft/loose or wet areas or other obviously deleterious materials must be excavated and properly replaced with material similar to the existing subgrade soils or other granular soils approved by the geotechnical engineer. A provisional cost of removing the existing pavement structure (asphalt, concrete, etc.) and a unit price of placing additional engineered fills, granular materials and asphalt should be considered in the contract.

7. ENVIRONMENTAL SOIL ANALYTICAL RESULTS

7.1 Soil Sample Submission

Selected soil samples were submitted to a laboratory which is a member of Canadian Association for Laboratory Accreditation (“CALA”) for chemical analyses. Descriptions of the selected soil samples, sample depths and analytical parameters are presented in the following table.

Sample ID	Soil Depth (mBGS)	Primary Soil	Assigned Analytical Parameters
BH102 AS2B	0.9 – 1.5	Fill: Sandy Silt	M&I
BH111 AS2B	1.0 – 1.5	Fill: Silty Sand	M&I; PHCs; VOCs

BH113 AS2B	1.0 – 1.5	Fill: Sandy Silt to Sand and Silt	M&I
BH118 AS2B	0.8 – 1.5	Fill: Sandy Silt to Silt	M&I; PHCs; VOCs
BH122 AS1C	0.7 – 0.8	Fill: Sandy Silt	M&I; PHCs; VOCs
BH127 AS2B	1.2 – 1.5	Fill: Sandy Silt	M&I; PHCs; VOCs
BH134 AS2B	0.8 – 1.5	Fill: Sandy Silt	M&I; PHCs; VOCs
BH139 AS2B	0.8 – 1.1	Fill: Sandy Silt	M&I
BH142 AS2	0.8 – 1.2	Fill: Sand and Silt	M&I
BH147 AS2B	0.8 – 1.2	Fill: Sandy Silt	M&I
BH206 AS2	0.8 – 1.2	Fill: Silty Sand	M&I; PHCs; VOCs
BH209 AS2	0.8 – 1.5	Fill: Sandy Silt	M&I
BH215 AS2	0.8 – 1.5	Fill: Sandy Silt	M&I; PHCs; VOCs
BH224 AS2B	0.8 – 1.2	Fill: Silty Sand	M&I
BH230 AS2	0.8 – 1.2	Fill: Sandy Silt	M&I
BH235 AS2	0.8 – 1.2	Fill: Sandy Silt to Sand and Silt	M&I
BH237 AS2	0.8 – 1.5	Fill: Sandy Silt	M&I; PHCs; VOCs
BH241 AS2B	0.9 – 1.2	Fill: Sandy Silt	M&I; PHCs; VOCs
BH302 AS2B	0.9 – 1.2	Fill: Sandy Silt to Silt	M&I; PHCs; VOCs
BH303 AS2B	1.0 – 1.2	Fill: Organic Silt	M&I
BH305 AS2C	1.2 – 1.5	Fill: Sand and Silt	M&I
BH308 AS2B	0.8 – 1.5	Fill: Sandy Silt	M&I; PHCs; VOCs

Notes: M&I = Metals and Inorganics
 PHCs = Petroleum Hydrocarbons Fractions F1 to F4
 VOCs = Volatile Organic Compounds

7.2 Soil Analytical Results

Selected soil samples were analysed for PHCs, VOCs and/or M&I under Ontario Regulation 153/04 (“O. Reg. 153/04”) as amended. A copy of the soil analytical results is provided in the Laboratory Certificates of Analysis attached in Appendix E.

The soil analytical results were compared with the Ontario Ministry of the Environment, Conservation and Parks (MECP) “Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act”, April 2011, Table 1: Full Depth Background Site Condition Standards for Residential/Parkland/Institutional/Industrial/Commercial/Community Property Uses (2011 MECP Table 1 Standards); Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition (2011 MECP Table 2 Standards), and Table 3: Full Depth Generic Site Condition Standards in a non-potable Ground Water Condition (2011 MECP Table 3 Standards), Table 2.1: Full Depth Excess Soil Quality Standards in a Potable Ground Water Condition (2020 MECP Table 2.1 Standards), and Table 3.1: Full Depth Excess Soil Quality Standards in a Non-Potable Ground Water Condition (2020 MECP Table 3.1 Standards).

Based on the comparison, exceedances of the MECP Table 1, Table 2, Table 3, Table 2.1 and/or Table 3.1 standards were noted and summarized in the following tables:

Soil Sample ID	Parameter	Detected Value / Unit	MECP Table 1 Standards Guideline Value	MECP Table 2 and 3 Standards (R/P/I) Guideline Value	MECP Table 2 and 3 Standards (I/C/C) Guideline Value
BH102 AS2B	EC	2.68 mS/cm	<u>0.57</u> mS/cm	<u>0.7</u> mS/cm	<u>1.4</u> mS/cm
	SAR	17.7	<u>2.4</u>	<u>5</u>	<u>12</u>
BH111 AS2B	EC	2.06 mS/cm	<u>0.57</u> mS/cm	<u>0.7</u> mS/cm	<u>1.4</u> mS/cm
	SAR	50.0	<u>2.4</u>	<u>5</u>	<u>12</u>
BH113 AS2B	EC	4.82 mS/cm	<u>0.57</u> mS/cm	<u>0.7</u> mS/cm	<u>1.4</u> mS/cm
	SAR	30.0	<u>2.4</u>	<u>5</u>	<u>12</u>
BH118 AS2B	EC	1.55 mS/cm	<u>0.57</u> mS/cm	<u>0.7</u> mS/cm	<u>1.4</u> mS/cm
	SAR	10.1	<u>2.4</u>	<u>5</u>	12
BH122 AS1C	EC	1.68 mS/cm	<u>0.57</u> mS/cm	<u>0.7</u> mS/cm	<u>1.4</u> mS/cm
	SAR	47.8	<u>2.4</u>	<u>5</u>	<u>12</u>
BH127 AS2B	EC	4.53 mS/cm	<u>0.57</u> mS/cm	<u>0.7</u> mS/cm	<u>1.4</u> mS/cm
	SAR	44.0	<u>2.4</u>	<u>5</u>	<u>12</u>
BH134 AS2B	EC	2.10 mS/cm	<u>0.57</u> mS/cm	<u>0.7</u> mS/cm	<u>1.4</u> mS/cm
	SAR	8.44	<u>2.4</u>	<u>5</u>	12
	PHCs F4	180 ug/g	<u>120</u> ug/g	2800 ug/g	3300 ug/g
	PHCs F4g	600 ug/g	<u>120</u> ug/g	2800 ug/g	3300 ug/g
BH139 AS2B	EC	3.06 mS/cm	<u>0.57</u> mS/cm	<u>0.7</u> mS/cm	<u>1.4</u> mS/cm
	SAR	56.5	<u>2.4</u>	<u>5</u>	<u>12</u>
BH142 AS2	EC	2.10 mS/cm	<u>0.57</u> mS/cm	<u>0.7</u> mS/cm	<u>1.4</u> mS/cm
	SAR	19.6	<u>2.4</u>	<u>5</u>	<u>12</u>
BH147 AS2B	EC	2.71 mS/cm	<u>0.57</u> mS/cm	<u>0.7</u> mS/cm	<u>1.4</u> mS/cm
	SAR	36.1	<u>2.4</u>	<u>5</u>	<u>12</u>
	Antimony	2 ug/g	<u>1.3</u> ug/g	7.5 ug/g	40 ug/g
	Barium	404 ug/g	<u>220</u> ug/g	<u>390</u> ug/g	670 ug/g
	Copper	351 ug/g	<u>92</u> ug/g	<u>140</u> ug/g	<u>230</u> ug/g
	Mercury	0.4 ug/g	<u>0.27</u> ug/g	<u>0.27</u> ug/g	3.9 ug/g
	Molybdenum	6 ug/g	<u>2</u> ug/g	6.9 ug/g	40 ug/g
	Selenium	3.9 ug/g	<u>1.5</u> ug/g	<u>2.4</u> ug/g	5.5 ug/g
Silver	2.2 ug/g	<u>0.5</u> ug/g	20 ug/g	40 ug/g	

Soil Sample ID	Parameter	Detected Value / Unit	MECP Table 1 Standards Guideline Value	MECP Table 2 and 3 Standards (R/P/I) Guideline Value	MECP Table 2 and 3 Standards (I/C/C) Guideline Value
	Zinc	578 ug/g	<u>290</u> ug/g	<u>340</u> ug/g	<u>340</u> ug/g
BH206 AS2	EC	2.45 mS/cm	<u>0.57</u> mS/cm	<u>0.7</u> mS/cm	<u>1.4</u> mS/cm
	SAR	48.8	<u>2.4</u>	<u>5</u>	<u>12</u>
BH209 AS2	EC	1.61 mS/cm	<u>0.57</u> mS/cm	<u>0.7</u> mS/cm	<u>1.4</u> mS/cm
	SAR	6.90	<u>2.4</u>	<u>5</u>	12
BH215 AS2	EC	1.54 mS/cm	<u>0.57</u> mS/cm	<u>0.7</u> mS/cm	<u>1.4</u> mS/cm
	SAR	37.4	<u>2.4</u>	<u>5</u>	<u>12</u>
	PHCs F2	41 ug/g	<u>10</u> ug/g	98 ug/g	230 ug/g
	PHCs F3	536 ug/g	<u>240</u> ug/g	<u>300</u> ug/g	1700 ug/g
	PHCs F4	1600 ug/g	<u>120</u> ug/g	2800 ug/g	3300 ug/g
	PHCs F4g	4340 ug/g	<u>120</u> ug/g	<u>2800</u> ug/g	<u>3300</u> ug/g
BH224 AS2B	EC	2.76 mS/cm	<u>0.57</u> mS/cm	<u>0.7</u> mS/cm	<u>1.4</u> mS/cm
	SAR	76.1	<u>2.4</u>	<u>5</u>	<u>12</u>
BH230 AS2	SAR	2.80	<u>2.4</u>	5	12
BH237 AS2	EC	2.07 mS/cm	<u>0.57</u> mS/cm	<u>0.7</u> mS/cm	<u>1.4</u> mS/cm
	SAR	10.2	<u>2.4</u>	<u>5</u>	12
	Barium	316 ug/g	<u>220</u> ug/g	390 ug/g	670 ug/g
	Uranium	2.8 ug/g	<u>2.5</u> ug/g	23 ug/g	33 ug/g
BH241 AS2B	EC	1.15 mS/cm	<u>0.57</u> mS/cm	<u>0.7</u> mS/cm	1.4 mS/cm
	SAR	15.1	<u>2.4</u>	<u>5</u>	<u>12</u>
BH302 AS2B	EC	1.19 mS/cm	<u>0.57</u> mS/cm	<u>0.7</u> mS/cm	1.4 mS/cm
	SAR	16.4	<u>2.4</u>	<u>5</u>	<u>12</u>
BH303 AS2B	EC	4.66 mS/cm	<u>0.57</u> mS/cm	<u>0.7</u> mS/cm	<u>1.4</u> mS/cm
	SAR	60.7	<u>2.4</u>	<u>5</u>	<u>12</u>
BH305 AS2C	EC	1.23 mS/cm	<u>0.57</u> mS/cm	<u>0.7</u> mS/cm	1.4 mS/cm
	SAR	18.5	<u>2.4</u>	<u>5</u>	<u>12</u>
BH308 AS2B	EC	1.36 mS/cm	<u>0.57</u> mS/cm	<u>0.7</u> mS/cm	1.4 mS/cm
	SAR	8.68	<u>2.4</u>	<u>5</u>	12

Notes: R/P/I = Residential, Parkland and Institutional Property Use
 I/C/C = Industrial, Commercial and Community Property Use
0.57 = standard value exceeded by the analytical result

Soil Sample ID	Parameter	Detected Value / Unit	MECP Table 1 Standards Guideline Value	MECP Table 2.1 Standards (R/P/I) Guideline Value	MECP Table 3.1 Standards (R/P/I) Guideline Value	MECP Table 2.1 Standards (I/C/C) Guideline Value	MECP Table 3.1 Standards (I/C/C) Guideline Value
BH102 AS2B	EC	2.68 mS/cm	<u>0.57</u> mS/cm	<u>0.7</u> mS/cm	<u>0.7</u> mS/cm	<u>1.4</u> mS/cm	<u>1.4</u> mS/cm
	SAR	17.7	<u>2.4</u>	<u>5</u>	<u>5</u>	<u>12</u>	<u>12</u>
BH111 AS2B	EC	2.06 mS/cm	<u>0.57</u> mS/cm	<u>0.7</u> mS/cm	<u>0.7</u> mS/cm	<u>1.4</u> mS/cm	<u>1.4</u> mS/cm
	SAR	50.0	<u>2.4</u>	<u>5</u>	<u>5</u>	<u>12</u>	<u>12</u>
BH113 AS2B	EC	4.82 mS/cm	<u>0.57</u> mS/cm	<u>0.7</u> mS/cm	<u>0.7</u> mS/cm	<u>1.4</u> mS/cm	<u>1.4</u> mS/cm
	SAR	30.0	<u>2.4</u>	<u>5</u>	<u>5</u>	<u>12</u>	<u>12</u>
BH118 AS2B	EC	1.55 mS/cm	<u>0.57</u> mS/cm	<u>0.7</u> mS/cm	<u>0.7</u> mS/cm	<u>1.4</u> mS/cm	<u>1.4</u> mS/cm
	SAR	10.1	<u>2.4</u>	<u>5</u>	<u>5</u>	12	12
BH122 AS1C	EC	1.68 mS/cm	<u>0.57</u> mS/cm	<u>0.7</u> mS/cm	<u>0.7</u> mS/cm	<u>1.4</u> mS/cm	<u>1.4</u> mS/cm
	SAR	47.8	<u>2.4</u>	<u>5</u>	<u>5</u>	<u>12</u>	<u>12</u>
BH127 AS2B	EC	4.53 mS/cm	<u>0.57</u> mS/cm	<u>0.7</u> mS/cm	<u>0.7</u> mS/cm	<u>1.4</u> mS/cm	<u>1.4</u> mS/cm
	SAR	44.0	<u>2.4</u>	<u>5</u>	<u>5</u>	<u>12</u>	<u>12</u>
BH134 AS2B	EC	2.10 mS/cm	<u>0.57</u> mS/cm	<u>0.7</u> mS/cm	<u>0.7</u> mS/cm	<u>1.4</u> mS/cm	<u>1.4</u> mS/cm
	SAR	8.44	<u>2.4</u>	<u>5</u>	<u>5</u>	12	12
	PHCs F4	180 ug/g	<u>120</u> ug/g	2800 ug/g	2800 ug/g	3300 ug/g	3300 ug/g
	PHCs F4g	600 ug/g	<u>120</u> ug/g	2800 ug/g	2800 ug/g	3300 ug/g	3300 ug/g
BH139 AS2B	EC	3.06 mS/cm	<u>0.57</u> mS/cm	<u>0.7</u> mS/cm	<u>0.7</u> mS/cm	<u>1.4</u> mS/cm	<u>1.4</u> mS/cm
	SAR	56.5	<u>2.4</u>	<u>5</u>	<u>5</u>	<u>12</u>	<u>12</u>
BH142 AS2	EC	2.10 mS/cm	<u>0.57</u> mS/cm	<u>0.7</u> mS/cm	<u>0.7</u> mS/cm	<u>1.4</u> mS/cm	<u>1.4</u> mS/cm
	SAR	19.6	<u>2.4</u>	<u>5</u>	<u>5</u>	<u>12</u>	<u>12</u>
BH147 AS2B	EC	2.71 mS/cm	<u>0.57</u> mS/cm	<u>0.7</u> mS/cm	<u>0.7</u> mS/cm	<u>1.4</u> mS/cm	<u>1.4</u> mS/cm
	SAR	36.1	<u>2.4</u>	<u>5</u>	<u>5</u>	<u>12</u>	<u>12</u>
	Antimony	2 ug/g	<u>1.3</u> ug/g	7.5 ug/g	7.5 ug/g	40 ug/g	40 ug/g
	Barium	404 ug/g	<u>220</u> ug/g	<u>390</u> ug/g	<u>390</u> ug/g	670 ug/g	670 ug/g
	Copper	351 ug/g	<u>92</u> ug/g	<u>140</u> ug/g	<u>140</u> ug/g	<u>230</u> ug/g	<u>230</u> ug/g
	Mercury	0.4 ug/g	<u>0.27</u> ug/g	<u>0.27</u> ug/g	<u>0.27</u> ug/g	<u>0.27</u> ug/g	<u>0.27</u> ug/g
	Molybdenum	6 ug/g	<u>2</u> ug/g	6.9 ug/g	6.9 ug/g	40 ug/g	40 ug/g
	Selenium	3.9 ug/g	<u>1.5</u> ug/g	<u>2.4</u> ug/g	<u>2.4</u> ug/g	5.5 ug/g	5.5 ug/g

Soil Sample ID	Parameter	Detected Value / Unit	MECP Table 1 Standards Guideline Value	MECP Table 2.1 Standards (R/P/I) Guideline Value	MECP Table 3.1 Standards (R/P/I) Guideline Value	MECP Table 2.1 Standards (I/C/C) Guideline Value	MECP Table 3.1 Standards (I/C/C) Guideline Value
	Silver	2.2 ug/g	0.5 ug/g	20 ug/g	20 ug/g	40 ug/g	40 ug/g
	Zinc	578 ug/g	290 ug/g	340 ug/g	340 ug/g	340 ug/g	340 ug/g
BH206 AS2	EC	2.45 mS/cm	0.57 mS/cm	0.7 mS/cm	0.7 mS/cm	1.4 mS/cm	1.4 mS/cm
	SAR	48.8	2.4	5	5	12	12
BH209 AS2	EC	1.61 mS/cm	0.57 mS/cm	0.7 mS/cm	0.7 mS/cm	1.4 mS/cm	1.4 mS/cm
	SAR	6.90	2.4	5	5	12	12
BH215 AS2	EC	1.54 mS/cm	0.57 mS/cm	0.7 mS/cm	0.7 mS/cm	1.4 mS/cm	1.4 mS/cm
	SAR	37.4	2.4	5	5	12	12
	PHCs F2	41 ug/g	10 ug/g	10 ug/g	10 ug/g	26 ug/g	26 ug/g
	PHCs F3	536 ug/g	240 ug/g	240 ug/g	300 ug/g	240 ug/g	1700 ug/g
	PHCs F4	1600 ug/g	120 ug/g	2800 ug/g	2800 ug/g	3300 ug/g	3300 ug/g
	PHCs F4g	4340 ug/g	120 ug/g	2800 ug/g	2800 ug/g	3300 ug/g	3300 ug/g
BH224 AS2B	EC	2.76 mS/cm	0.57 mS/cm	0.7 mS/cm	0.7 mS/cm	1.4 mS/cm	1.4 mS/cm
	SAR	76.1	2.4	5	5	12	12
BH230 AS2	SAR	2.80	2.4	5	5	12	12
BH237 AS2	EC	2.07 mS/cm	0.57 mS/cm	0.7 mS/cm	0.7 mS/cm	1.4 mS/cm	1.4 mS/cm
	SAR	10.2	2.4	5	5	12	12
	Barium	316 ug/g	220 ug/g	390 ug/g	390 ug/g	670 ug/g	670 ug/g
	Uranium	2.8 ug/g	2.5 ug/g	23 ug/g	23 ug/g	33 ug/g	33 ug/g
BH241 AS2B	EC	1.15 mS/cm	0.57 mS/cm	0.7 mS/cm	0.7 mS/cm	1.4 mS/cm	1.4 mS/cm
	SAR	15.1	2.4	5	5	12	12
BH302 AS2B	EC	1.19 mS/cm	0.57 mS/cm	0.7 mS/cm	0.7 mS/cm	1.4 mS/cm	1.4 mS/cm
	SAR	16.4	2.4	5	5	12	12
BH303 AS2B	EC	4.66 mS/cm	0.57 mS/cm	0.7 mS/cm	0.7 mS/cm	1.4 mS/cm	1.4 mS/cm
	SAR	60.7	2.4	5	5	12	12
BH305 AS2C	EC	1.23 mS/cm	0.57 mS/cm	0.7 mS/cm	0.7 mS/cm	1.4 mS/cm	1.4 mS/cm
	SAR	18.5	2.4	5	5	12	12
BH308 AS2B	EC	1.36 mS/cm	0.57 mS/cm	0.7 mS/cm	0.7 mS/cm	1.4 mS/cm	1.4 mS/cm
	SAR	8.68	2.4	5	5	12	12

Notes: R/P/I = Residential, Parkland and Institutional Property Use
I/C/C = Industrial, Commercial and Community Property Use
0.57 = standard value exceeded by the analytical result

7.3 Discussion of Analytical Results

Based on the analytical results, exceedances of MECP Table 1, Table 2, Table 3, Table 2.1 and/or Table 3.1 Standards were noted in the tested soil samples. It should be noted that the samples with exceedances of Electrical Conductivity (EC) and/or Sodium Adsorption Ratio (SAR) values were taken from the boreholes located on or adjacent to the pavement road. The elevated EC and SAR values in the tested soil samples may likely be attributed to the application of de-icing salt on the road. The potential source of the other elevated parameters is unknown.

Based on the results of soil sample analysis, GeoPro would recommend the following disposal options:

- 1) The soils generated near Boreholes BH102, BH111, BH113, BH118, BH122, BH127, BH134, BH139, BH142, BH206, BH209, BH224, BH230, BH235, BH237, BH241, BH302, BH303, BH305 and BH308 at the tested depths can be re-used at a receiving site which would accept the soils as per the test results. Additional chemical testing may be required by these sites; and
- 2) The soils generated at the Site at the same tested sample depths from Boreholes BH147 and BH215 may be disposed at a licensed landfill site; however, additional chemical testing under O. Reg. 347/558 may be required by the landfill site.

It should be noted that the analytical results of the chemical test refer only to the soil samples tested, which were obtained from specific sampling locations and sampling depths, and that the soil chemistry may vary between and beyond the location and depth of the samples taken. Therefore, soil materials to be used on site or transported to other sites must be inspected during excavation for indication of variance in composition or any chemical/environmental constraints. If conditions indicate significant variations, further chemical testing should be carried out.

Please note that the level of testing outlined herein is meant to provide a broad indication of soil quality based on the limited soil samples tested. The analytical results contained in this report should not be considered a warranty with respect to the soil quality or the use of the soil for any specific purpose. Furthermore, it must be noted that our scope of work was only limited to the review of the analytical results of the limited number of samples. The scope of work did not include any environmental evaluation or assessment of the subject site (such as a Phase One or Phase Two Environmental Site Assessment).

Sites accepting fill may have requirements relating to its aesthetic or engineering properties in addition to its chemical quality. Some receiving sites may have specific chemical testing protocols, which may require additional tests to meet the requirements. The requirements for accepting

the fill at an off-site location must be confirmed in advance. GeoPro would be pleased to assist once the receiving sites are determined and the requirements of the receiving sites are available.

Additional Testing and Disposal Requirements as per New Regulation O.Reg. 406/19

It should be noted that excess soil disposal practices and responsibilities have changed with the implementation of Ontario Regulation 406/19 On-Site and Excess Soil Management (O.Reg. 406/19). As of January 1, 2021, all excess soils leaving a project site are classified as waste unless reused in accordance with the new regulation. In order to be reused, the excess soil quality must not exceed the soil quality standards for the specific reuse site in accordance with the MECP 2020 Rules for Soil Management and Excess Soil Quality Standards Report. When greater than 350m³ of excess soil is being transported to a receiving site, the soil quality must not exceed the newly developed excess soil quality standards tables. Furthermore, receiving sites will have new procedures and policies for accepting excess soil and therefore must be consulted well in advanced before the soil is removed from site.

In addition, as of January 1, 2022, new projects generating excess soil will require registry filing and up to four planning documents developed by a qualified person. The planning documents include an Assessment of Past Use, a Sampling and Analysis Plan, a Soil Characterization Report, and an Excess Soil Destination Assessment Report. If a Soil Characterization Report is required, the project would require additional sampling and chemical testing. If a project involving excess soil is set to begin in 2022 it is advised that a qualified person is consulted to determine how much sampling and which reports are required for the specific project under O.Reg. 406/19. Additionally, project leaders will be responsible for developing a tracking system for the movement of excess soils off-site. As of April 21, 2022, the implementation of the provisions that came into effect on January 1, 2022 was temporarily suspended until January 1, 2023. However, the pause does not change the contract exemption date of January 1, 2022 by which a project leader must enter into a contract in order to be exempt from reuse planning provisions that come into effect January 1, 2023. It should be noted that some of the receiving sites still request full compliance of O.Reg. 406/19. As such, testing required in compliance with O.Reg. 406/19 should be considered.

Previous reports that meet the requirements of the planning documents may be used within 18 months of completion for registry filing. During this transitional period the Site will also be compared to the equivalent standards under O.Reg. 406/19 as a proactive approach towards projections of potential future Site work and soil disposal. This is considered to be best practise by the MECP during this transitional time.

We strongly recommend the design engineer and contractor consult a qualified person during the design and tender stage for soil disposal. Should it be required, GeoPro would be pleased to provide an additional scope of work to meet the requirements of O.Reg. 406.

8. CORROSION POTENTIAL

Selected soil samples were submitted to a laboratory which is a member of Canadian Association for Laboratory Accreditation (“CALA”) for corrosivity potential analysis. The sulphate (SO₄) resistance requirements for concrete in contact with the site soils were evaluated by performing water-soluble sulphate tests on nine (9) soil samples taken from Boreholes BH224, BH225, BH401 and BH403 to BH408, with depths are shown in the following table. The analytical data are attached in Appendix F.

The test revealed that the sulphate concentrations in tested soil samples ranged from 0.0054% to 0.05%. The category of severity of attack is “negligible” based on CSA Standard A23.1, Concrete Materials and Methods of Concrete Construction. The final selection of the type of concrete should be made by the Engineer taking into account all aspects of design considerations.

The corrosivity of soils towards ferrous metal was evaluated by performing corrosivity tests on same soil samples. The corrosivity of soils was evaluated using the 10 points method which is based on five soil properties: sulphides, resistivity, pH, Redox potential and moisture content. The following table summarizes the ANSI/AWWA rating for the tested soil sample for the potential for corrosion towards buried grey or ductile cast iron pipe. A score of ten (10) points or more indicates potential for corrosion.

BH No. Sample No.	Parameter (Score)							Total Points
	Depth (m)	Soil Type	pH (Point)	Resistivity (ohm.cm) (Point)	Sulfide (ug/g) (Point)	Redox Potential (mV) (Point)	Moisture Content (%) (Point)	
BH224 AS4	2.3 – 2.7	Fill: Silty Gravelly Sand	9.00 (3)	446 (10)	<0.20 (2)	234 (0)	12.1 (2)	17
BH225 AS4	2.3 – 2.9	Fill: Sandy Silt to Silt; Native: Clayey Silt	8.12 (0)	1220 (10)	<0.20 (2)	250 (0)	25.6 (2)	14
BH401 SS4	2.3 – 2.7	Fill: Sandy Silt; Native: Sandy Silt Till	8.24 (0)	1060 (10)	1.20 (3.5)	337 (0)	13.3 (2)	15.5
BH403 SS4	2.3 – 2.7	Native: Sandy Silt to Silt/Shale Complex	8.13 (0)	1430 (10)	<0.20 (2)	265 (0)	9.5 (2)	14
BH404 SS3	1.5 – 1.8	Native: Sandy Silt to Silt	8.02 (0)	549 (10)	0.5 (3.5)	141 (0)	8.3 (2)	15.5

BH No. Sample No.	Parameter (Score)							
	Depth (m)	Soil Type	pH (Point)	Resistivity (ohm.cm) (Point)	Sulfide (ug/g) (Point)	Redox Potential (mV) (Point)	Moisture Content (%) (Point)	Total Points
BH405 SS4B	2.3 – 2.7	Native: Sandy Silt Till	7.95 (0)	962 (10)	0.7 (3.5)	206 (0)	12.0 (2)	15.5
BH406 SS4	2.3 – 2.7	Fill: Sandy Silt	8.35 (0)	2630 (1)	0.3 (3.5)	200 (0)	11.5 (2)	6.5
BH407 SS4	2.3 – 2.7	Fill: Sandy Silt to Sand and Silt	8.01 (0)	1470 (10)	0.2 (3.5)	239 (0)	12.6 (2)	15.5
BH408 SS4	2.3 – 2.7	Native: Clayey Silt	6.78 (0)	578 (10)	2.20 (3.5)	210 (0)	12.9 (2)	15.5

According to the ANSI/AWWA rating system, the tested samples of BH406 SS4 indicate low to moderate potential for corrosion of grey ductile iron pipe, however, the tested samples of BH224 AS4, BH225 AS4, BH401 SS4, BH403 SS4, BH404 SS3, BH405 SS4B, BH407 SS4 and BH408 SS4 indicate that soils are corrosive to ductile-iron pipes, the anti-corrosion protection is needed. Further provision of recommendations for corrosion protection is outside of the scope of GeoPro’s terms of reference.

Note that there may be other overriding factors in the assessment of corrosion potential, such as the application of de-icing salts on the roadway and subsequent leaching into the subsoils, stray currents, etc.

9. MONITORING AND TESTING

The geotechnical aspects of the final design drawings and specifications should be reviewed by GeoPro prior to tendering and construction, to confirm that the intent of this report has been met. During construction, full-time engineered fill monitoring and sufficient foundation inspections, subgrade inspections, in-situ density tests and materials testing should be carried out to confirm that the conditions exposed are consistent with those encountered in the boreholes, and to monitor conformance to the pertinent project specifications.

10. CLOSURE

We appreciate the opportunity to be of service to you and trust that this report provides sufficient geotechnical engineering information to facilitate the detail design of this project. We look forward to providing you with continuing service during the construction stage. Please do not hesitate to contact our office should you wish to discuss, in further detail, any aspects of this project.

Yours very truly,

GEOPRO CONSULTING LIMITED

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GeoPro Consulting Limited

Geotechnical-Hydrogeology-Environmental-Materials-Inspection

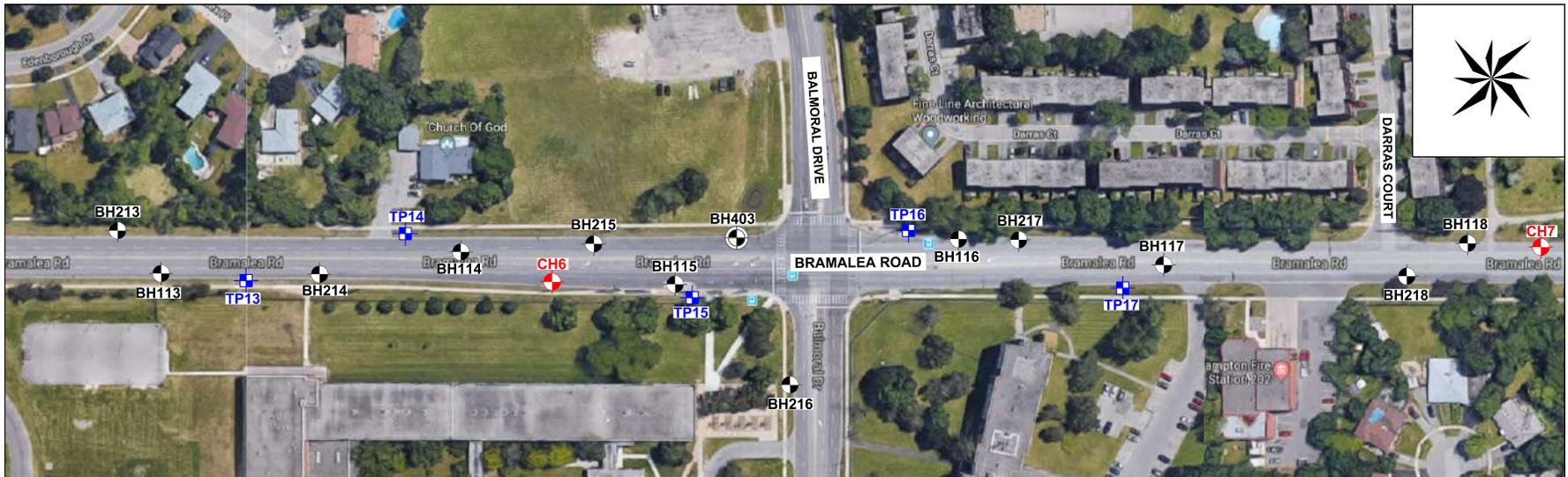
DRAWINGS



Legend:

-  Borehole Location
-  Monitoring Well Location
-  Test Pit Location
-  Corehole Location

Client:	Stantec Consulting Limited		Project No.:	18-2325GHE	Drawing No.:	1A
Drawn:	KA	Approved:	DL	Title: Borehole Location Plan		
Date:	August 2022	Scale:	N.T.S	Project: Geotechnical Investigation Proposed Road Improvements Bramalea Road, Brampton, Ontario		
Original Size:	Letter	Rev:	TY			



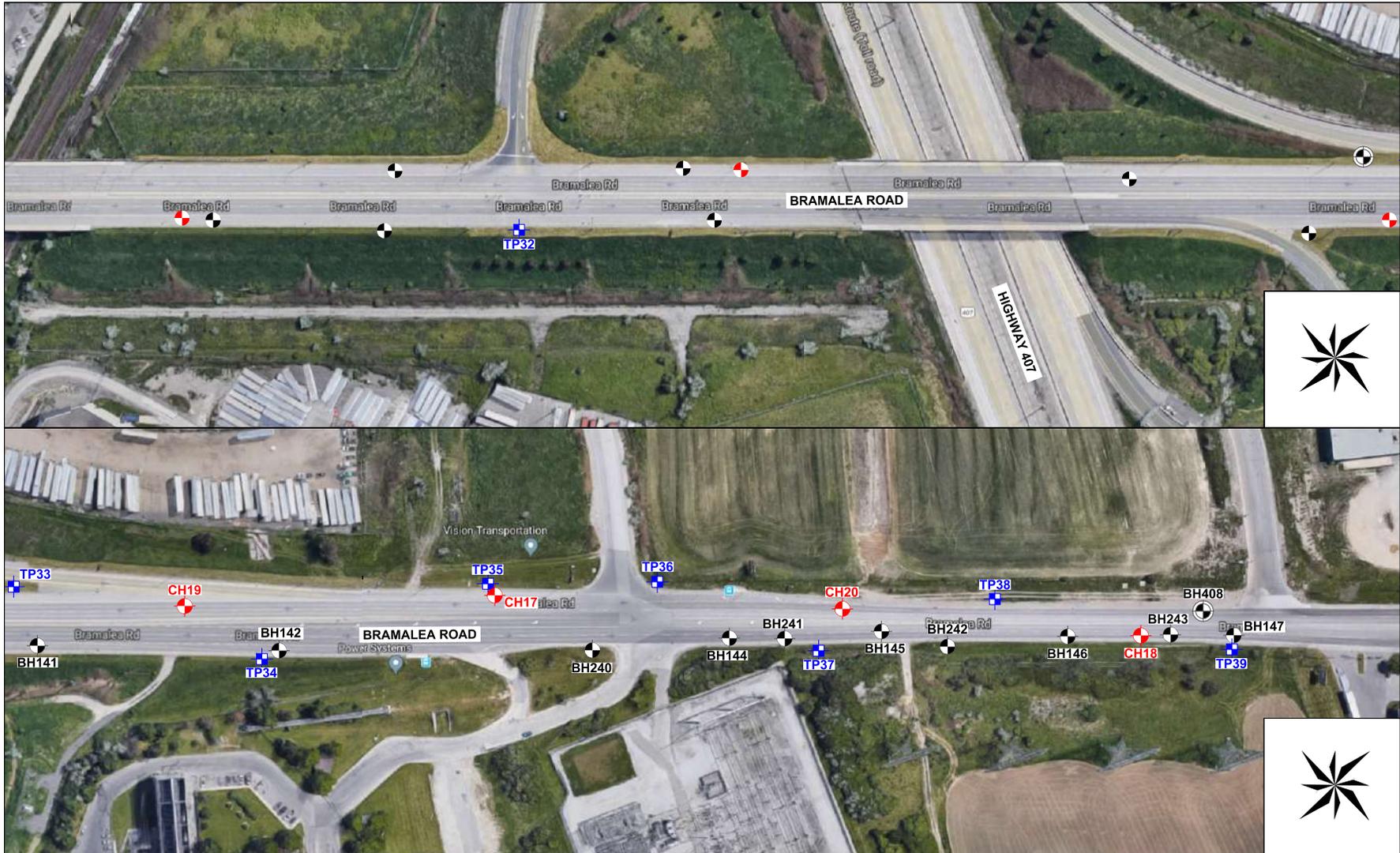
Legend:

-  Borehole Location
-  Monitoring Well Location
-  Test Pit Location
-  Corehole Location

Client:	Stantec Consulting Limited	Project No.:	18-2325GHE	Drawing No.:	1B
Drawn:	KA	Approved:	DL	Title: Borehole Location Plan	
Date:	August 2022	Scale:	N.T.S	Project: Geotechnical Investigation Proposed Road Improvements Bramalea Road, Brampton, Ontario	
Original Size:	Letter	Rev:	TY		



Legend:	Client: Stantec Consulting Limited		Project No.: 18-2325GHE	Drawing No.: 1C
	Borehole Location	Drawn: KA	Approved: DL	Title: Borehole Location Plan
	Monitoring Well Location	Date: August 2022	Scale: N.T.S	Project: Geotechnical Investigation Proposed Road Improvements Bramalea Road, Brampton, Ontario
	Test Pit Location	Original Size: Letter	Rev: TY	GeoPro Consulting Limited
Corehole Location				



Legend:

-  Borehole Location
-  Monitoring Well Location
-  Test Pit Location
-  Corehole Location

Client:	Stantec Consulting Limited		Project No.:	18-2325GHE	Drawing No.:	1D
Drawn:	KA	Approved:	DL	Title: Borehole Location Plan		
Date:	August 2022	Scale:	N.T.S	Project: Geotechnical Investigation Proposed Road Improvements Bramalea Road, Brampton, Ontario		
Original Size:	Letter	Rev:	TY	 GeoPro Consulting Limited		



GeoPro Consulting Limited

Geotechnical-Hydrogeology-Environmental-Materials-Inspection

ENCLOSURES



Enclosure 1A: Notes on Sample Descriptions

1. Each soil stratum is described according to the *Modified Unified Soil Classification System*. The compactness condition of cohesionless soils (SPT) and the consistency of cohesive soils (undrained shear strength) are defined according to Canadian Foundation Engineering Manual, 4th Edition. Different soil classification systems may be used by others. Please note that a description of the soil strata is based on visual and tactile examination of the samples augmented with field and laboratory test results, such as a grain size analysis and/or Atterberg Limits testing. Visual classification is not sufficiently accurate to provide exact grain sizing or precise differentiation between size classification systems.
2. Fill: Where fill is designated on the borehole log it is defined as indicated by the sample recovered during the boring process. The reader is cautioned that fills are heterogeneous in nature and variable in density or degree of compaction. The borehole description may therefore not be applicable as a general description of site fill materials. All fills should be expected to contain obstruction such as wood, large concrete pieces or subsurface basements, floors, tanks, etc., none of these may have been encountered in the boreholes. Since boreholes cannot accurately define the contents of the fill, test pits are recommended to provide supplementary information. Despite the use of test pits, the heterogeneous nature of fill will leave some ambiguity as to the exact composition of the fill. Most fills contain pockets, seams, or layers of organically contaminated soil. This organic material can result in the generation of methane gas and/or significant ongoing and future settlements. Fill at this site may have been monitored for the presence of methane gas and, if so, the results are given on the borehole logs. The monitoring process does not indicate the volume of gas that can be potentially generated nor does it pinpoint the source of the gas. These readings are to advise of the presence of gas only, and a detailed study is recommended for sites where any explosive gas/methane is detected. Some fill material may be contaminated by toxic/hazardous waste that renders it unacceptable for deposition in any but designated land fill sites; unless specifically stated the fill on this site has not been tested for contaminants that may be considered toxic or hazardous. This testing and a potential hazard study can be undertaken if requested. In most residential/commercial areas undergoing reconstruction, buried oil tanks are common and are generally not detected in a conventional preliminary geotechnical site investigation.
3. Till: The term till on the borehole logs indicates that the material originates from a geological process associated with glaciation. Because of this geological process the till must be considered heterogeneous in composition and as such may contain pockets and/or seams of material such as sand, gravel, silt or clay. Till often contains cobbles (75 to 300 mm) or boulders (over 300 mm). Contractors may therefore encounter cobbles and boulders during excavation, even if they are not indicated by the borings. It should be appreciated that normal sampling equipment cannot differentiate the size or type of any obstruction. Because of the horizontal and vertical variability of till, the sample description may be applicable to a very limited zone; caution is therefore essential when dealing with sensitive excavations or dewatering programs in till materials.



Enclosure 1B: Explanation of Terms Used in the Record of Boreholes

Sample Type

AS	Auger sample
BS	Block sample
CS	Chunk sample
DO	Drive open
DS	Dimension type sample
FS	Foil sample
NR	No recovery
RC	Rock core
SC	Soil core
SS	Spoon sample
SH	Shelby tube Sample
ST	Slotted tube
TO	Thin-walled, open
TP	Thin-walled, piston
WS	Wash sample

Penetration Resistance

Standard Penetration Resistance (SPT), N:

The number of blows by a 63.5 kg (140 lb) hammer dropped 760 mm (30 in) required to drive a 50 mm (2 in) drive open sampler for a distance of 300 mm (12 in).

PM – Samples advanced by manual pressure
 WR – Samples advanced by weight of sampler and rod
 WH – Samples advanced by static weight of hammer

Dynamic Cone Penetration Resistance, N_d :

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

Piezo-Cone Penetration Test (CPT):

An electronic cone penetrometer with a 60 degree conical tip and a projected end area of 10 cm² pushed through ground at a penetration rate of 2 cm/s. Measurement of tip resistance (Q_t), porewater pressure (PWP) and friction along a sleeve are recorded electronically at 25 mm penetration intervals.

Textural Classification of Soils (ASTM D2487)

Classification	Particle Size
Boulders	> 300 mm
Cobbles	75 mm - 300 mm
Gravel	4.75 mm - 75 mm
Sand	0.075 mm – 4.75 mm
Silt	0.002 mm-0.075 mm
Clay	<0.002 mm(*)

(*) Canadian Foundation Engineering Manual (4th Edition)

Coarse Grain Soil Description (50% greater than 0.075 mm)

Terminology	Proportion
Trace	0-10%
Some	10-20%
Adjective (e.g. silty or sandy)	20-35%
And (e.g. sand and gravel)	> 35%

Soil Description

a) Cohesive Soils (*)

Consistency	Undrained Shear Strength (kPa)	SPT “N” Value
Very soft	<12	<2
Soft	12-25	2-4
Firm	25-50	4-8
Stiff	50-100	8-15
Very stiff	100-200	15-30
Hard	>200	>30

(*) Hierarchy of Shear Strength prediction

1. Lab triaxial test
2. Field vane shear test
3. Lab. vane shear test
4. SPT “N” value
5. Pocket penetrometer

b) Cohesionless Soils (*)

Compactness Condition (Formerly Relative Density)	SPT “N” Value
Very loose	0-4
Loose	4-10
Compact	10-30
Dense	30-50
Very dense	>50

Soil Tests

w	Water content
w _p	Plastic limit
w _l	Liquid limit
C	Consolidation (oedometer) test
CID	Consolidated isotropically drained triaxial test
CIU	consolidated isotropically undrained triaxial test with porewater pressure measurement
D _R	Relative density (specific gravity, G _s)
DS	Direct shear test
ENV	Environmental/ chemical analysis
M	Sieve analysis for particle size
MH	Combined sieve and hydrometer (H) analysis
MPC	Modified proctor compaction test
SPC	Standard proctor compaction test
OC	Organic content test
U	Unconsolidated Undrained Triaxial Test
V	Field vane (LV-laboratory vane test)
γ	Unit weight

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: MM	DATE: 2021-12-03	
DATUM: N/A	SAMPLE REVIEW: ND	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 2	

SOIL PROFILE			SAMPLES			GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content W	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)			
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS/0.3m		ELEVATION	○ SPT	≧ Cone	blows/0.3m						20	40	60
0.0	ASPHALT: (200 mm)																	
0.2	GRANULAR BASE/SUBBASE: (470 mm)		1A	AS														44 44 12
0.7	FILL: silty sand, trace gravel, brown, moist		1B	AS														
0.8	FILL: sandy silt, some clay, trace gravel, organic inclusions, brown, moist		2	AS														
			3	AS														
2.1	END OF BOREHOLE																	
	Note: 1) Borehole caved at a depth of 1.8 m below ground surface (mBGS) upon completion of drilling.																	

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:17

GROUNDWATER ELEVATIONS
 Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ = 3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 155 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: SKPC	DATE: 2021-12-29	
DATUM: N/A	SAMPLE REVIEW: ND	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 3	

SOIL PROFILE			SAMPLES		GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content W	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		"N" BLOWS/0.3m	ELEVATION	SPT	Cone					
							20	40	60	80	● Unconfined	× Field Vane & Sensitivity		
							20	40	60	80	▲ Quick Triaxial	⊠ Penetrometer	+	Lab Vane
0.0	ASPHALT: (140 mm)													
0.1	GRANULAR BASE: (350 mm)		1A	AS										
0.5	GRANULAR SUBBASE: (380 mm)		1B	AS										
			2A	AS										
0.9	FILL: sandy silt, some clay, trace gravel, organic inclusions, layers of clayey silt, brown, moist		2B	AS										
			3	AS										
2.0	END OF BOREHOLE Note: 1) Borehole caved at a depth of 1.2 m below ground surface (mBGS) upon completion of drilling.													

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:17

GROUNDWATER ELEVATIONS
 Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ = 3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: CH	DATE: 2021-11-25	
DATUM: N/A	SAMPLE REVIEW: ND	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 4	

SOIL PROFILE		SAMPLES			GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content W	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)	
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		"N" BLOWS/0.3m	ELEVATION	20	40						60
0.0	ASPHALT: (150 mm)														
0.2	GRANULAR BASE/SUBBASE: (430 mm)		1A	AS											
0.6	FILL: sandy silt to silt, trace clay, trace gravel, containing cobbles and boulders, brown, moist --- auger grinding from 0.8 m to 0.9 m		1B	AS											
1.4	CLAYEY SILT: sandy, trace gravel, layers of sandy silt, containing cobbles and boulders, brown, moist --- auger grinding		2	AS											
2.1	SANDY SILT TO SILT: trace to some clay, trace gravel, brown, moist		3	AS											2 28 44 26
2.3	moist END OF BOREHOLE Note: 1) Borehole caved at a depth of 2.1 m below ground surface (mBGS) upon completion of drilling.		4	AS											

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:17

GROUNDWATER ELEVATIONS
 Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ 3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger - Auto Hammer	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: CH	DATE: 2021-12-10	
DATUM: N/A	SAMPLE REVIEW: ND	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 6	

SOIL PROFILE		SAMPLES			GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content W	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		"N" BLOWS/0.3m	ELEVATION	SPT	Cone					
							20	40	60	80	● Unconfined × Field Vane & Sensitivity ▲ Quick Triaxial ⊠ Penetrometer + Lab Vane			
0.0	ASPHALT: (170 mm)													
0.2	GRANULAR BASE/SUBBASE: (370 mm)		1A	AS										
0.5	FILL: silty sand, trace gravel, brown, moist, compact		1B	AS										
			2A	SS										
1.0	FILL: sandy silt to sand and silt, trace to some clay, trace gravel, brown, moist, compact		2B	SS	16									
1.4	SANDY SILT TILL: some clay, trace gravel, layers of sandy silt, containing cobbles and boulders, brown, moist, compact		3	SS	24									
2.0	END OF BOREHOLE Note: 1) Borehole caved at a depth of 1.7 m below ground surface (mBGS) upon completion of drilling.													

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:17

GROUNDWATER ELEVATIONS
 Measurement 1st 2nd 3rd 4th

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ ³=3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 155 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: CH	DATE: 2021-12-13	
DATUM: N/A	SAMPLE REVIEW: ND	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 7	

SOIL PROFILE			SAMPLES			GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content W	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS/0.3m		ELEVATION	SPT 20	Cone 40	blows/0.3m 60					
0.0	ASPHALT: (150 mm)														
0.2	GRANULAR BASE: (180 mm)		1A	AS											
0.3	GRANULAR SUBBASE: (210 mm)		1B	AS											
0.5	FILL: silty sand, some gravel, layers of sandy silt, containing cobbles and boulders, brown, moist		1C	AS											
0.8	--- auger grinding		2A	AS											
1.1	FILL: gravelly sand, some silt, layers of sandy silt, brown, moist		2B	AS											
	FILL: silty sand to sand, trace gravel, containing cobbles and boulders, brown, wet														
1.5	--- auger grinding														
	FILL: sandy silt, some clay, trace gravel, containing cobbles and boulders, brown, moist		3	AS											
2.0	--- auger grinding														
<p>END OF BOREHOLE</p> <p>Notes:</p> <ol style="list-style-type: none"> 1) Water encountered at a depth of 1.1 m below ground surface (mBGS) during drilling. 2) Water was at a depth of 1.1 mBGS upon completion of drilling. 3) Borehole caved at a depth of 1.7 mBGS upon completion of drilling. 															

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:17

GROUNDWATER ELEVATIONS
 Measurement

GRAPH NOTES + 3, x 3: Numbers refer to Sensitivity ▲ s=3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: CH	DATE: 2021-12-10	
DATUM: N/A	SAMPLE REVIEW: ND	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 8	

SOIL PROFILE		SAMPLES			GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content w	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		"N" BLOWS/0.3m	ELEVATION	20	40					
0.0	ASPHALT: (175 mm)													
0.2	GRANULAR BASE: (130 mm)		1A	AS										
0.3	GRANULAR SUBBASE: (430 mm)		1B	AS										
0.7	FILL: silty sand, trace gravel, layers of sandy silt, brown, moist to wet		1C	AS										
	--- wet		2	AS										
			3	AS										
1.8	END OF BOREHOLE													
	Notes: 1) Water encountered at a depth of 1.4 m below ground surface (mBGS) during drilling. 2) Borehole caved at a depth of 1.7 mBGS upon completion of drilling.													

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:17

GROUNDWATER ELEVATIONS
 Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ s=3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 155 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: CH	DATE: 2021-12-13	
DATUM: N/A	SAMPLE REVIEW: ND	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 9	

SOIL PROFILE			SAMPLES		GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content W	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		"N" BLOWS/0.3m	ELEVATION	SPT	Cone					
							20	40	60	80	● Unconfined	✕ Field Vane & Sensitivity		
							20	40	60	80	▲ Quick Triaxial	☒ Penetrometer	+	Lab Vane
0.0	ASPHALT: (170 mm)													
0.2	GRANULAR BASE: (90 mm)		1A	AS										
0.3	GRANULAR SUBBASE: (500 mm)		1B	AS										
	--- auger grinding from 0.6 m to 0.8 m													
0.8	FILL: sandy silt to sand and silt, trace clay, trace gravel, organic inclusions, layers/zones of silty sand, brown, moist		2	AS										
1.4	FILL: sand and silt to silty sand, trace clay, trace gravel, organic inclusions, layers/zones of sandy silt, containing cobbles and boulders, brown, moist		3	AS										
2.0	END OF BOREHOLE													
	Note: 1) Borehole caved at a depth of 1.8 m below ground surface (mBGS) upon completion of drilling.													

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:17

GROUNDWATER ELEVATIONS
 Measurement 1st 2nd 3rd 4th

GRAPH NOTES + 3, ✕ 3: Numbers refer to Sensitivity ▲ 3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: BK, DG	DATE: 2022-05-13	
DATUM: N/A	SAMPLE REVIEW: IG	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 10	

SOIL PROFILE			SAMPLES			GROUND WATER	DYNAMIC PENETRATION TEST				UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)	
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS/0.3m		ELEVATION	○ SPT 20 40 60 80	≧ Cone blows/0.3m 20 40 60 80	Plastic Limit W _p			Natural Moisture Content W
							SHEAR STRENGTH (kPa) ● Unconfined × Field Vane & Sensitivity ▲ Quick Triaxial ⊠ Penetrometer + Lab Vane				WATER CONTENT (%) 10 20 30 40		GR SA SI CL
0.0	ASPHALT: (160 mm)												
0.2	GRANULAR BASE: (300 mm)		1A	AS									
0.5	GRANULAR SUBBASE: (420 mm)		1B	AS									
			2A	AS									
0.9	FILL: sand and silt to silty sand, trace clay, trace gravel, brown, moist		2B	AS									
1.2	FILL: sand and silt to sandy silt, trace to some clay, trace gravel, organic inclusions, layers of clayey silt, brown, moist		2C	AS									
			3A	AS									
1.8	SANDY SILT: some clay, trace gravel, layers of clayey silt, brown, moist		3B	AS									
2.3	END OF BOREHOLE Note: 1) Borehole caved at a depth of 2.1 m below ground surface (mBGS) upon completion of drilling.												

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:17

GROUNDWATER ELEVATIONS
 Measurement 1st 2nd 3rd 4th

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ = 3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 155 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: RD	DATE: 2022-01-07	
DATUM: N/A	SAMPLE REVIEW: ND	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 11	

SOIL PROFILE			SAMPLES			GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content w	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS/0.3m		ELEVATION	SHEAR STRENGTH (kPa)							
							○ SPT ≧ Cone blows/0.3m 20 40 60 80								
0.0	ASPHALT: (190 mm)														
0.2	GRANULAR BASE: (300 mm)		1A	AS											
0.5	GRANULAR SUBBASE: (230 mm)		1B	AS											
0.7	FILL: sandy silt, some clay, trace gravel, organic matters, dark brown, moist		1C	AS											
			2	AS											
1.5	END OF BOREHOLE Note: 1) Borehole caved at a depth of 1.4 m below ground surface (mBGS) upon completion of drilling.														

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:17

GROUNDWATER ELEVATIONS
 Measurement 1st 2nd 3rd 4th

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ = 3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: RD	DATE: 2022-01-07	
DATUM: N/A	SAMPLE REVIEW: ND	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 12	

SOIL PROFILE			SAMPLES		GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content w	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)	
ELEV DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		"N" BLOWS/0.3m	ELEVATION	20	40						60
0.0	ASPHALT: (180 mm)														
0.2	GRANULAR BASE: (370 mm)		1A	AS											
0.6	GRANULAR SUBBASE: (470 mm)		1B	AS											
			2A	AS											
1.0	FILL: silty sand, trace to some gravel, organic inclusions, layers of clayey silt, brown, moist		2B	AS											
1.5	END OF BOREHOLE Note: 1) Borehole caved at a depth of 1.3 m below ground surface (mBGS) upon completion of drilling.														

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:17

GROUNDWATER ELEVATIONS
 Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ 3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: RD	DATE: 2022-01-14	
DATUM: N/A	SAMPLE REVIEW: ND	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 13	

SOIL PROFILE			SAMPLES			GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content w	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS/0.3m		ELEVATION	○ SPT	≧ Cone	blows/0.3m					
0.0	ASPHALT: (250 mm)														
0.3	GRANULAR BASE: (250 mm) --- auger refusal at 0.3 m due to concrete slab/block, borehole moved 1 m west		1A	AS											
0.5	GRANULAR SUBBASE: (330 mm)		1B	AS											
0.8	FILL: sandy silt to sand and silt, trace clay, trace to some gravel, organic matters, dark brown to brown, moist		2A	AS											
			2B	AS											
1.5	END OF BOREHOLE Note: 1) Borehole caved at a depth of 1.4 m below ground surface (mBGS) upon completion of drilling.														

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:17

GROUNDWATER ELEVATIONS
 Measurement
 1st 2nd 3rd 4th

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ 3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: NT	DATE: 2022-02-11	
DATUM: N/A	SAMPLE REVIEW: ND	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 14	

SOIL PROFILE			SAMPLES		GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content W	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		"N" BLOWS/0.3m	ELEVATION	SHEAR STRENGTH (kPa)						
							○ SPT ≧ Cone blows/0.3m 20 40 60 80							
							● Unconfined × Field Vane & Sensitivity ▲ Quick Triaxial ⊠ Penetrometer + Lab Vane							
							20 40 60 80							
0.0	ASPHALT: (170 mm)													
0.2	GRANULAR BASE: (270 mm)		1A	AS										
0.4	GRANULAR SUBBASE: (530 mm) --- auger grinding		1B	AS										
			2A	AS										
1.0	FILL: sandy silt to sand and silt, some clay, trace gravel, organic matters, layers of organic silt, dark brown to brown, moist		2B	AS										
1.5	END OF BOREHOLE Note: 1) Borehole caved at a depth of 1.4 m below ground surface (mBGS) upon completion of drilling.													

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-1B-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:17

GROUNDWATER ELEVATIONS
 Measurement 1st 2nd 3rd 4th

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ = 3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: NT	DATE: 2022-02-11	
DATUM: N/A	SAMPLE REVIEW: ND	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 15	

SOIL PROFILE			SAMPLES		GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content w	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)							
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		"N" BLOWS/0.3m	ELEVATION	SPT	Cone						blows/0.3m	SHEAR STRENGTH (kPa)			WATER CONTENT (%)		
							20	40	60	80	● Unconfined × Field Vane & Sensitivity ▲ Quick Triaxial ⊠ Penetrometer + Lab Vane			10	20	30	40	GR	SA	SI	CL
0.0	ASPHALT: (220 mm)																				
0.2	GRANULAR BASE: (290 mm)		1A	AS														21	65	14	
0.5	GRANULAR SUBBASE: (470 mm) --- auger grinding		1B	AS																	
			2A	AS																	
1.0	FILL: sandy silt, some clay, trace gravel, organic inclusions, layers of clayey silt, brown, moist		2B	AS																	
1.5	END OF BOREHOLE Note: 1) Borehole caved at a depth of 1.4 m below ground surface (mBGS) upon completion of drilling.																				

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:17

GROUNDWATER ELEVATIONS
 Measurement 1st 2nd 3rd 4th

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ = 3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: CH	DATE: 2022-01-13	
DATUM: N/A	SAMPLE REVIEW: ND	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 16	

SOIL PROFILE		SAMPLES			GROUND WATER	DYNAMIC PENETRATION TEST				UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)	
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		"N" BLOWS/0.3m	ELEVATION	○ SPT 20 40 60 80	≧ Cone blows/0.3m 20 40 60 80			Plastic Limit W _p
0.0	ASPHALT: (135 mm)											
0.1	GRANULAR BASE/SUBBASE: (460 mm)		1A	AS								
0.6	FILL: sand and silt, trace to some gravel, brown, moist		1B	AS								
0.8	FILL: sandy silt to silt, trace to some clay, layers of clayey silt, containing cobbles and boulders, brown, moist --- auger grinding from 0.9 m to 1.1 m		2	AS								
			3	AS								
1.6	END OF BOREHOLE DUE TO AUGER REFUSAL ON PROBABLE CONCRETE SLAB/BLOCK OR COBBLES AND BOULDERS OR SHALE BEDROCK Note: 1) Borehole caved at a depth of 1.5 m below ground surface (mBGS) upon completion of drilling.											

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:17

GROUNDWATER ELEVATIONS
 Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ 3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: SKPC	DATE: 2022-03-14	
DATUM: N/A	SAMPLE REVIEW: IG	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 17	

SOIL PROFILE			SAMPLES		GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content W	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)	
ELEV DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		"N" BLOWS/0.3m	ELEVATION	20	40						60
0.0	ASPHALT: (120 mm)														
0.1	GRANULAR BASE: (240 mm)		1A	AS											
0.4	GRANULAR SUBBASE: (410 mm)		1B	AS											15 64 21
0.8	FILL: sandy silt, trace to some clay, trace gravel, organic matters, layers of organic silt, layers of silty sand, brown, moist		2A	AS											
1.0			2B	AS											
1.5	END OF BOREHOLE														
	<p>Note:</p> <p>1) Borehole caved at a depth of 1.3 m below ground surface (mBGS) upon completion of drilling.</p>														

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:17

GROUNDWATER ELEVATIONS

Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ = 3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: NT	DATE: 2022-02-10	
DATUM: N/A	SAMPLE REVIEW: ND	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 18	

SOIL PROFILE			SAMPLES			GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content w	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)			
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS/0.3m		ELEVATION	○ SPT	≧ Cone	blows/0.3m						20	40	60
0.0	ASPHALT: (170 mm)																	
0.2	GRANULAR BASE: (270 mm)		1A	AS														
0.4	GRANULAR SUBBASE: (520 mm) --- auger grinding		1B	AS												17	66	17
			2A	AS														
1.0	FILL: sandy silt, trace clay, trace gravel, organic matters, layers of organic silt, likely hydrocarbon odour, dark brown, moist		2B	AS														
1.5	FILL: sandy silt, trace to some clay, trace gravel, containing cobbles and boulders, brown, moist --- auger grinding																	
			3	AS														
2.3	END OF BOREHOLE Note: 1) Borehole caved at a depth of 2.1 m below ground surface (mBGS) upon completion of drilling.																	

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:17

GROUNDWATER ELEVATIONS
 Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ s=3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: NT	DATE: 2022-02-11	
DATUM: N/A	SAMPLE REVIEW: ND	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 19	

SOIL PROFILE			SAMPLES		GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content w	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)	
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		"N" BLOWS/0.3m	ELEVATION	20	40						60
0.0	ASPHALT: (170 mm)														
0.2	GRANULAR BASE: (290 mm)		1A	AS											
0.5	GRANULAR SUBBASE: (380 mm) --- auger grinding		1B	AS											
			2A	AS											
0.8	FILL: sandy silt to silt, some clay, trace gravel, organic inclusions, pockets of organic silt, brown, moist		2B	AS											
1.5	END OF BOREHOLE Note: 1) Borehole caved at a depth of 1.3 m below ground surface (mBGS) upon completion of drilling.														

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:17

GROUNDWATER ELEVATIONS
 Measurement 1st 2nd 3rd 4th

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ = 3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: NT	DATE: 2022-02-10	
DATUM: N/A	SAMPLE REVIEW: ND	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 20	

SOIL PROFILE			SAMPLES		GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content W	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		"N" BLOWS/0.3m	ELEVATION	20	40					
0.0	ASPHALT: (180 mm)													
0.2	GRANULAR BASE: (230 mm)		1A	AS										
0.4	GRANULAR SUBBASE: (510 mm)		1B	AS										
			2A	AS										
0.9	FILL: sandy silt to sand and silt, trace clay, trace gravel, brown, moist		2B	AS										
1.5	END OF BOREHOLE Note: 1) Borehole caved at a depth of 1.3 m below ground surface (mBGS) upon completion of drilling.													

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:17

GROUNDWATER ELEVATIONS
 Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ = 3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: RD	DATE: 2022-01-14	
DATUM: N/A	SAMPLE REVIEW: ND	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 21	

SOIL PROFILE			SAMPLES			GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content W	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS/0.3m		ELEVATION	SPT 20	Cone 40	blows/0.3m 60					
0.0	ASPHALT: (150 mm)														
0.2	GRANULAR BASE: (300 mm)		1A	AS											
0.5	GRANULAR SUBBASE: (210 mm)		1B	AS											
0.7	FILL: silty sand, trace gravel, organic inclusions, layers of organic silt, layers of sandy silt, brown, moist FILL: sandy silt, trace clay, trace gravel, organic inclusions, layers of silty sand, brown, moist		1C	AS											
0.8			2	AS											
1.5	END OF BOREHOLE Note: 1) Borehole caved at a depth of 1.4 m below ground surface (mBGS) upon completion of drilling.														

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:17

GROUNDWATER ELEVATIONS
 Measurement
 1st 2nd 3rd 4th

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ = 3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: RD	DATE: 2022-01-14	
DATUM: N/A	SAMPLE REVIEW: ND	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 22	

SOIL PROFILE		SAMPLES			GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content W	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		"N" BLOWS/0.3m	ELEVATION	SPT	Cone					
0.0	ASPHALT: (145 mm)													
0.1	GRANULAR BASE/SUBBASE: (500 mm)		1A	AS										
0.7	FILL: sandy silt, some clay, trace gravel, organic inclusions, layers of organic silt, brown, moist		1B	AS										
			2	AS										
1.5	END OF BOREHOLE Note: 1) Borehole caved at a depth of 1.4 m below ground surface (mBGS) upon completion of drilling.													

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:17

GROUNDWATER ELEVATIONS
 Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ = 3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: SKPC	DATE: 2022-03-15	
DATUM: N/A	SAMPLE REVIEW: IG	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 23	

SOIL PROFILE			SAMPLES		GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content w	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		"N" BLOWS/0.3m	ELEVATION	SPT 20	Cone 40					
0.0	ASPHALT: (120 mm)													
0.1	GRANULAR BASE: (190 mm)		1A	AS										
0.3	GRANULAR SUBBASE: (380 mm)		1B	AS										
0.7	FILL: sandy silt, trace clay, trace gravel, organic inclusions, brown, moist		1C	AS										
			2	AS										
1.5	END OF BOREHOLE Note: 1) Borehole caved at a depth of 1.3 m below ground surface (mBGS) upon completion of drilling.													

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:17

GROUNDWATER ELEVATIONS
 Measurement
 1st 2nd 3rd 4th

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ = 3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: NT	DATE: 2022-02-11	
DATUM: N/A	SAMPLE REVIEW: ND	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 24	

SOIL PROFILE			SAMPLES			GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content W	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS/0.3m		ELEVATION	20	40	60					
0.0	ASPHALT: (180 mm)														
0.2	GRANULAR BASE: (270 mm)		1A	AS											
0.5	GRANULAR SUBBASE: (470 mm) --- auger grinding		1B	AS											
			2A	AS											
0.9	FILL: sandy silt to silty sand, trace to some clay, trace gravel, organic inclusions, containing cobbles and boulders, brown, moist --- auger grinding		2B	AS											
1.5	END OF BOREHOLE Note: 1) Borehole caved at a depth of 1.4 m below ground surface (mBGS) upon completion of drilling.														

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:17

GROUNDWATER ELEVATIONS
 Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ 3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: RD	DATE: 2022-01-14	
DATUM: N/A	SAMPLE REVIEW: ND	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 25	

SOIL PROFILE			SAMPLES			GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content W	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS/0.3m		ELEVATION	20	40	60					
0.0	ASPHALT: (170 mm)														
0.2	GRANULAR BASE/SUBBASE: (650 mm)		1	AS											16 58 26
0.8	FILL: sandy silt, some clay, trace gravel, organic inclusions, rootlet inclusions, layers of clayey silt, brown, moist		2A	AS											
			2B	AS											
1.5	END OF BOREHOLE Note: 1) Borehole caved at a depth of 1.3 m below ground surface (mBGS) upon completion of drilling.														

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:17

GROUNDWATER ELEVATIONS
 Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ = 3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: NT	DATE: 2022-02-11	
DATUM: N/A	SAMPLE REVIEW: ND	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 26	

SOIL PROFILE			SAMPLES			GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content W	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS/0.3m		ELEVATION	SPT 20	Cone 40	blows/0.3m 60					
0.0	ASPHALT: (220 mm)														
0.2	GRANULAR BASE: (220 mm)		1A	AS											
0.4	GRANULAR SUBBASE: (490 mm)		1B	AS											
	--- auger grinding		2A	AS											
0.9	FILL: sand and silt to sandy silt, trace to some clay, trace gravel, brown, wet		2B	AS											
1.5	END OF BOREHOLE														
	Notes: 1) Water encountered at a depth of 0.6 m below ground surface (mBGS) during drilling. 2) Water was at a depth of 1.4 mBGS upon completion of drilling. 3) Borehole caved at a depth of 1.4 mBGS upon completion of drilling.														

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:17

GROUNDWATER ELEVATIONS
 Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ 3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: DG	DATE: 2022-04-20	
DATUM: N/A	SAMPLE REVIEW: IG	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 27	

SOIL PROFILE			SAMPLES		GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content w	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		"N" BLOWS/0.3m	ELEVATION	20	40					
0.0	ASPHALT: (210 mm)													
0.2	GRANULAR BASE: (190 mm)		1A	AS										
0.4	GRANULAR SUBBASE: (400 mm)		1B	AS										
0.8	FILL: sandy silt, some clay, trace gravel, layers of silty sand, layers/pockets of organic silt, brown, moist		2A	AS										
			2B	AS										
			3	AS										
2.3	END OF BOREHOLE Note: 1) Borehole caved at a depth of 2.1 m below ground surface (mBGS) upon completion of drilling.													

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:17

GROUNDWATER ELEVATIONS
 Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ 3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: DG,CH	DATE: 2022-06-02	
DATUM: N/A	SAMPLE REVIEW: IG	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 28	

SOIL PROFILE			SAMPLES		GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content w	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL	
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		"N" BLOWS/0.3m	ELEVATION	20	40						60
0.0	ASPHALT: (320 mm)														
0.3	GRANULAR BASE: (200 mm)		1A	AS											
0.5	GRANULAR SUBBASE: (230 mm)		1B	AS											
0.8	FILL: sand and silt to silty sand, trace clay, trace gravel, organic inclusions, layers of clayey silt, greyish brown, moist		1C	AS											
			2A	AS											
1.2	FILL: sandy silt, trace clay, trace gravel, organic inclusions, layers of clayey silt, containing cobbles and boulders, brown, moist --- auger grinding		2B	AS											
			3	AS											
2.3	END OF BOREHOLE Note: 1) Borehole caved at a depth of 2.1 m below ground surface (mBGS) upon completion of drilling.														

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:17

GROUNDWATER ELEVATIONS
 Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ s=3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: SKPC	DATE: 2022-03-22	
DATUM: N/A	SAMPLE REVIEW: IG	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 29	

SOIL PROFILE			SAMPLES		GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content w	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		"N" BLOWS/0.3m	ELEVATION	SPT 20	Cone 40					
0.0	ASPHALT: (230 mm)													
-0.2	GRANULAR BASE: (80 mm)		1A	AS										
0.3	GRANULAR SUBBASE: (430 mm)		1B	AS										
0.7	FILL: sandy silt, some clay, trace gravel, organic inclusions, layers of clayey silt, brown, moist		1C	AS										
				2	AS									
1.5	END OF BOREHOLE													
	Note: 1) Borehole caved at a depth of 1.3 m below ground surface (mBGS) upon completion of drilling.													

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:17

GROUNDWATER ELEVATIONS
 Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ = 3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: SKPC	DATE: 2022-03-15	
DATUM: N/A	SAMPLE REVIEW: IG	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 30	

SOIL PROFILE			SAMPLES			GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content w	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)
ELEV DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS/0.3m		ELEVATION	○ SPT	≧ Cone	blows/0.3m					
0.0	ASPHALT: (230 mm)														
0.2	GRANULAR BASE: (120 mm)		1A	AS											
0.3	GRANULAR SUBBASE: (450 mm)		1B	AS											
0.8	FILL: clayey silt, trace to some sand, trace gravel, organic inclusions, brown, moist		2A	AS											
1.1			2B	AS											
1.5	FILL: sandy silt, some clay, trace gravel, organic inclusions, brown, moist		2C	AS											
1.5	END OF BOREHOLE Note: 1) Borehole caved at a depth of 1.2 m below ground surface (mBGS) upon completion of drilling.														

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:17

GROUNDWATER ELEVATIONS
 Measurement 1st 2nd 3rd 4th

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ 3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: SKPC	DATE: 2022-03-22	
DATUM: N/A	SAMPLE REVIEW: IG	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 31	

SOIL PROFILE			SAMPLES			GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content w	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS/0.3m		ELEVATION	20	40	60					
0.0	ASPHALT: (185 mm)														
0.2	GRANULAR BASE: (210 mm)		1A	AS											
0.4	GRANULAR SUBBASE: (390 mm)		1B	AS											
0.8	FILL: sandy silt, some clay, trace gravel, organic inclusions, layers of clayey silt, layers of silty sand, brown, moist		2B	AS											
1.5			2C	AS											
1.5	END OF BOREHOLE Note: 1) Borehole caved at a depth of 1.4 m below ground surface (mBGS) upon completion of drilling.														

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:17

GROUNDWATER ELEVATIONS
 Measurement
 1st 2nd 3rd 4th

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ = 3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: CH	DATE: 2022-03-16	
DATUM: N/A	SAMPLE REVIEW: IG	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 32	

SOIL PROFILE			SAMPLES			GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content W	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS/0.3m		ELEVATION	20	40	60					
0.0	ASPHALT: (195 mm)														
0.2	GRANULAR BASE: (100 mm)		1A	AS											
0.3	GRANULAR SUBBASE: (470 mm)		1B	AS											
0.8	FILL: silty gravelly sand, containing cobbles and boulders, brown, saturated		2	AS											
	--- auger grinding														
1.5	END OF BOREHOLE														
	Notes: 1) Water encountered at a depth of 0.9 m below ground surface (mBGS) during drilling. 2) Water was at a depth of 0.5 mBGS upon completion of drilling. 3) Borehole caved at a depth of 0.9 mBGS upon completion of drilling.														

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:17

GROUNDWATER ELEVATIONS
 Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ s=3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: CH	DATE: 2022-03-16	
DATUM: N/A	SAMPLE REVIEW: IG	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 33	

SOIL PROFILE			SAMPLES			GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content W	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS/0.3m		ELEVATION	○ SPT	≧ Cone	blows/0.3m					
0.0	ASPHALT: (165 mm)														
0.2	GRANULAR BASE: (100 mm)		1A	AS											
0.3	GRANULAR SUBBASE: (500 mm)		1B	AS											
0.8	FILL: sand, some silt, trace to some gravel, layers of silty sand, pockets of clayey silt, brown, moist		2A	AS											
1.1	FILL: silty sand, trace gravel, organic inclusions, layers of sandy silt, pockets of clayey silt, brown, moist		2B	AS											
1.4	FILL: sandy silt, some clay, trace gravel, layers of clayey silt, brown, moist		3	AS											
1.8	END OF BOREHOLE Note: 1) Borehole caved at a depth of 1.4 m below ground surface (mBGS) upon completion of drilling.														

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:17

GROUNDWATER ELEVATIONS
 Measurement

GRAPH NOTES + 3, × 3: Numbers refer to Sensitivity ▲ 3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: DG	DATE: 2022-04-20	
DATUM: N/A	SAMPLE REVIEW: IG	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 34	

SOIL PROFILE			SAMPLES			GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content w	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS/0.3m		ELEVATION	○ SPT	≧ Cone	blows/0.3m					
0.0	ASPHALT: (350 mm)														
0.4	GRANULAR BASE: (250 mm)		1A	AS											
0.6	GRANULAR SUBBASE: (160 mm)		1B	AS											
0.8	FILL: sandy silt, trace to some clay, trace to some gravel, layers of clayey silt, layers of gravelly sand, layers/pockets of silt, containing cobbles and boulders, brown, moist --- auger grinding --- auger grinding		2	AS											
			3	AS											
2.3	END OF BOREHOLE Note: 1) Borehole caved at a depth of 2.1 m below ground surface (mBGS) upon completion of drilling.														

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:17

GROUNDWATER ELEVATIONS
 Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ s=3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: SKPC	DATE: 2022-03-17	
DATUM: N/A	SAMPLE REVIEW: IG	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 35	

SOIL PROFILE			SAMPLES			GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content W	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS/0.3m		ELEVATION	20	40	60					
0.0	ASPHALT: (170 mm)														
0.2	GRANULAR BASE/SUBBASE: (630 mm)		1	AS											
0.8	FILL: sandy silt, trace to some gravel, trace clay, organic inclusions, pockets of clayey silt, brown, moist		2A	AS											
			2B	AS											
1.5	END OF BOREHOLE Note: 1) Borehole caved at a depth of 1.3 m below ground surface (mBGS) upon completion of drilling.														

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:17

GROUNDWATER ELEVATIONS
 Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ = 3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: SKPC	DATE: 2022-03-21	
DATUM: N/A	SAMPLE REVIEW: IG	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 36	

SOIL PROFILE			SAMPLES		GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content W	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL			
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		"N" BLOWS/0.3m	ELEVATION	SPT	Cone						blows/0.3m	SHEAR STRENGTH (kPa)	
							20	40	60	80	● Unconfined × Field Vane & Sensitivity ▲ Quick Triaxial ⊠ Penetrometer + Lab Vane			10 20 30 40			
0.0	ASPHALT: (125 mm)																
0.1	GRANULAR BASE: (200 mm)		1A	AS													
0.3	GRANULAR SUBBASE: (460 mm)		1B	AS													
0.8	FILL: sandy silt, some clay, trace gravel, organic inclusions, layers of clayey silt, layers/pockets of organic silt, greyish brown, moist		2A	AS													
			2B	AS													
1.5	END OF BOREHOLE Note: 1) Borehole caved at a depth of 1.3 m below ground surface (mBGS) upon completion of drilling.																

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:17

GROUNDWATER ELEVATIONS
 Measurement 1st 2nd 3rd 4th

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ 3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: CH/DG	DATE: 2022-06-23	
DATUM: N/A	SAMPLE REVIEW: IG	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 37	

SOIL PROFILE			SAMPLES		GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content w	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		"N" BLOWS/0.3m	ELEVATION	SPT	Cone					
0.0	ASPHALT: (140 mm)													
0.1	GRANULAR BASE: (260 mm)		1A	AS										
0.4	GRANULAR SUBBASE: (500 mm)		1B	AS										
			2A	AS										
0.9	FILL: silty sand to sand and silt, some gravel, trace clay, organic inclusions, layers of sandy silt, pockets of clayey silt, brown, moist		2B	AS										
1.5	FILL: sandy silt, some clay, trace gravel, organic inclusions, layers of clayey silt, brown, moist		3	AS										
2.3	END OF BOREHOLE Note: 1) Borehole caved at a depth of 2.0 m below ground surface (mBGS) upon completion of drilling.													

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:17

GROUNDWATER ELEVATIONS
 Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ = 3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: BK, DG	DATE: 2022-05-13	
DATUM: N/A	SAMPLE REVIEW: IG	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 38	

SOIL PROFILE		SAMPLES			GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content W	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL	
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		"N" BLOWS/0.3m	ELEVATION	20	40						60
0.0	ASPHALT: (170 mm)														
0.2	GRANULAR BASE: (260 mm)		1A	AS											
0.4	GRANULAR SUBBASE: (470 mm) --- auger grinding		1B 2A	AS AS											
0.9	FILL: sandy silt, some clay, some gravel, containing cobbles and boulders, brown, moist --- auger grinding from 1.1 m to 1.5 m --- layers of clayey silt		2B 3	AS AS											
2.0	END OF BOREHOLE Note: 1) Borehole caved at a depth of 1.4 m below ground surface (mBGS) upon completion of drilling.														

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:17

GROUNDWATER ELEVATIONS
 Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ ³=3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: SKPC	DATE: 2022-03-22	
DATUM: N/A	SAMPLE REVIEW: IG	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 39	

SOIL PROFILE			SAMPLES		GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content w	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)	
ELEV DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		"N" BLOWS/0.3m	ELEVATION	20	40						60
0.0	ASPHALT: (170 mm)														
0.2	GRANULAR BASE: (200 mm)		1A	AS											
0.4	GRANULAR SUBBASE: (440 mm)		1B	AS											
0.8	--- auger grinding		2A	AS											
	FILL: silty sand to sandy silt, trace to some clay, trace gravel, layers of clayey silt, brown, moist		2B	AS											
1.5	END OF BOREHOLE														
	Note: 1) Borehole caved at a depth of 1.2 m below ground surface (mBGS) upon completion of drilling.														

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:17

GROUNDWATER ELEVATIONS
 Measurement 1st 2nd 3rd 4th

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ = 3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: SKPC	DATE: 2022-03-21	
DATUM: N/A	SAMPLE REVIEW: IG	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 40	

SOIL PROFILE			SAMPLES		GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content W	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)							
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		"N" BLOWS/0.3m	ELEVATION	SPT	Cone						blows/0.3m	SHEAR STRENGTH (kPa)			WATER CONTENT (%)		
							20	40	60	80	● Unconfined × Field Vane & Sensitivity ▲ Quick Triaxial ⊠ Penetrometer + Lab Vane			10	20	30	40	GR	SA	SI	CL
0.0	ASPHALT: (150 mm)																				
0.2	GRANULAR BASE: (230 mm)		1A	AS														45	42	14	
0.4	GRANULAR SUBBASE: (410 mm)		1B	AS																	
0.8	FILL: sandy silt, some clay, trace gravel, layers/pockets of clayey silt, brown, moist		2A 2B	AS AS																	
1.1	FILL: clayey silt, some sand, trace gravel, layers of sandy silt, brown, moist		2C	AS																	
1.5	END OF BOREHOLE Note: 1) Borehole caved at a depth of 1.4 m below ground surface (mBGS) upon completion of drilling.																				

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:18

GROUNDWATER ELEVATIONS
 Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ $\epsilon=3\%$ Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: SKPC	DATE: 2022-03-21	
DATUM: N/A	SAMPLE REVIEW: IG	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 41	

SOIL PROFILE		SAMPLES			GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content W	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		"N" BLOWS/0.3m	ELEVATION	20	40					
0.0	ASPHALT: (145 mm)													
0.1	GRANULAR BASE: (280 mm)		1A	AS										
0.4	GRANULAR SUBBASE: (300 mm)		1B	AS										
0.7	FILL: sandy silt, some clay, trace gravel, layers of clayey silt, brown, moist		1C	AS										
			2	AS										
1.5	END OF BOREHOLE Note: 1) Borehole caved at a depth of 1.3 m below ground surface (mBGS) upon completion of drilling.													

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:18

GROUNDWATER ELEVATIONS
 Measurement
 1st 2nd 3rd 4th

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ = 3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: CH/VW	DATE: 2022-07-22	
DATUM: N/A	SAMPLE REVIEW: IG	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 42	

SOIL PROFILE		SAMPLES			GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content w	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)	
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		"N" BLOWS/0.3m	ELEVATION	20	40						60
0.0	ASPHALT: (155 mm)														
0.2	GRANULAR BASE: (300 mm)		1A	AS											
0.5	GRANULAR SUBBASE: (340 mm)		1B	AS											
0.8	FILL: sand and silt, trace to some clay, trace gravel, brown, moist		2A	AS											
			2B	AS											
1.4	FILL: clayey silt, some sand, trace gravel, containing cobbles and boulders, brown, moist		3	AS											
	--- auger grinding														
2.3	END OF BOREHOLE Note: 1) Borehole caved at a depth of 2.1 m below ground surface (mBGS) upon completion of drilling.														

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:18

GROUNDWATER ELEVATIONS
 Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ ³=3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: CH/VW	DATE: 2022-07-22	
DATUM: N/A	SAMPLE REVIEW: IG	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 43	

SOIL PROFILE		SAMPLES			GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content W	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)	
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		"N" BLOWS/0.3m	ELEVATION	20	40						60
0.0	ASPHALT: (185 mm)														
0.2	GRANULAR BASE/SUBBASE: (580 mm)		1	AS											
0.8	FILL: sand and silt, some gravel, trace clay, layers of sandy silt, containing glass fragments, brown, moist		2	AS											
1.4	FILL: sandy silt, trace clay, trace gravel, layers of sand, brown, moist		3	AS											
2.1	FILL: clayey silt, sandy, trace gravel, organic matters, layers/zones of wet sandy silt, brown, moist		4	AS											
3.0	END OF BOREHOLE Notes: 1) Water encountered at a depth of 2.3 m below ground surface (mBGS) during drilling. 2) Borehole caved at a depth of 2.8 mBGS upon completion of drilling.														

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:18

GROUNDWATER ELEVATIONS
 Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ 3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: CH/DG	DATE: 2022-06-23	
DATUM: N/A	SAMPLE REVIEW: IG	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 44	

SOIL PROFILE		SAMPLES			GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content W	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)	
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		"N" BLOWS/0.3m	ELEVATION	20	40						60
0.0	ASPHALT: (170 mm)														
0.2	GRANULAR BASE/SUBBASE: (530 mm)		1A	AS											
0.7	FILL: sandy silt, trace to some clay, trace gravel, layers/pockets of clayey silt, brown, moist		1B	AS											
1.4	CLAYEY SILT: some sand, trace gravel, layers of sandy silt, containing cobbles and boulders, brown, moist --- auger grinding		3	AS											3 18 49 30
2.1	SANDY SILT: some clay, trace gravel, layers of clayey silt, brown, moist		4	AS											
3.0	END OF BOREHOLE Note: 1) Borehole caved at a depth of 2.8 m below ground surface (mBGS) upon completion of drilling.														

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:18

GROUNDWATER ELEVATIONS
 Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ ³=3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements CLIENT: Stantec Consulting Limited PROJECT LOCATION: Bramalea Road, Brampton, Ontario DATUM: N/A BH LOCATION: See Borehole Location Plan	DRILLING DATA METHOD: Continuous Flight Auger FIELD ENGINEER: BK, CH SAMPLE REVIEW: IG CHECKED: DX DIAMETER: 105 mm DATE: 2022-05-20 REF. NO.: 18-2325GHE ENCL. NO.: 45
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SOIL PROFILE			SAMPLES		GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content w	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		"N" BLOWS/0.3m	ELEVATION	SPT 20	Cone 40					
0.0	ASPHALT: (120 mm)													
0.1	GRANULAR BASE: (180 mm)		1A	AS										
0.3	GRANULAR SUBBASE: (620 mm)		1B	AS										
			2A	AS										
0.9	FILL: sandy silt, some clay, trace gravel, organic inclusions, layers of clayey silt, brown, moist		2B	AS										
			3A	AS										
1.7	SANDY SILT: some clay, trace gravel, layers of clayey silt, brown, moist		3B	AS										
2.3	END OF BOREHOLE Note: 1) Borehole caved at a depth of 2.0 m below ground surface (mBGS) upon completion of drilling.													

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:18

GROUNDWATER ELEVATIONS
 Measurement
 1st 2nd 3rd 4th

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ = 3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: CH/DG	DATE: 2022-07-19	
DATUM: N/A	SAMPLE REVIEW: IG	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 46	

SOIL PROFILE		SAMPLES			GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content W	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		"N" BLOWS/0.3m	ELEVATION	20	40					
0.0	ASPHALT: (130 mm)													
0.1	GRANULAR BASE: (370 mm)		1A	AS										
0.5	GRANULAR SUBBASE: (300 mm)		1B	AS										
0.8	FILL: sand and silt to sandy silt, trace to some clay, trace gravel, layers of organic silt, brown, moist		2A	AS										
			2B	AS										
			3	AS										
2.3	END OF BOREHOLE Note: 1) Borehole caved at a depth of 2.0 m below ground surface (mBGS) upon completion of drilling.													

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:18

GROUNDWATER ELEVATIONS
 Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ ³=3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: DG, BG	DATE: 2022-04-26	
DATUM: N/A	SAMPLE REVIEW: IG	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 47	

SOIL PROFILE			SAMPLES		GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content w	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		"N" BLOWS/0.3m	ELEVATION	SHEAR STRENGTH (kPa)						
							○ SPT ≧ Cone blows/0.3m 20 40 60 80							
							● Unconfined × Field Vane & Sensitivity ▲ Quick Triaxial ⊠ Penetrometer + Lab Vane							
							20	40	60	80	10	20	30	40
0.0	ASPHALT: (155 mm)													
0.2	GRANULAR BASE: (150 mm)		1A	AS										
0.3	GRANULAR SUBBASE: (490 mm)		1B	AS										
0.8	FILL: sandy silt, trace clay, trace gravel, organic inclusions, pockets of organic silt, pockets of clayey silt, brown, moist		2A	AS										
			2B	AS										
1.4	SANDY SILT: trace clay, trace gravel, layers of clayey silt, brown, moist		3	AS										
2.0	END OF BOREHOLE Note: 1) Borehole caved at a depth of 1.7 m below ground surface (mBGS) upon completion of drilling.													

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:18

GROUNDWATER ELEVATIONS
 Measurement 1st 2nd 3rd 4th

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ = 3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements CLIENT: Stantec Consulting Limited PROJECT LOCATION: Bramalea Road, Brampton, Ontario DATUM: N/A BH LOCATION: See Borehole Location Plan	DRILLING DATA METHOD: Continuous Flight Auger FIELD ENGINEER: MM SAMPLE REVIEW: ND CHECKED: DX DIAMETER: 105 mm DATE: 2021-12-03 REF. NO.: 18-2325GHE ENCL. NO.: 48
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SOIL PROFILE			SAMPLES			GROUND WATER	DYNAMIC PENETRATION TEST				ELEVATION	SHEAR STRENGTH (kPa)				WATER CONTENT (%)				UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)
ELEV DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS/0.3m		SPT	Cone	blows/0.3m			Plastic Limit	Natural Moisture Content	Liquid Limit	W _p	w	W _L	GR	SA		
0.0	TOPSOIL: (180 mm)	[Symbol]																			
0.2	FILL: silty sand, trace gravel, organic inclusions, rootlet inclusions, brown, moist to wet	[Symbol]	1	AS									○								
1	--- layers of clayey silt	[Symbol]	2	AS										○							
1.5	FILL: silty sand, some clay, trace gravel, containing cobbles and boulders, brown, moist	[Symbol]	3	AS										○						4 46 31 19	
2	--- auger grinding	[Symbol]																			
2.1	PROBABLE FILL: sandy silt, some clay, trace gravel, brown, moist	[Symbol]	4	AS										○							
3.0	END OF BOREHOLE Notes: 1) Water encountered at a depth of 0.8 m below ground surface (mBGS) during drilling. 2) Borehole caved at a depth of 2.7 mBGS upon completion of drilling.																				

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-DX-GPJ 2022-09-13 00:18

GROUNDWATER ELEVATIONS
 Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ ³=3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 155 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: SKPC	DATE: 2022-03-07	
DATUM: N/A	SAMPLE REVIEW: DX	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 49	

ELEV. DEPTH (m)	SOIL PROFILE DESCRIPTION	STRATA PLOT	SAMPLES			GROUND WATER	ELEVATION	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content w	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
			NUMBER	TYPE	"N" BLOWS/0.3m			20	40	60	80					
0.0	TOPSOIL: (175 mm)															
0.2	FILL: sandy silt, some clay, trace gravel, organic matters, rootlet inclusions, dark brown to brown, moist		1	AS												
0.8	FILL: sand, some silt, trace gravel, containing cobbles and boulders, brown, moist --- auger grinding		2	AS												
1.4	FILL: sandy silt, some clay, trace gravel, organic matters, containing cobbles and boulders, grey, moist --- auger grinding		3	AS												
2.2	SANDY SILT: trace gravel, trace clay, brown, moist		4	AS												
3.0	END OF BOREHOLE Note: 1) Borehole caved at a depth of 2.7 m below ground surface (mBGS) upon completion of drilling.															

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:18

GROUNDWATER ELEVATIONS
 Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ e=3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 155 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: SKPC	DATE: 2021-12-29	
DATUM: N/A	SAMPLE REVIEW: ND	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 50	

SOIL PROFILE			SAMPLES		GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content W	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		"N" BLOWS/0.3m	ELEVATION	○ SPT	≧ Cone					
0.0	TOPSOIL: (250 mm)													
0.3	FILL: gravelly sand, some silt, organic inclusions, rootlet inclusions, layers/zones of clayey silt, brown, moist		1	AS										
1.5	SANDY SILT TO SILT: some clay, trace gravel, containing cobbles and boulders, brown, moist --- auger grinding		2	AS										
3.0	END OF BOREHOLE Note: 1) Borehole caved at a depth of 2.7 m below ground surface (mBGS) upon completion of drilling.		3	AS										
			4	AS										

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:18

GROUNDWATER ELEVATIONS
 Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ ³=3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 155 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: SKPC	DATE: 2021-12-29	
DATUM: N/A	SAMPLE REVIEW: ND	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 51	

SOIL PROFILE		SAMPLES			GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content W	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		"N" BLOWS/0.3m	ELEVATION	SPT 20	Cone 40					
0.0	ASPHALT: (150 mm)													
0.2	GRANULAR BASE/SUBBASE: (380 mm)		1A	AS										
0.5	FILL: sand, trace gravel, brown, moist		1B	AS										
0.8	FILL: silty sand, trace gravel, organic inclusions, layers of organic silt, layers of sandy silt, brown, moist		2	AS										
1.5	SANDY SILT: some clay, trace gravel, layers of silt, containing cobbles and boulders, brown, moist --- auger grinding		3	AS										
			4	AS										
3.0	END OF BOREHOLE Note: 1) Borehole caved at a depth of 2.7 m below ground surface (mBGS) upon completion of drilling.													

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:18

GROUNDWATER ELEVATIONS
 Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ ³=3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: CH	DATE: 2022-01-13	
DATUM: N/A	SAMPLE REVIEW: ND	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 52	

SOIL PROFILE		SAMPLES			GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content W	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		"N" BLOWS/0.3m	ELEVATION	20	40					
0.0	TOPSOIL: (170 mm)													
0.2	FILL: sandy silt, trace to some clay, trace gravel, organic matters, rootlet inclusions, dark brown to brown, moist		1	AS								20		
0.8	FILL: sand and silt, some gravel, trace clay, containing cobbles and boulders, brown, moist --- auger grinding		2	AS								20		
1.5	FILL: sandy silt, some clay, trace gravel, organic inclusions, rootlet inclusions, containing cobbles and boulders, brown, moist --- auger grinding		3	AS								20		
2.2	SANDY SILT TO SILT: some clay, trace gravel, containing cobbles and boulders, brown, moist --- auger grinding		4	AS								20		
3.0	END OF BOREHOLE Note: 1) Borehole caved at a depth of 2.8 m below ground surface (mBGS) upon completion of drilling.													

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:18

GROUNDWATER ELEVATIONS
 Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ 3% Strain at Failure

<p>PROJECT: Geotechnical Investigation for Proposed Road Improvements</p> <p>CLIENT: Stantec Consulting Limited</p> <p>PROJECT LOCATION: Bramalea Road, Brampton, Ontario</p> <p>DATUM: N/A</p> <p>BH LOCATION: See Borehole Location Plan</p>	<p>DRILLING DATA</p> <p>METHOD: Continuous Flight Auger</p> <p>FIELD ENGINEER: SKPC</p> <p>SAMPLE REVIEW: DX</p> <p>CHECKED: DX</p> <p>DIAMETER: 155 mm</p> <p>DATE: 2022-03-08</p> <p>REF. NO.: 18-2325GHE</p> <p>ENCL. NO.: 53</p>
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SOIL PROFILE			SAMPLES			GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content w	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS/0.3m		ELEVATION	○ SPT	≧ Cone	blows/0.3m					
0.0	TOPSOIL: (175 mm)														
0.2	FILL: sand and silt, some clay, trace gravel, organic inclusions, rootlet inclusions, brown, wet		1	AS											
0.8	FILL: silty sand, trace clay, trace gravel, containing rock fragment/pieces, brown, moist		2	AS											
1.4	FILL: sandy silt, trace to some clay, trace gravel, organic matters, layers of organic silt, dark brown, moist		3A	AS											
1.8	FILL: sandy silt, some clay, trace gravel, containing cobbles and boulders, brown, moist		3B	AS											
2.2	--- auger grinding SANDY SILT: some clay, trace gravel, brown, moist		4	AS											
3.0	END OF BOREHOLE Note: 1) Borehole caved at a depth of 2.8 m below ground surface (mBGS) upon completion of drilling.														

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-DX-GPJ 2022-09-13 00:18

GROUNDWATER ELEVATIONS

Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ e=3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: CH	DATE: 2022-01-13	
DATUM: N/A	SAMPLE REVIEW: ND	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 54	

SOIL PROFILE		SAMPLES			GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content w	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)	
ELEV DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		"N" BLOWS/0.3m	ELEVATION	20	40						60
0.0	TOPSOIL: (200 mm)														
0.2	FILL: sandy silt, trace clay, trace gravel, organic matters, rootlet inclusions, dark brown, moist		1	AS											
0.8	FILL: silty sand, some clay, some gravel, organic inclusions, containing cobbles and boulders, brown, moist --- auger grinding		2	AS											12 50 27 11
1.5	FILL: sandy silt, some clay, trace gravel, brown, moist		3	AS											
2.2	SANDY SILT: trace clay, trace gravel, brown, moist		4	AS											
3.0	END OF BOREHOLE Note: 1) Borehole caved at a depth of 2.7 m below ground surface (mBGS) upon completion of drilling.														

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:18

GROUNDWATER ELEVATIONS
 Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ $\epsilon=3\%$ Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements CLIENT: Stantec Consulting Limited PROJECT LOCATION: Bramalea Road, Brampton, Ontario DATUM: N/A BH LOCATION: See Borehole Location Plan	DRILLING DATA METHOD: Continuous Flight Auger FIELD ENGINEER: SKPC SAMPLE REVIEW: DX CHECKED: DX DIAMETER: 155 mm DATE: 2022-03-07 REF. NO.: 18-2325GHE ENCL. NO.: 55
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ELEV. DEPTH (m)	SOIL PROFILE DESCRIPTION	STRATA PLOT	SAMPLES			GROUND WATER	ELEVATION	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content w	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)
			NUMBER	TYPE	"N" BLOWS/0.3m			20	40	60	80					
0.0	TOPSOIL: (200 mm)															
0.2	FILL: sandy silt, some clay, trace gravel, organic matters, containing cobbles and boulders, brown, moist to wet --- auger grinding		1	AS												
1.1	FILL: clayey silt, trace to some sand, trace gravel, organic inclusions, layers of organic silt, containing cobbles and boulders, brown, moist --- auger grinding		2A	AS												
1.5	FILL: sandy silt, some clay, trace gravel, organic inclusions, brown, moist		2B	AS												
2.2	SANDY SILT: some clay to clayey, trace gravel, layers/zones of clayey silt, brown, wet		3	AS												
3.0	END OF BOREHOLE Notes: 1) Water encountered at a depth of 0.2 m below ground surface (mBGS) during drilling. 2) Water was at a depth of 2.8 mBGS upon completion of drilling. 3) Borehole caved at a depth of 2.8 mBGS upon completion of drilling.		4	AS												

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:18

GROUNDWATER ELEVATIONS
 Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ = 3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: SKPC	DATE: 2022-03-08	
DATUM: N/A	SAMPLE REVIEW: DX	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 57	

SOIL PROFILE			SAMPLES		GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content w	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		"N" BLOWS/0.3m	ELEVATION	○ SPT	≧ Cone					
0.0	TOPSOIL: (165 mm)													
0.2	FILL: sand and silt, some clay, trace gravel, organic inclusions, rootlet inclusions, brown, moist		1	AS										
0.8	FILL: silt, some clay, trace sand, trace gravel, organic inclusions, layers of clayey silt, brown, moist		2	AS										
1.5	FILL: sandy silt, some clay, trace gravel, organic inclusions, brown, moist		3	AS										
2.2	CLAYEY SILT: sandy, trace gravel, brown, moist		4	AS										0 21 45 34
3.0	END OF BOREHOLE Note: 1) Borehole caved at a depth of 2.6 m below ground surface (mBGS) upon completion of drilling.													

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:18

GROUNDWATER ELEVATIONS
 Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ ³=3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: NT	DATE: 2022-02-10	
DATUM: N/A	SAMPLE REVIEW: ND	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 58	

SOIL PROFILE			SAMPLES			GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content w	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS/0.3m		ELEVATION	20	40	60					
0.0	ASPHALT: (170 mm)														
0.2	GRANULAR BASE: (270 mm)		1A	AS											
0.4	GRANULAR SUBBASE: (600 mm) --- auger grinding		1B	AS											
1.0	FILL: organic silt, some clay, some sand, trace gravel, layers of sandy silt, dark brown, moist		2B	AS											
1.5	FILL: clayey silt, some sand, trace gravel, organic inclusions, containing cobbles and boulders, brown, moist		3	AS											
2.2	--- auger grinding PROBABLE FILL: sandy silt to silt, some clay, trace gravel, brown, moist		4	AS											
3.0	END OF BOREHOLE Note: 1) Borehole caved at a depth of 2.6 m below ground surface (mBGS) upon completion of drilling.														

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:18

GROUNDWATER ELEVATIONS
 Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ e=3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: SKPC	DATE: 2022-03-02	
DATUM: N/A	SAMPLE REVIEW: ND	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 59	

SOIL PROFILE		SAMPLES			GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content W	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)	
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		"N" BLOWS/0.3m	ELEVATION	20	40						60
0.0	ASPHALT: (140 mm)														
0.1	GRANULAR BASE: (290 mm)		1A	AS											
0.4	GRANULAR SUBBASE: (370 mm)		1B	AS											
0.8	FILL: sandy silt to silt, trace gravel, organic matters, layers of organic silt, containing cobbles and boulders, dark brown, moist --- auger grinding		2A	AS											
			2B	AS											
1.5	SANDY SILT TO SILT: trace to some clay, trace gravel, brown, moist		3	AS											3 31 49 17
			4	AS											
3.0	END OF BOREHOLE Note: 1) Borehole caved at a depth of 2.8 m below ground surface (mBGS) upon completion of drilling.														

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:18

GROUNDWATER ELEVATIONS
 Measurement

GRAPH NOTES + 3, × 3: Numbers refer to Sensitivity ▲ 3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: CH	DATE: 2022-01-13	
DATUM: N/A	SAMPLE REVIEW: ND	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 60	

SOIL PROFILE		SAMPLES			GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content w	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		"N" BLOWS/0.3m	ELEVATION	○ SPT	≧ Cone					
0.0	TOPSOIL: (240 mm)													
0.2	FILL: sandy silt, some clay, trace gravel, organic matters, rootlet inclusions, dark brown, moist		1	AS										
0.8	FILL: sandy silt, some clay, trace gravel, organic inclusions, rootlet inclusions, containing cobbles and boulders, brown, moist --- auger grinding from 0.9 m to 1.2 m		2	AS										
1.5	END OF BOREHOLE DUE TO AUGER REFUSAL ON PROBABLE CONCRETE SLAB/BLOCK OR COBBLES AND BOULDERS OR SHALE BEDROCK Note: 1) Borehole caved at a depth of 1.3 m below ground surface (mBGS) upon completion of drilling.													

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:18

GROUNDWATER ELEVATIONS
 Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ ³=3% Strain at Failure

<p>PROJECT: Geotechnical Investigation for Proposed Road Improvements</p> <p>CLIENT: Stantec Consulting Limited</p> <p>PROJECT LOCATION: Bramalea Road, Brampton, Ontario</p> <p>DATUM: N/A</p> <p>BH LOCATION: See Borehole Location Plan</p>	<p>DRILLING DATA</p> <p>METHOD: Continuous Flight Auger</p> <p>FIELD ENGINEER: NT</p> <p>SAMPLE REVIEW: ND</p> <p>CHECKED: DX</p>
	<p>DIAMETER: 105 mm</p> <p>DATE: 2022-02-10</p> <p>REF. NO.: 18-2325GHE</p> <p>ENCL. NO.: 61</p>

SOIL PROFILE			SAMPLES			GROUND WATER	DYNAMIC PENETRATION TEST				ELEVATION	WATER CONTENT (%)	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)	
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS/0.3m		SPT	Cone	blows/0.3m	Plastic Limit					Natural Moisture Content
0.0	ASPHALT: (170 mm)														
0.2	GRANULAR BASE: (310 mm)		1A	AS					○						
0.5	GRANULAR SUBBASE: (460 mm) --- auger grinding		1B	AS					○						
0.9	FILL: organic silt, some clay, some sand, trace gravel, dark brown, moist		2A	AS					○						
1.1	FILL: clayey silt, some sand, trace gravel, organic matters, brown to dark brown, moist		2B	AS					○						
1.5	FILL: sandy silt to silt, some clay to clayey, organic inclusions, containing cobbles and boulders, brown, moist --- auger grinding		2C	AS					○						
2.2	SILT: some clay, trace sand, trace gravel, containing shale fragments, cobbles and boulders, brown, moist --- auger grinding		3	AS					○						
4			4	AS					○						
3.0	END OF BOREHOLE Note: 1) Borehole caved at a depth of 2.9 m below ground surface (mBGS) upon completion of drilling.														

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-NZ-IG-DX-GPJ 2022-09-13 00:18

GROUNDWATER ELEVATIONS

Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ = 3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: RD	DATE: 2022-01-07	
DATUM: N/A	SAMPLE REVIEW: ND	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 62	

SOIL PROFILE		SAMPLES			GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content W	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		"N" BLOWS/0.3m	ELEVATION	○ SPT	≧ Cone					
0.0	ASPHALT: (210 mm)													
0.2	GRANULAR BASE/SUBBASE: (470 mm)		1A	AS										
0.7	FILL: sandy silt, trace to some clay, trace gravel, layers of silty sand, brown, moist		1B	AS										
			2	AS										
1.5	END OF BOREHOLE DUE TO AUGER REFUSAL ON PROBABLE CONCRETE SLAB/BLOCK OR COBBLES AND BOULDERS OR SHALE BEDROCK Note: 1) Borehole caved at a depth of 1.4 m below ground surface (mBGS) upon completion of drilling.													

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:18

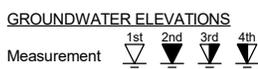
GROUNDWATER ELEVATIONS
 Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ = 3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: DG,CH	DATE: 2022-06-03	
DATUM: N/A	SAMPLE REVIEW: IG	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 63	

ELEV. DEPTH (m)	SOIL PROFILE DESCRIPTION	STRATA PLOT	SAMPLES			GROUND WATER	ELEVATION	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content w	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)
			NUMBER	TYPE	"N" BLOWS/0.3m			○ SPT	≧ Cone	blows/0.3m	blows/0.3m					
0.0	TOPSOIL: (200 mm)															
0.2	FILL: sand and silt, trace clay, trace gravel, rootlet inclusions, layers of sandy silt, brown, moist		1A	AS												
0.5	FILL: sandy silt, some clay, trace gravel, rootlet inclusions, layers of clayey silt, containing cobbles and boulders, brown, moist to wet		1B	AS												
	--- auger grinding		2	AS												
	--- auger grinding															
	--- some clay to clayey, layers/zones of clayey silt, moist to wet		3	AS												
2.3	FILL: sandy silt, some clay, trace gravel, layers of sandy silt, containing cobbles and boulders, brown, wet		4	AS												
2.8	--- auger grinding from 2.4 m to 2.7 m END OF BOREHOLE DUE TO AUGER REFUSAL ON PROBABLE CONCRETE SLAB/BLOCK OR COBBLES AND BOULDERS OR SHALE BEDROCK															
	Notes: 1) Water encountered at a depth of 2.0 m below ground surface (mBGS) during drilling. 2) Water was at a depth of 2.3 mBGS upon completion of drilling. 3) Borehole caved at a depth of 2.5 mBGS upon completion of drilling.															

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-DX-GPJ 2022-09-13 00:18



GRAPH NOTES + 3, × 3: Numbers refer to Sensitivity ▲ = 3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: BK, DG	DATE: 2022-05-13	
DATUM: N/A	SAMPLE REVIEW: IG	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 64	

SOIL PROFILE		SAMPLES			GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content w	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		"N" BLOWS/0.3m	ELEVATION	○ SPT	△ Cone					
0.0	ASPHALT: (170 mm)													
0.2	GRANULAR BASE: (150 mm)		1A	AS										
0.3	GRANULAR SUBBASE: (300 mm)		1B	AS										
0.6	FILL: sand and silt to silty sand, trace clay, trace gravel, organic inclusions, brown, moist --- layers of clayey silt		1C	AS										
			2	AS										
1.4	FILL: clayey silt, some sand, trace gravel, organic inclusions, layers of sandy silt, containing cobbles and boulders, brown, moist --- auger grinding		3	AS										
2.1	--- auger grinding		4	NR	50 / 30 mm									
2.2	NO SAMPLE RECOVERY END OF BOREHOLE DUE TO AUGER REFUSAL ON PROBABLE CONCRETE SLAB/BLOCK OR COBBLES AND BOULDERS OR SHALE BEDROCK Note: 1) Borehole caved at a depth of 1.9 m below ground surface (mBGS) upon completion of drilling.													

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:18

GROUNDWATER ELEVATIONS
 Measurement 1st 2nd 3rd 4th

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ s=3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 155 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: SKPC	DATE: 2022-03-07	
DATUM: N/A	SAMPLE REVIEW: DX	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 65	

SOIL PROFILE		SAMPLES		GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit Natural Moisture Content Liquid Limit	WATER CONTENT (%) W _p W W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER		TYPE	"N" BLOWS/0.3m	ELEVATION	SHEAR STRENGTH (kPa)				
							○ SPT ≧ Cone blows/0.3m 20 40 60 80					
0.0	ASPHALT: (150 mm)											
0.2	GRANULAR BASE: (330 mm)		1A	AS								
0.5	GRANULAR SUBBASE: (330 mm)		1B	AS								
0.8	--- auger grinding		2A	AS								
0.8	FILL: sand and silt, trace to some clay, trace gravel, organic inclusions, brown, moist		2B	AS								
1.2	FILL: sandy silt, trace to some clay, trace gravel, organic matters, layers of organic silt, containing cobbles and boulders, dark brown to brown, moist		2C	AS								
1.5	--- auger grinding		3	AS								
1.5	SANDY SILT: trace clay, trace to some gravel, containing cobbles and boulders, brown, moist											
	--- auger grinding		4	AS								
3.0	END OF BOREHOLE											
	Note: 1) Borehole caved at a depth of 2.7 m below ground surface (mBGS) upon completion of drilling.											

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:18

GROUNDWATER ELEVATIONS
 Measurement 1st 2nd 3rd 4th

GRAPH NOTES + 3, × 3: Numbers refer to Sensitivity ▲ 3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger - Auto Hammer	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: SK	DATE: 2022-03-29	
DATUM: N/A	SAMPLE REVIEW: IG	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 66	

SOIL PROFILE			SAMPLES		GROUND WATER	DYNAMIC PENETRATION TEST				WATER CONTENT (%)	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)	
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		"N" BLOWS/0.3m	ELEVATION	○ SPT	≧ Cone				blows/0.3m
0.0	ASPHALT: (135 mm)												
0.1	GRANULAR BASE: (250 mm)		1A	AS									
0.4	GRANULAR SUBBASE: (430 mm)		1B	AS									
0.8	FILL: clayey silt, some sand to sandy, trace gravel, organic matters, layers of sandy silt, dark brown to brown, moist		2A	AS									
1.5	SANDY SILT TILL: some clay, trace gravel, layers of sandy silt, seams of sand, containing cobbles and boulders, brown, moist, dense CLAYEY SILT: some sand, trace gravel, interlayers of silt, containing cobbles and boulders, brown, moist, hard		3A	SS	46								
1.7			3B	SS									
2.1			4A	SS	79 / 220								
2.5	SANDY SILT TO SILT/SHALE COMPLEX: some clay, trace		4B	SS	mm								
2.7	gravel, layers of clayey silt, seams of sand, containing shale fragments/pieces/slab, brown to grey, moist, very dense PROBABLE WEATHERED SHALE: interbedded with limestone, grey END OF BOREHOLE DUE TO SPOON REFUSAL ON PROBABLE WEATHERED SHALE Note: 1) Borehole caved at a depth of 2.5 m below ground surface (mBGS) upon completion of drilling.												

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-18-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:18

GROUNDWATER ELEVATIONS
 Measurement 1st 2nd 3rd 4th

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ = 3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements CLIENT: Stantec Consulting Limited PROJECT LOCATION: Bramalea Road, Brampton, Ontario DATUM: N/A BH LOCATION: See Borehole Location Plan	DRILLING DATA METHOD: Continuous Flight Auger FIELD ENGINEER: SKPC SAMPLE REVIEW: IG CHECKED: DX DIAMETER: 105 mm DATE: 2022-03-14 REF. NO.: 18-2325GHE ENCL. NO.: 67
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SOIL PROFILE			SAMPLES		GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content w	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)	
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		"N" BLOWS/0.3m	ELEVATION	20	40						60
0.0	ASPHALT: (115 mm)														
0.1	GRANULAR BASE: (200 mm)		1A	AS											
0.3	GRANULAR SUBBASE: (500 mm)		1B	AS											
0.8	FILL: sandy silt, some clay, trace gravel, containing rock fragments, cobbles and boulders, brown, moist		2A	AS											
			2B	AS											
1.2	--- auger grinding		2C	AS											
1.4	FILL: sand and gravel, some silt, layers/zones of sandy silt, containing rock fragments/pieces, brown, moist --- auger refusal at 1.4 m due to probable concrete slab or shale bedrock, borehole moved 2 m south and auger refusal again at 1.4 m END OF BOREHOLE DUE TO AUGER REFUSAL ON PROBABLE CONCRETE SLAB OR SHALE BEDROCK Note: 1) Borehole caved at a depth of 1.2 m below ground surface (mBGS) upon completion of drilling.														

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:18

GROUNDWATER ELEVATIONS
 Measurement
 1st 2nd 3rd 4th

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ = 3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: DG,CH	DATE: 2022-06-02	
DATUM: N/A	SAMPLE REVIEW: IG	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 68	

SOIL PROFILE		SAMPLES			GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content w	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)	
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		"N" BLOWS/0.3m	ELEVATION	○ SPT	∠ Cone						blows/0.3m
0.0	TOPSOIL: (190 mm)														
0.2	FILL: sand and silt, trace clay, trace gravel, organic inclusions, rootlet inclusions, layers of silty sand, brown, moist		1A	AS											
			1B	AS											
0.8	FILL: sandy silt, some clay, trace gravel, layers of clayey silt, brown to greyish brown, moist --- organic inclusions, greyish brown		2	AS											
			3	AS											
			4A	AS											
			4B	AS											
2.4	FILL: sand and silt to silty sand, some clay, trace gravel, organic matters/odour, layers of clayey silt, layers of sandy silt, grey, wet														
3.0	END OF BOREHOLE Notes: 1) Water encountered at a depth of 2.4 m below ground surface (mBGS) during drilling. 2) Borehole caved at a depth of 2.7 mBGS upon completion of drilling.														

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:18

GROUNDWATER ELEVATIONS
 Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ $\epsilon=3\%$ Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: SKPC	DATE: 2022-03-15	
DATUM: N/A	SAMPLE REVIEW: IG	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 69	

SOIL PROFILE		SAMPLES		GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit Natural Moisture Content Liquid Limit	WATER CONTENT (%) W _p W W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER		TYPE	"N" BLOWS/0.3m	ELEVATION	SHEAR STRENGTH (kPa)				
							○ SPT ≧ Cone blows/0.3m 20 40 60 80					
							● Unconfined × Field Vane & Sensitivity ▲ Quick Triaxial ⊠ Penetrometer + Lab Vane					
							20 40 60 80	10 20 30 40				
0.0	ASPHALT: (135 mm)											
0.1	GRANULAR BASE: (290 mm)		1A	AS					○			
0.4	GRANULAR SUBBASE: (360 mm)		1B	AS					○			
0.8	FILL: silty sand, trace gravel, layers of sandy silt, brown, wet		2A	AS					○			
			2B	AS					○			
			3	AS					○			
2.1	FILL: silty gravelly sand, layers of sandy silt, brown, wet		4	AS					○			
3.0	END OF BOREHOLE											
	Notes: 1) Water encountered at a depth of 0.9 m below ground surface (mBGS) during drilling. 2) Water was at a depth of 2.0 mBGS upon completion of drilling. 3) Borehole caved at a depth of 2.5 mBGS upon completion of drilling.											

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:18

GROUNDWATER ELEVATIONS
 Measurement 1st 2nd 3rd 4th

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ s=3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: CH	DATE: 2022-03-16	
DATUM: N/A	SAMPLE REVIEW: IG	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 70	

SOIL PROFILE		SAMPLES			GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content w	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)	
ELEV DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		"N" BLOWS/0.3m	ELEVATION	○ SPT	≧ Cone						blows/0.3m
0.0	TOPSOIL: (240 mm)														
0.2	FILL: sandy silt to silt, some clay, trace gravel, organic matters, rootlet inclusions, layers of topsoil, layers/zones of clayey silt, containing cobbles and boulders, dark brown to brown, moist --- auger grinding		1	AS											
			2	AS											
			3	AS											
			4A	AS											
2.6	CLAYEY SILT: sandy, trace gravel, layers of sandy silt, containing cobbles and boulders, brown, moist --- auger grinding		4B	AS										1 22 50 27	
2.9	<p>END OF BOREHOLE DUE TO AUGER REFUSAL ON PROBABLE COBBLES AND BOULDERS OR SHALE BEDROCK</p> <p>Note:</p> <p>1) Borehole caved at a depth of 2.7 m below ground surface (mBGS) upon completion of drilling.</p>														

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:18

GROUNDWATER ELEVATIONS
 Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ e=3% Strain at Failure

<p>PROJECT: Geotechnical Investigation for Proposed Road Improvements</p> <p>CLIENT: Stantec Consulting Limited</p> <p>PROJECT LOCATION: Bramalea Road, Brampton, Ontario</p> <p>DATUM: N/A</p> <p>BH LOCATION: See Borehole Location Plan</p>	<p>DRILLING DATA</p> <p>METHOD: Continuous Flight Auger</p> <p>FIELD ENGINEER: DG</p> <p>SAMPLE REVIEW: IG</p> <p>CHECKED: DX</p> <p>DIAMETER: 105 mm</p> <p>DATE: 2022-04-20</p> <p>REF. NO.: 18-2325GHE</p> <p>ENCL. NO.: 71</p>
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SOIL PROFILE			SAMPLES		GROUND WATER	DYNAMIC PENETRATION TEST				WATER CONTENT (%)			UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)	
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		ELEVATION	SPT	Cone	blows/0.3m	W _p	W	W _L			
0.0	ASPHALT: (170 mm)														
0.2	GRANULAR BASE: (210 mm)		1A	AS					○						
0.4	GRANULAR SUBBASE: (300 mm)		1B	AS					○						
0.7	--- auger grinding FILL: sandy silt, some clay, trace gravel, layers of silty sand, layers/pockets of clayey silt, brown, moist		1C	AS					○						
1			2	AS					○						
2			3	AS					○						
2.2	SANDY SILT: trace clay, trace gravel, pockets of clayey silt, pockets of sand, containing cobbles and boulders, brown, moist --- auger grinding		4	AS					○						
3															
3.0	END OF BOREHOLE Note: 1) Borehole caved at a depth of 2.7 m below ground surface (mBGS) upon completion of drilling.														

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:18

GROUNDWATER ELEVATIONS

Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ 3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: BK	DATE: 2022-04-28	
DATUM: N/A	SAMPLE REVIEW: IG	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 72	

SOIL PROFILE			SAMPLES			GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content W	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)				
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS/0.3m		ELEVATION	○ SPT	≧ Cone	blows/0.3m						20	40	60	80
0.0	TOPSOIL: (300 mm)																		
0.1	FILL: sandy silt, some clay, trace gravel, organic inclusions/matters, rootlet inclusions, layers of topsoil, layers of organic silt, layers/pockets of clayey silt, dark brown to brown, moist		1	AS															
			2	AS															
			3	AS															
			4	AS															
3.0	END OF BOREHOLE																		
	Note: 1) Borehole caved at a depth of 2.7 m below ground surface (mBGS) upon completion of drilling.																		

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:18

GROUNDWATER ELEVATIONS
 Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ ³=3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: BK, DG	DATE: 2022-05-13	
DATUM: N/A	SAMPLE REVIEW: IG	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 73	

SOIL PROFILE			SAMPLES		GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content W	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)			
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		"N" BLOWS/0.3m	ELEVATION	SPT	Cone						blows/0.3m	SHEAR STRENGTH (kPa)	
0.0	ASPHALT: (270 mm)																
0.3	GRANULAR BASE: (180 mm)		1A	AS													
0.5	GRANULAR SUBBASE: (360 mm) --- auger grinding		1B	AS													
0.8	FILL: sandy silt to sand and silt, trace clay, trace gravel, organic inclusions, containing cobbles and boulders, brown, moist --- auger grinding from 0.9 m to 1.2 m		2A	AS													
			2B	AS													
			3	AS													
			4	AS													
3.0	END OF BOREHOLE																
	Note: 1) Borehole caved at a depth of 2.3 m below ground surface (mBGS) upon completion of drilling.																

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-DX-GPJ 2022-09-13 00:18

GROUNDWATER ELEVATIONS
 Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ $\epsilon=3\%$ Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: SKPC	DATE: 2022-03-15	
DATUM: N/A	SAMPLE REVIEW: IG	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 74	

SOIL PROFILE			SAMPLES		GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content W	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		"N" BLOWS/0.3m	ELEVATION	SHEAR STRENGTH (kPa)						
							○ SPT ≧ Cone blows/0.3m 20 40 60 80			● Unconfined ✕ Field Vane & Sensitivity ▲ Quick Triaxial ⊠ Penetrometer + Lab Vane		10 20 30 40		
0.0	ASPHALT: (220 mm)													
0.2	GRANULAR BASE: (300 mm)		1A	AS										
0.5	GRANULAR SUBBASE: (420 mm)		1B	AS										
			2A	AS										
0.9	FILL: silty sand, trace gravel, layers of clayey silt, brown, wet		2B	AS										
1.4			3	AS										
	FILL: sand and silt to sandy silt, trace to some clay, trace gravel, layers of clayey silt, brown, wet		4	AS										
3.0	END OF BOREHOLE													
	Notes: 1) Water encountered at a depth of 0.9 m below ground surface (mBGS) during drilling. 2) Water was at a depth of 2.1 mBGS upon completion of drilling. 3) Borehole caved at a depth of 2.5 mBGS upon completion of drilling.													

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:18

GROUNDWATER ELEVATIONS
 Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ $\epsilon=3\%$ Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: DG/SC	DATE: 2022-06-08	
DATUM: N/A	SAMPLE REVIEW: IG	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 75	

SOIL PROFILE		SAMPLES			GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content W	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)				
						○ SPT	≧ Cone	blows/0.3m										
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS/0.3m	ELEVATION	SHEAR STRENGTH (kPa)				WATER CONTENT (%)			GR	SA	SI	CL	
							● Unconfined	× Field Vane & Sensitivity	▲ Quick Triaxial	⊠ Penetrometer	+	Lab Vane	10					20
0.0	TOPSOIL: (230 mm)																	
0.2	FILL: sandy silt, trace clay, trace gravel, rootlet inclusions, containing cobbles and boulders, brown, moist --- auger grinding		1	AS														
0.8	FILL: sandy silt, some clay, trace gravel, organic inclusions, rootlet inclusions, layers of clayey silt, brown, moist --- layers/zones of clayey silt		2	AS														
2.2	SANDY SILT: trace to some clay, trace gravel, layers of clayey silt, containing cobbles and boulders, brown, moist --- auger grinding		4	AS														
3.0	END OF BOREHOLE Note: 1) Borehole caved at a depth of 2.4 m below ground surface (mBGS) upon completion of drilling.																	

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:18

GROUNDWATER ELEVATIONS
 Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ ●=3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: CH	DATE: 2022-03-16	
DATUM: N/A	SAMPLE REVIEW: IG	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 76	

SOIL PROFILE			SAMPLES			GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content w	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS/0.3m		ELEVATION	○ SPT	≧ Cone	blows/0.3m					
0.0	TOPSOIL: (230 mm)														
0.2	FILL: sandy silt, some clay, trace gravel, organic matters, rootlet inclusions, layers of topsoil, layers of clayey silt, dark brown, wet		1	AS											
1.4	FILL: clayey silt, some sand to sandy, trace gravel, organic inclusions, rootlet inclusions, layers of sandy silt, containing rock fragments/pieces, cobbles and boulders, brown, moist --- auger grinding		2	AS											
2.4	FILL: sandy silt, trace clay, trace gravel, organic inclusions, rootlet inclusions, pockets of silt, brown moist		3	AS											
2.4			4A	AS											
2.4			4B	AS											
2.7	<p>END OF BOREHOLE DUE TO AUGER REFUSAL ON PROBABLE CONCRETE SLAB/BLOCK OR COBBLES AND BOULDERS OR SHALE BEDROCK</p> <p>Notes:</p> <p>1) Water encountered at a depth of 0.2 m below ground surface (mBGS) during drilling.</p> <p>2) Borehole caved at a depth of 2.0 mBGS upon completion of drilling.</p>														

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:18

GROUNDWATER ELEVATIONS

Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ e=3% Strain at Failure

<p>PROJECT: Geotechnical Investigation for Proposed Road Improvements</p> <p>CLIENT: Stantec Consulting Limited</p> <p>PROJECT LOCATION: Bramalea Road, Brampton, Ontario</p> <p>DATUM: N/A</p> <p>BH LOCATION: See Borehole Location Plan</p>	<p>DRILLING DATA</p> <p>METHOD: Continuous Flight Auger</p> <p>FIELD ENGINEER: DG</p> <p>SAMPLE REVIEW: IG</p> <p>CHECKED: DX</p> <p>DIAMETER: 105 mm</p> <p>DATE: 2022-04-20</p> <p>REF. NO.: 18-2325GHE</p> <p>ENCL. NO.: 77</p>
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SOIL PROFILE			SAMPLES			GROUND WATER	DYNAMIC PENETRATION TEST				ELEVATION	SHEAR STRENGTH (kPa)				WATER CONTENT (%)				UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)		
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS/0.3m		20	40	60	80		W _p	w	W _L	10	20	30	40	GR			SA	SI
0.0	TOPSOIL: (200 mm)	[Symbol]																					
0.2	FILL: sandy silt, trace clay, trace gravel, organic inclusions/matters, rootlet inclusions, layers of topsoil, layers of clayey silt, containing cobbles and boulders, dark brown to brown, moist --- organic inclusions --- containing cobbles and boulders --- auger grinding	[Symbol]	1	AS																			
1		[Symbol]	2	AS																			
2		[Symbol]	3	AS																			
2.2	SANDY SILT: trace clay, trace gravel, layers of clayey silt, containing cobbles and boulder, brown, moist	[Symbol]	4	AS																			
2.7	END OF BOREHOLE DUE TO AUGER REFUSAL ON PROBABLE COBBLES AND BOULDERS OR SHALE BEDROCK Note: 1) Borehole caved at a depth of 2.5 m below ground surface (mBGS) upon completion of drilling.																						

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:18

GROUNDWATER ELEVATIONS

Measurement

1st 2nd 3rd 4th

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ e=3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: SKPC	DATE: 2022-03-17	
DATUM: N/A	SAMPLE REVIEW: IG	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 78	

SOIL PROFILE			SAMPLES		GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content W	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		"N" BLOWS/0.3m	ELEVATION	○ SPT	≧ Cone					
0.0	TOPSOIL: (380 mm)													
0.4	FILL: sandy silt, some clay, trace gravel, organic matters, rootlet inclusions, layers of clayey silt, dark brown, moist		1	AS										
0.8	FILL: sandy silt, some clay, trace gravel, organic inclusions, rootlet inclusions, containing shale fragments, rock fragments, brown, moist		2	AS										
			3	AS										
2.1	PROBABLE FILL: clayey silt, trace gravel, organic inclusions, layers of sandy silt, pockets of silt, brown, moist		4	AS										
3.0	END OF BOREHOLE Note: 1) Borehole caved at a depth of 2.7 m below ground surface (mBGS) upon completion of drilling.													

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:18

GROUNDWATER ELEVATIONS
 Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ 3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: SKPC	DATE: 2022-05-21	
DATUM: N/A	SAMPLE REVIEW: IG	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 79	

SOIL PROFILE			SAMPLES			GROUND WATER	DYNAMIC PENETRATION TEST				UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)	
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS/0.3m		ELEVATION	○ SPT 20 40 60 80	≧ Cone blows/0.3m 20 40 60 80	Plastic Limit W _p			Natural Moisture Content W
							SHEAR STRENGTH (kPa) ● Unconfined × Field Vane & Sensitivity ▲ Quick Triaxial ⊠ Penetrometer + Lab Vane				WATER CONTENT (%) W _p W W _L		GR SA SI CL
0.0	TOPSOIL: (250 mm)												
0.3	FILL: sandy silt, some clay, trace gravel, organic inclusions, rootlet inclusions, layers of clayey silt, containing rock fragments/pieces, cobbles and boulders, brown, moist		1	AS						○			
1	--- auger grinding		2	AS						○			
	--- auger grinding		3	AS						○			
3	--- auger grinding		4	AS						○			
3.0	END OF BOREHOLE Note: 1) Borehole caved at a depth of 2.6 m below ground surface (mBGS) upon completion of drilling.												

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:18

GROUNDWATER ELEVATIONS
 Measurement 1st 2nd 3rd 4th

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ 3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements CLIENT: Stantec Consulting Limited PROJECT LOCATION: Bramalea Road, Brampton, Ontario DATUM: N/A BH LOCATION: See Borehole Location Plan	DRILLING DATA METHOD: Continuous Flight Auger FIELD ENGINEER: CH/DG SAMPLE REVIEW: IG CHECKED: DX DIAMETER: 105 mm DATE: 2022-06-24 REF. NO.: 18-2325GHE ENCL. NO.: 80
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SOIL PROFILE		SAMPLES			GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit Natural Moisture Content Liquid Limit	WATER CONTENT (%) W _p W W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		"N" BLOWS/0.3m	ELEVATION	SPT 20	Cone 40				
0.0	TOPSOIL: (200 mm)												
0.2	FILL: sand and silt, some gravel, trace clay, rootlet inclusions, pockets of clayey silt, brown, moist		1	AS							○		
0.8	FILL: sandy silt to sand and silt, trace clay, trace gravel, organic inclusions, rootlet inclusions, pockets of clayey silt, brown, moist		2	AS							○		
1.4	FILL: clayey silt, some sand, trace gravel, organic inclusions, rootlet inclusions, layers of sandy silt, containing plastic pieces, rock fragments/pieces, brown, moist		3	AS							○		
2.1	FILL: sandy silt, some clay, trace gravel, layers of clayey silt, containing rock pieces, cobbles and boulders, brown, moist --- auger grinding		4	AS							○		
3.0	END OF BOREHOLE Note: 1) Borehole caved at a depth of 2.8 m below ground surface (mBGS) upon completion of drilling.												

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:18

GROUNDWATER ELEVATIONS
 Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ $\epsilon=3\%$ Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: SKPC	DATE: 2022-03-22	
DATUM: N/A	SAMPLE REVIEW: IG	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 81	

SOIL PROFILE			SAMPLES		GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content W	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		"N" BLOWS/0.3m	ELEVATION	SHEAR STRENGTH (kPa)						
							○ SPT ≧ Cone blows/0.3m 20 40 60 80							
0.0	TOPSOIL: (240 mm)													
0.2	FILL: sandy silt, some clay, trace gravel, organic inclusions, rootlet inclusions, layers of clayey silt, brown, moist		1	AS										
1			2	AS										
1.4	SANDY SILT: some clay, trace gravel, layers of clayey silt, brown, moist		3	AS										
2			4	AS										
3														
3.0	END OF BOREHOLE Note: 1) Borehole caved at a depth of 2.7 m below ground surface (mBGS) upon completion of drilling.													

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:18

GROUNDWATER ELEVATIONS
 Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ ³=3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: DG	DATE: 2022-04-18	
DATUM: N/A	SAMPLE REVIEW: IG	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 82	

SOIL PROFILE			SAMPLES		GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content W	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		"N" BLOWS/0.3m	ELEVATION	SPT	Cone					
0.0	ASPHALT: (170 mm)													
0.2	GRANULAR BASE: (130 mm)		1A	AS										
0.3	GRANULAR SUBBASE: (430 mm)		1B	AS										
0.7	FILL: sandy silt, trace clay, trace gravel, layers/pockets of clayey silt, containing cobbles and boulders, brown, moist --- auger grinding		1C	AS										
			2	AS										
			3	AS										
1.8	END OF BOREHOLE DUE TO AUGER REFUSAL ON PROBABLE CONCRETE SLAB/BLOCK OR COBBLES AND BOULDERS OR SHALE BEDROCK Note: 1) Borehole caved at a depth of 1.6 m below ground surface (mBGS) upon completion of drilling.													

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:18

GROUNDWATER ELEVATIONS
 Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ 3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: CH	DATE: 2022-07-19	
DATUM: N/A	SAMPLE REVIEW: IG	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 83	

SOIL PROFILE			SAMPLES			GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content W	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS/0.3m		ELEVATION	SPT 20	Cone 40	blows/0.3m 60					
0.0	TOPSOIL: (150 mm)														
0.2	FILL: sand and silt, trace clay, trace gravel, layers of sand and gravel, containing cobbles and boulders, brown, moist		1	AS											
1	--- auger grinding		2	AS											
	--- auger grinding														
1.4	FILL: sandy silt, trace clay, trace gravel, rootlet inclusions, layers of sand and silt, containing cobbles and boulders, brown, moist		3	AS											
2															
	--- auger grinding		4	AS											
3															
3.0	END OF BOREHOLE Note: 1) Borehole caved at a depth of 2.7 m below ground surface (mBGS) upon completion of drilling.														

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:18

GROUNDWATER ELEVATIONS
 Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ ³=3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: CH/DG	DATE: 2022-07-04	
DATUM: N/A	SAMPLE REVIEW: IG	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 84	

SOIL PROFILE		SAMPLES			GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content W	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)				
						○ SPT	≧ Cone	blows/0.3m										
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS/0.3m	ELEVATION	SHEAR STRENGTH (kPa)				WATER CONTENT (%)			GR	SA	SI	CL	
							● Unconfined	× Field Vane & Sensitivity	▲ Quick Triaxial	⊠ Penetrometer	⊕ Lab Vane	10	20					30
0.0	TOPSOIL: (200 mm)																	
0.2	FILL: silty sand, some gravel, organic inclusions, rootlet inclusions, brown, moist		1	AS														
0.8	FILL: sand and silt, trace to some gravel, trace clay, rootlet inclusions, pockets of clayey silt, containing cobbles and boulders, brown, moist --- auger grinding		2	AS														
			3	AS														
2.1	FILL: sandy silt, some clay, trace gravel, rootlet inclusions, layers of clayey silt, containing cobbles and boulders, brown, moist --- auger grinding		4	AS														
3.0	END OF BOREHOLE Note: 1) Borehole caved at a depth of 2.8 m below ground surface (mBGS) upon completion of drilling.																	

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:18

GROUNDWATER ELEVATIONS
 Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ ³=3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: CH/DG	DATE: 2022-06-23	
DATUM: N/A	SAMPLE REVIEW: IG	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 85	

SOIL PROFILE			SAMPLES		GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content W	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		"N" BLOWS/0.3m	ELEVATION	SHEAR STRENGTH (kPa)						
							○ SPT ≧ Cone blows/0.3m 20 40 60 80							
0.0	ASPHALT: (160 mm)													
0.2	GRANULAR BASE: (340 mm)		1A	AS										
0.5	GRANULAR SUBBASE: (400 mm) --- auger grinding		1B 2A	AS AS										
0.9	FILL: sandy silt, some clay, trace gravel, organic inclusions, layers of clayey silt, brown, moist		2B	AS										
1.4	FILL: clayey silt, some sand, trace gravel, layers of sandy silt, containing cobbles and boulders, brown, moist --- auger grinding		3	AS										
2.1	FILL: sandy silt, some clay, trace gravel, layers of clayey silt, brown, moist		4	AS										
3.0	END OF BOREHOLE Note: 1) Borehole caved at a depth of 2.7 m below ground surface (mBGS) upon completion of drilling.													

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:18

GROUNDWATER ELEVATIONS
 Measurement 1st 2nd 3rd 4th

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ s=3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: BK, CH	DATE: 2022-05-20	
DATUM: N/A	SAMPLE REVIEW: IG	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 86	

SOIL PROFILE		SAMPLES			GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit Natural Moisture Content Liquid Limit	WATER CONTENT (%) W _p W W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		"N" BLOWS/0.3m	ELEVATION	SPT	Cone				
0.0	TOPSOIL: (250 mm)												
0.3	FILL: sandy silt, trace clay, trace gravel, organic matters, rootlet inclusions, dark brown, moist		1	AS									
0.8	FILL: clayey silt, some sand, trace gravel, organic inclusions, rootlet inclusions, layers of sandy silt, brown, moist		2	AS									
			3A	AS									
1.9	FILL: sandy silt, some clay, trace gravel, layers of clayey silt, containing cobbles and boulders, brown, moist		3B	AS									
			4A	AS									
2.4	SANDY SILT TO FINE SANDY SILT: trace clay, trace gravel, containing cobbles and boulders, brown, moist --- auger grinding from 2.4 m to 3.0 m		4B	AS									
3.0	END OF BOREHOLE Note: 1) Borehole caved at a depth of 2.7 m below ground surface (mBGS) upon completion of drilling.												

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-NZ-IG-DX-GPJ 2022-09-13 00:18

GROUNDWATER ELEVATIONS
 Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ $\epsilon=3\%$ Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: CH/DG	DATE: 2022-07-04	
DATUM: N/A	SAMPLE REVIEW: IG	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 87	

SOIL PROFILE		SAMPLES		GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content W	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER		TYPE	"N" BLOWS/0.3m	ELEVATION	SHEAR STRENGTH (kPa)					
							○ SPT ≧ Cone blows/0.3m 20 40 60 80						
							● Unconfined × Field Vane & Sensitivity ▲ Quick Triaxial ⊠ Penetrometer + Lab Vane						
							20 40 60 80	10	20	30	40		
0.0	ASPHALT: (140 mm)												
0.1	GRANULAR BASE: (360 mm)		1A	AS				○					
0.5	GRANULAR SUBBASE: (350 mm)		1B	AS				○					
			2A	AS				○					
0.9	FILL: sandy silt, some clay, trace gravel, layers of clayey silt, brown, moist		2B	AS									
1.4	SANDY SILT: some clay, trace gravel, layers of clayey silt, brown, moist		2C	AS									
			3	AS					○				
			4	AS					○				
3.0	END OF BOREHOLE Note: 1) Borehole caved at a depth of 2.7 m below ground surface (mBGS) upon completion of drilling.												

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-DX-GPJ 2022-09-13 00:18

GROUNDWATER ELEVATIONS
 Measurement 1st 2nd 3rd 4th

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ 3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: SKPC	DATE: 2022-03-10	
DATUM: N/A	SAMPLE REVIEW: IG	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 88	

SOIL PROFILE			SAMPLES			GROUND WATER	DYNAMIC PENETRATION TEST				UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)		
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS/0.3m		ELEVATION	SPT 20	Cone 40	blows/0.3m 60			80	Plastic Limit W _p
0.0	ASPHALT: (335 mm)													
0.3	GRANULAR BASE: (180 mm)		1A	AS							○			
0.5	GRANULAR SUBBASE: (240 mm)		1B	AS							○			
0.8	FILL: sandy silt, trace clay, organic inclusions, layers of silty sand, containing cobbles and boulders, brown, moist --- auger grinding		1C	AS							○			
			2	AS							○			
1.5	END OF BOREHOLE Note: 1) Borehole caved at a depth of 1.3 m below ground surface (mBGS) upon completion of drilling.													

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:18

GROUNDWATER ELEVATIONS

Measurement

GRAPH NOTES

+³, ×³: Numbers refer to Sensitivity

▲ s=3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 155 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: SKPC	DATE: 2022-03-10	
DATUM: N/A	SAMPLE REVIEW: IG	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 89	

SOIL PROFILE			SAMPLES			GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content W	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)	
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS/0.3m		ELEVATION	○ SPT	≧ Cone	blows/0.3m						
							20	40	60	80						
							SHEAR STRENGTH (kPa)				WATER CONTENT (%)					
							● Unconfined × Field Vane & Sensitivity				-----○-----					
							▲ Quick Triaxial ⊠ Penetrometer + Lab Vane									
							20	40	60	80	10	20	30	40	GR SA SI CL	
0.0	ASPHALT: (340 mm)															
0.3	GRANULAR BASE: (180 mm)		1A	AS												
0.5	GRANULAR SUBBASE: (360 mm)		1B	AS												
			2A	AS												
0.9			2B	AS												
1.2	FILL: silty sand, trace gravel, layers/zones of clayey silt, containing rock fragments/pieces, brown, moist		2C	AS												
1.5	FILL: sandy silt to silt, some clay, trace gravel, organic matters, seams of organic silt, dark brown to brown, moist															
	<p>END OF BOREHOLE</p> <p>Note:</p> <p>1) Borehole caved at a depth of 1.4 m below ground surface (mBGS) upon completion of drilling.</p>															

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:18

GROUNDWATER ELEVATIONS

Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ e=3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 155 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: SKPC	DATE: 2022-03-10	
DATUM: N/A	SAMPLE REVIEW: IG	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 90	

SOIL PROFILE			SAMPLES		GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content w	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)	
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		"N" BLOWS/0.3m	ELEVATION	20	40						60
0.0	ASPHALT: (390 mm)														
0.4	GRANULAR BASE: (190 mm)		1A	AS											
0.6	GRANULAR SUBBASE: (410 mm)		1B	AS											
			2A	AS											
1.0	FILL: organic silt, trace to some clay, trace sand, dark brown, moist		2B	AS											
1.2	FILL: silty sand, trace to some gravel, organic inclusions, layers of organic silt, brown, moist		2C	AS											
1.5	END OF BOREHOLE														
	Note: 1) Borehole caved at a depth of 1.3 m below ground surface (mBGS) upon completion of drilling.														

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:18

GROUNDWATER ELEVATIONS
 Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ 3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 155 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: SKPC	DATE: 2022-03-10	
DATUM: N/A	SAMPLE REVIEW: IG	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 91	

SOIL PROFILE			SAMPLES		GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content W	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		"N" BLOWS/0.3m	ELEVATION	20	40					
0.0	ASPHALT: (375 mm)													
0.4	GRANULAR BASE: (210 mm)		1A	AS										
0.6	GRANULAR SUBBASE: (310 mm) --- auger grinding		1B	AS										
0.9	FILL: organic silt, trace to some clay, trace sand, dark brown, moist		2A	AS										
1.2	FILL: silt, some clay, trace sand, trace gravel, organic matters, greyish brown, moist		2B	AS										
1.5	END OF BOREHOLE Note: 1) Borehole caved at a depth of 1.4 m below ground surface (mBGS) upon completion of drilling.		2C	AS										

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:18

GROUNDWATER ELEVATIONS
 Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ 3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements CLIENT: Stantec Consulting Limited PROJECT LOCATION: Bramalea Road, Brampton, Ontario DATUM: N/A BH LOCATION: See Borehole Location Plan	DRILLING DATA METHOD: Continuous Flight Auger FIELD ENGINEER: DG/CH SAMPLE REVIEW: IG CHECKED: DX DIAMETER: 105 mm DATE: 2022-06-08 REF. NO.: 18-2325GHE ENCL. NO.: 92
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SOIL PROFILE		SAMPLES			GROUND WATER	DYNAMIC PENETRATION TEST				ELEVATION	Plastic Limit Natural Moisture Content Liquid Limit W _p W W _L WATER CONTENT (%)	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)	
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		"N" BLOWS/0.3m	SPT	Cone	blows/0.3m					SHEAR STRENGTH (kPa)
0.0	ASPHALT: (270 mm)													
0.3	GRANULAR BASE: (230 mm)		1A	AS								○		
0.5	--- auger grinding GRANULAR SUBBASE: (410 mm)		1B	AS								○		
0.9	FILL: sand and gravel, some silt, containing cobbles and boulders, brown, moist		2A	AS								○		
1.2	--- auger grinding and refusal at 0.9 m due to probable concrete slab/block or cobbles and boulders, borehole moved 1 m west		2B	AS								○		
1.5	FILL: sand and silt, some gravel, trace clay, organic inclusions, layers of organic silt, layers of gravelly sand, pockets of clayey silt, containing cobbles and boulders, dark brown to brown, moist		2C	AS								○		
2.3	SANDY SILT: trace clay, trace gravel, layers/pockets of clayey silt, containing cobbles and boulders, brown, moist --- auger grinding END OF BOREHOLE Note: 1) Borehole caved at a depth of 2.0 m below ground surface (mBGS) upon completion of drilling.		3	AS								○		

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:18

GROUNDWATER ELEVATIONS
 Measurement 1st 2nd 3rd 4th

GRAPH NOTES + 3, × 3: Numbers refer to Sensitivity ▲ = 3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements CLIENT: Stantec Consulting Limited PROJECT LOCATION: Bramalea Road, Brampton, Ontario DATUM: N/A BH LOCATION: See Borehole Location Plan	DRILLING DATA METHOD: Continuous Flight Auger FIELD ENGINEER: DG/CH SAMPLE REVIEW: IG CHECKED: DX DIAMETER: 105 mm DATE: 2022-06-08 REF. NO.: 18-2325GHE ENCL. NO.: 93
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SOIL PROFILE			SAMPLES		GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content w	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		"N" BLOWS/0.3m	ELEVATION	SPT	Cone					
0.0	ASPHALT: (400 mm)													
0.4	GRANULAR BASE: (250 mm)		1A	AS										35 53 12
0.7	GRANULAR SUBBASE: (300 mm)		1B	AS										
			2A	AS										
1.0	FILL: sand and silt, trace clay, trace gravel, layers of silty sand, pockets of clayey silt, brown, moist		2B	AS										
			2C	AS										
1.5	SAND AND SILT: some clay, some gravel, layers of clayey silt, brown, moist		3	AS										11 37 39 13
2.3	END OF BOREHOLE Note: 1) Borehole caved at a depth of 1.8 m below ground surface (mBGS) upon completion of drilling.													

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:18

GROUNDWATER ELEVATIONS
 Measurement
 1st 2nd 3rd 4th

GRAPH NOTES + 3, × 3: Numbers refer to Sensitivity ▲ 3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: SKPC	DATE: 2022-03-08	
DATUM: N/A	SAMPLE REVIEW: DX	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 94	

SOIL PROFILE			SAMPLES		GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content W	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		"N" BLOWS/0.3m	ELEVATION	SPT	Cone					
							20	40	60	80	● Unconfined × Field Vane & Sensitivity ▲ Quick Triaxial ⊠ Penetrometer + Lab Vane			
0.0	ASPHALT: (230 mm)													
0.2	GRANULAR BASE: (270 mm)		1A	AS										
0.5	GRANULAR SUBBASE: (300 mm)		1B	AS										
0.8	FILL: sandy silt, some clay, trace gravel, organic inclusions, brown, moist		2A	AS										
			2B	AS										
1.5	END OF BOREHOLE													
	Note: 1) Borehole caved at a depth of 1.3 m below ground surface (mBGS) upon completion of drilling.													

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:18

GROUNDWATER ELEVATIONS
 Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ = 3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: SKPC	DATE: 2022-03-09	
DATUM: N/A	SAMPLE REVIEW: DX	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 95	

SOIL PROFILE			SAMPLES		GROUND WATER	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content W	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)				
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE		"N" BLOWS/0.3m	ELEVATION	SPT	Cone						blows/0.3m	SHEAR STRENGTH (kPa)		
							20	40	60	80	● Unconfined × Field Vane & Sensitivity ▲ Quick Triaxial ⊠ Penetrometer + Lab Vane			10	20	30	40	GR SA SI CL
0.0	ASPHALT: (210 mm)																	
0.2	GRANULAR BASE: (280 mm)		1A	AS														
0.5	GRANULAR SUBBASE: (330 mm)		1B	AS														
0.8	FILL: sandy silt, some clay, trace gravel, organic matters, layers of organic silt, dark brown, moist		2A	AS														
			2B	AS														
1.5	END OF BOREHOLE: Note: 1) Borehole caved at a depth of 1.4 m below ground surface (mBGS) upon completion of drilling.																	

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:18

GROUNDWATER ELEVATIONS
 Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ = 3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger - Auto Hammer	DIAMETER: 155 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: SKPC	DATE: 2022-03-02	
DATUM: N/A	SAMPLE REVIEW: ND	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 96	

SOIL PROFILE			SAMPLES		DYNAMIC PENETRATION TEST				WATER CONTENT (%)			REMARKS AND GRAIN SIZE DISTRIBUTION (%)
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS/0.3m	ELEVATION	Plastic Limit	Natural Moisture Content	Liquid Limit	UNIT WT (kN/m ³)	GR SA SI CL	
0.0	TOPSOIL: (270 mm)											
0.3	FILL: sand and gravel, some silt, organic inclusions, layers of sandy silt, containing wood fragments, brown, moist, very dense		1	SS	62							
0.7	FILL: fine sand, some silt, trace gravel, brown, wet, very loose		2A	SS	3							
1.0	FILL: organic silt, some clay, trace sand, trace gravel, layers of clayey silt, layers of silty sand, containing wood fragments, dark grey, moist to wet, very loose		2B	SS								
1.4	FILL: sandy silt, some clay, trace gravel, rootlet inclusions, brown, moist to wet, compact		3	SS	17							
2.4	SANDY SILT TILL: some clay, trace gravel, layers of sandy silt, containing cobbles and boulders, brown, moist, compact to very dense		4A	SS	25							
			4B	SS								
			5	SS	31							
4.7	SAND AND SILT TILL/SHALE COMPLEX: trace to some gravel, trace clay, layers of silty sand, containing shale fragments, cobbles and boulders, grey, moist, very dense		6A	SS	54							
			6B	SS								
5.2	SANDY SILT TO SILTY SAND/SHALE COMPLEX: trace to some gravel, trace clay, containing cobbles and boulders, shale fragments, grey, moist, very dense		7	SS	50 / 80							
5.6	END OF BOREHOLE DUE TO AUGER REFUSAL ON PROBABLE COBBLES AND BOULDERS OR SHALE BEDROCK											

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912_18-DX-JR-MY-IG-DX-IG-NZ-IG-DX-GPJ 2022-09-13 00:18

Notes:

- 1) Water encountered at a depth of 0.7 m below ground surface (mBGS) during drilling.
- 2) Borehole caved at a depth of 5.0 mBGS upon completion of drilling.
- 3) 51 mm dia. monitoring well was installed in borehole upon completion of drilling.

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger - Auto Hammer	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: CH	DATE: 2021-12-10	
DATUM: N/A	SAMPLE REVIEW: ND	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 97	

ELEV. DEPTH (m)	SOIL PROFILE DESCRIPTION	STRATA PLOT	SAMPLES			GROUND WATER	ELEVATION	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content w	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)
			NUMBER	TYPE	"N" BLOWS/0.3m			20	40	60	80					
0.0	ASPHALT: (165 mm)															
0.2	GRANULAR BASE: (160 mm)		1A	AS												
0.3	GRANULAR SUBBASE: (380 mm)		1B	AS												
0.7	FILL: sandy silt, some clay to clayey, trace gravel, organic inclusions, layers of clayey silt, brown, moist, compact --- layers of silty sand		1C	AS												
1.0			2	SS	19											
1.8	SANDY SILT TILL: some clay, trace gravel, layers of sandy silt, containing cobbles and boulders, brown, moist, compact		3A	SS	24											
2.1	SANDY SILT TO SILT: trace clay, trace gravel, containing shale fragments, cobbles and boulders, brown, moist to wet, dense --- auger grinding		3B	SS												
2.9	PROBABLE WEATHERED SHALE: interbedded with limestone, brown --- auger grinding		4	SS	43											
3.0			5	SS	50											
4.3	END OF BOREHOLE DUE TO AUGER REFUSAL ON PROBABLE SHALE BEDROCK Notes: 1) Water encountered at a depth of 2.7 m below ground surface (mBGS) during drilling. 2) Water was at a depth of 3.0 mBGS upon completion of drilling. 3) Borehole caved at a depth of 4.1 mBGS upon completion of drilling. 4) 51 mm dia. monitoring well was installed in borehole upon completion of drilling. Water Level Reading Date W.L. Depth (mBGS) Aug. 02, 2022 2.53															

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:18

GROUNDWATER ELEVATIONS
 Measurement 1st 2nd 3rd 4th

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ =3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger - Auto Hammer	DIAMETER: 155 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: SKPC/NT	DATE: 2021-12-23	
DATUM: N/A	SAMPLE REVIEW: ND	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 98	

ELEV. DEPTH (m)	SOIL PROFILE DESCRIPTION	STRATA PLOT	SAMPLES		GROUND WATER	ELEVATION	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content w	Liquid Limit W _L	WATER CONTENT (%)	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)
			NUMBER	TYPE			"N" BLOWS/0.3m	SPT 20	Cone 40	blows/0.3m 60						
0.0	ASPHALT: (145 mm)															GR SA SI CL
0.1	GRANULAR BASE: (110 mm)		1A	AS												
0.3	GRANULAR SUBBASE: (420 mm)		1B	AS												
0.7	FILL: gravelly sand, some silt, brown, moist		1C	AS												
0.8	FILL: sandy silt, some clay, trace gravel, organic inclusions, layers of clayey silt, brown, moist, compact to very dense		2	SS	14											
			3A	SS	61 / 220 mm											
1.8	SANDY SILT: some clay, trace gravel, layers of clayey silt, brown, moist, very dense		3B	SS												
2.1	SANDY SILT TO SILT/SHALE COMPLEX: some clay, trace gravel, containing shale fragments, cobbles and boulders, brown, moist to wet, very dense		4	SS	67											
3.1	--- auger grinding from 3.0 m to 3.7 m PROBABLE WEATHERED SHALE: interbedded with limestone, brown to grey		5A	SS	50 / 100 mm											
			5B	SS	100 mm											
	--- auger grinding		6	NR	50 / 50 mm											
4.6	END OF BOREHOLE DUE TO AUGER REFUSAL ON PROBABLE WEATHERED SHALE Notes: 1) Water encountered at a depth of 2.3 m below ground surface (mBGS) during drilling. 2) Borehole caved at a depth of 4.3 mBGS upon completion of drilling. 3) 51 mm dia. monitoring well was installed in borehole upon completion of drilling. Water Level Reading Date W.L. Depth (mBGS) Aug. 02, 2022 3.10															

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:18

GROUNDWATER ELEVATIONS
 Measurement 1st 2nd 3rd 4th

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ = 3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger - Auto Hammer	DIAMETER: 155 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: SK	DATE: 2022-03-29	
DATUM: N/A	SAMPLE REVIEW: IG	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 99	

SOIL PROFILE		SAMPLES			DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content w	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)							
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS/0.3m	ELEVATION	20	40						60	80	10	20	30	40	GR
0.0	ASPHALT: (140 mm)																			
0.1	GRANULAR BASE: (280 mm)		1A	AS																
0.4	GRANULAR SUBBASE: (430 mm)		1B	AS																
0.9	FILL: sandy silt, some clay, trace gravel, organic inclusions, layers of clayey silt, brown, moist, compact SANDY SILT TILL: trace clay, trace gravel, layers of sandy silt, containing cobbles and boulders, brown, moist, compact SANDY SILT TO SILT: some clay, trace gravel, seams of sand, containing shale fragments, cobbles and boulders, brown, moist to wet, very dense		2A	SS	14															
1.0			2B	SS																
1.4			2C	SS																
2.1	SANDY SILT/SHALE COMPLEX: trace clay, trace gravel, layers of sandy silt, containing shale fragments/pieces/slabs, grey, moist to wet, very dense		3	SS	74 / 210 mm															
2.4	PROBABLE WEATHERED SHALE: interbedded with limestone, grey		4A	SS	50 / 70 mm															
2.5	END OF BOREHOLE DUE TO AUGER REFUSAL ON PROBABLE WEATHERED SHALE		4B	SS	70 mm															

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-DX-IG-DX-GPJ 2022-09-13 00:18

Notes:

- 1) Water encountered at a depth of 1.5 m below ground surface (mBGS) during drilling.
- 2) Water was at a depth of 2.0 mBGS upon completion of drilling.
- 3) Borehole caved at a depth of 2.3 mBGS upon completion of drilling.
- 4) 51 mm dia. monitoring well was installed in borehole upon completion of drilling.

Water Level Reading

Date	W.L. Depth (mBGS)
Aug. 02, 2022	dry
Aug. 19, 2022	2.05

GROUNDWATER ELEVATIONS

Measurement

GRAPH NOTES

+ 3, × 3: Numbers refer to Sensitivity ▲ = 3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger - Auto Hammer	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: BK	DATE: 2022-04-28	
DATUM: N/A	SAMPLE REVIEW: IG	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 100	

ELEV. DEPTH (m)	SOIL PROFILE DESCRIPTION	STRATA PLOT	SAMPLES			GROUND WATER	ELEVATION	DYNAMIC PENETRATION TEST				Plastic Limit	Natural Moisture Content	Liquid Limit	WATER CONTENT (%)	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)
			NUMBER	TYPE	"N" BLOWS/0.3m			20	40	60	80						
0.0	ASPHALT: (190 mm)																
0.2	GRANULAR BASE: (260 mm)		1A	AS													
0.5	GRANULAR SUBBASE: (290 mm)		1B	AS													
0.7	FILL: silty sand, trace gravel, brown, moist		1C	AS													
0.8	FILL: gravelly sand, some silt, layers of sandy silt, pockets of clayey silt, brown, moist, compact		2A	SS	16												
0.8	FILL: gravelly sand, some silt, layers of sandy silt, pockets of clayey silt, brown, moist, compact		2B	SS													
1.4	FILL: clayey silt, some sand, trace gravel, organic matters, layers of organic silt, layers of sandy silt, dark brown, moist, very stiff		3A	SS													
1.6	FILL: silty sand, trace gravel, layers of sandy silt, layers/pockets of clayey silt, brown, moist, compact		3B	SS	14												
2.3	FILL: clayey silt, some sand, trace gravel, organic inclusions, layers of sandy silt, brown to grey, moist, stiff to hard		4A	SS													
2.3	SANDY SILT TILL: some clay, trace gravel, layers of sandy silt, pockets of silt, containing cobbles and boulders, brown, moist, dense		4B	SS	47												
	--- seams of sand, layers/zones of silty sand																
	--- auger grinding		5	SS	49												
	--- auger grinding																
4.0	SILTY SAND: some gravel, layers of silt, layers of gravelly sand, grey, wet, very dense																
4.0			6	SS	50 / 100												
4.8	END OF BOREHOLE DUE TO AUGER REFUSAL ON PROBABLE COBBLES AND BOULDERS OR SHALE BEDROCK																
	Notes:																
	1) Water encountered at a depth of 4.0 m below ground surface (mBGS) during drilling.																
	2) Water was at a depth of 4.6 mBGS upon completion of drilling.																
	3) Borehole caved at a depth of 4.6 mBGS upon completion of drilling.																
	4) 51 mm dia. monitoring well was installed in borehole upon completion of drilling.																
	Water Level Reading																
	Date Aug. 02, 2022																
	W.L. Depth (mBGS) 2.67																

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-DX-GPJ 2022-09-13 00:18

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger - Auto Hammer	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: CH/DG	DATE: 2022-06-24	
DATUM: N/A	SAMPLE REVIEW: IG	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 101	

SOIL PROFILE			SAMPLES			DYNAMIC PENETRATION TEST				WATER CONTENT (%)			REMARKS AND GRAIN SIZE DISTRIBUTION (%)	
ELEV. DEPTH (m)	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS/0.3m	SHEAR STRENGTH (kPa)				W _p	W	W _L		UNIT WT (kN/m ³)
						○ SPT ≧ Cone blows/0.3m 20 40 60 80				Plastic Limit Natural Moisture Content Liquid Limit W _p W W _L			GR SA SI CL	
0.0	TOPSOIL: (150 mm)													
0.2	FILL: sand and gravel, some silt, brown, moist, very dense		1	SS	46									
0.7	FILL: sandy silt, some clay, trace gravel, organic inclusions, layers/zones of clayey silt, brown to greyish brown, moist, loose to compact		2	SS	9									
	--- zones of clayey silt		3	SS	12									
2.9	FILL: clayey silt, some sand to sandy, trace gravel, layers of sand and silt, brown, moist, stiff		5	SS	10									
4.0	FILL: silty sand, clayey, trace gravel, organic inclusions, layers of clayey silt, brown, moist, compact		6A	SS										
4.6	FILL: sand, some silt, trace gravel, brown, moist, compact		6B	SS	12									6 38 35 21
5.0	FILL: clayey silt, some sand, trace gravel, organic inclusions, layers of silty sand, brown, moist, stiff		6C	SS										
5.6	CLAYEY SILT TILL: some sand to sandy, trace gravel, layers of silt, layers of sandy silt, seams of sand, containing cobbles and boulders, brown, moist, hard		7	SS	32									
7.1	SANDY SILT/SHALE COMPLEX: some clay, trace gravel, layers of clayey silt, containing shale fragments/pieces/slabs, cobbles and boulders, brown, moist to wet, very dense		8	SS	81 / 260 mm									

01 - GEOPRO SOIL LOG - GEOPRO 18-2325GHE BH LOG 20220912_18-DX-JR-MY-IG-DX-IG-NZ-IG-DX-GPJ - 2022-09-13 00:18

Continued Next Page

GROUNDWATER ELEVATIONS
 Measurement 1st 2nd 3rd 4th

GRAPH NOTES + 3, × 3: Numbers refer to Sensitivity ▲ = 3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger - Auto Hammer	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: CH/DG	DATE: 2022-06-24	
DATUM: N/A	SAMPLE REVIEW: IG	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 101	

ELEV. DEPTH (m)	SOIL PROFILE DESCRIPTION	STRATA PLOT	SAMPLES			GROUND WATER	ELEVATION	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content W	Liquid Limit W _L	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
			NUMBER	TYPE	"N" BLOWS/0.3m			20	40	60	80					
8.1	END OF BOREHOLE Notes: 1) Water encountered at a depth of 7.6 m below ground surface (mBGS) during drilling. 2) Borehole caved at a depth of 7.7 mBGS upon completion of drilling. 3) 51 mm dia. monitoring well was installed in borehole upon completion of drilling. Water Level Reading Date W.L. Depth (mBGS) Aug. 19, 2022 5.56															

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-IG-DX-GPJ 2022-09-13 00:18

GROUNDWATER ELEVATIONS
 Measurement

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ = 3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger - Auto Hammer	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: CH	DATE: 2022-07-19	
DATUM: N/A	SAMPLE REVIEW: IG	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 102	

ELEV. DEPTH (m)	SOIL PROFILE DESCRIPTION	STRATA PLOT	SAMPLES			GROUND WATER	ELEVATION	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content W	Liquid Limit W _L	WATER CONTENT (%)	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)
			NUMBER	TYPE	"N" BLOWS/0.3m			20	40	60	80						
0.0	TOPSOIL: (140 mm)																GR SA SI CL
0.1	FILL: sandy silt to sand and silt, some clay, trace gravel, rootlet inclusions, layers of silty sand, brown, moist, loose to compact		1	SS	13												
1			2	SS	16												
2			3	SS	7												
3	--- containing shale fragments		4	SS	13												
4	--- organic inclusions, pockets of organic		5	SS	13												
4.0	FILL: sandy silt, some clay, some gravel, containing cobbles and boulders, brown, wet, loose --- auger grinding		6A	SS													
4.7	FILL: sand, some silt, trace gravel, layers/pockets of clayey silt, brown, wet, loose		6B	SS	7												
4.9	FILL: clayey silt, some sand, trace gravel, rootlet inclusions, layers of sandy silt, brown, moist to wet, firm		6C	SS													
5.6	FILL: sandy silt to silt, some clay to clayey, organic inclusions, rootlet inclusions, trace gravel, brown, wet, loose to compact		7A	SS													
6.4	FILL: organic silt, trace clay, trace gravel, dark brown, moist, loose to compact		7B	SS	10												
6.6	END OF BOREHOLE																

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-DX-GPJ 2022-09-13 00:18

Notes:

- 1) Water encountered at a depth of 4.6 m below ground surface (mBGS) during drilling.
- 2) Water was at a depth of 5.6 mBGS upon completion of drilling.
- 3) Borehole caved at a depth of 6.1 mBGS upon completion of drilling.
- 4) 51 mm dia. monitoring well was installed in borehole upon completion of drilling.

Water Level Reading

Date W.L. Depth (mBGS)
Aug. 19, 2022 5.04

GROUNDWATER ELEVATIONS

Measurement 1st 2nd 3rd 4th

GRAPH NOTES +³, ×³: Numbers refer to Sensitivity ▲ = 3% Strain at Failure

PROJECT: Geotechnical Investigation for Proposed Road Improvements		DRILLING DATA	
CLIENT: Stantec Consulting Limited	METHOD: Continuous Flight Auger - Auto Hammer	DIAMETER: 105 mm	
PROJECT LOCATION: Bramalea Road, Brampton, Ontario	FIELD ENGINEER: DG, BK	DATE: 2022-04-26	
DATUM: N/A	SAMPLE REVIEW: IG	REF. NO.: 18-2325GHE	
BH LOCATION: See Borehole Location Plan	CHECKED: DX	ENCL. NO.: 103	

ELEV. DEPTH (m)	SOIL PROFILE DESCRIPTION	STRATA PLOT	SAMPLES			GROUND WATER	ELEVATION	DYNAMIC PENETRATION TEST				Plastic Limit W _p	Natural Moisture Content w	Liquid Limit W _L	WATER CONTENT (%)	UNIT WT (kN/m ³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)
			NUMBER	TYPE	"N" BLOWS/0.3m			20	40	60	80						
0.0	ASPHALT: (165 mm)																
0.2	GRANULAR BASE: (160 mm)		1A	AS													
0.3	GRANULAR SUBBASE: (400 mm)		1B	AS													
0.7	FILL: sandy silt, trace clay, trace gravel, organic matters, layers of organic silt, dark brown, moist FILL: clayey silt, some sand, trace gravel, organic inclusions, layers of organic silt, layers of sandy silt, brown, moist, very stiff		1C	AS	17												
0.8			2A	SS													
0.8	FILL: sandy silt, some clay, trace gravel, layers of clayey silt, brown, moist, compact SANDY SILT TO SILT: some clay, trace gravel, layers of clayey silt, seams of sand, brown, moist, dense		2B	SS	35												
1.4			3	SS													
2.1	CLAYEY SILT: some sand, trace gravel, layers of sandy silt, seams of sand, pockets of silt, brown, moist, hard		4	SS	43												
2.9			5	SS													
2.9	SANDY SILT TILL: some clay, trace gravel, layers of clayey silt, layers of sandy silt, seams of sand, pockets of silt, containing cobbles and boulders, brown to grey, moist, dense to very dense --- auger grinding --- auger grinding --- auger grinding from 4.1 m to 4.3 m --- grey		5	SS	43												
3.5			6	SS													
3.5			90/280 mm														
5.0	END OF BOREHOLE DUE TO SPOON REFUSAL ON PROBABLE COBBLES AND BOULDERS OR SHALE BEDROCK																

01 - GEOPRO SOIL LOG GEOPRO 18-2325GHE BH LOG 20220912-JB-DX-JR-MY-IG-DX-IG-NZ-IG-DX-GPJ 2022-09-13 00:18

GROUNDWATER ELEVATIONS
 Measurement: 1st, 2nd, 3rd, 4th

GRAPH NOTES
 + 3, × 3: Numbers refer to Sensitivity
 ▲ = 3% Strain at Failure

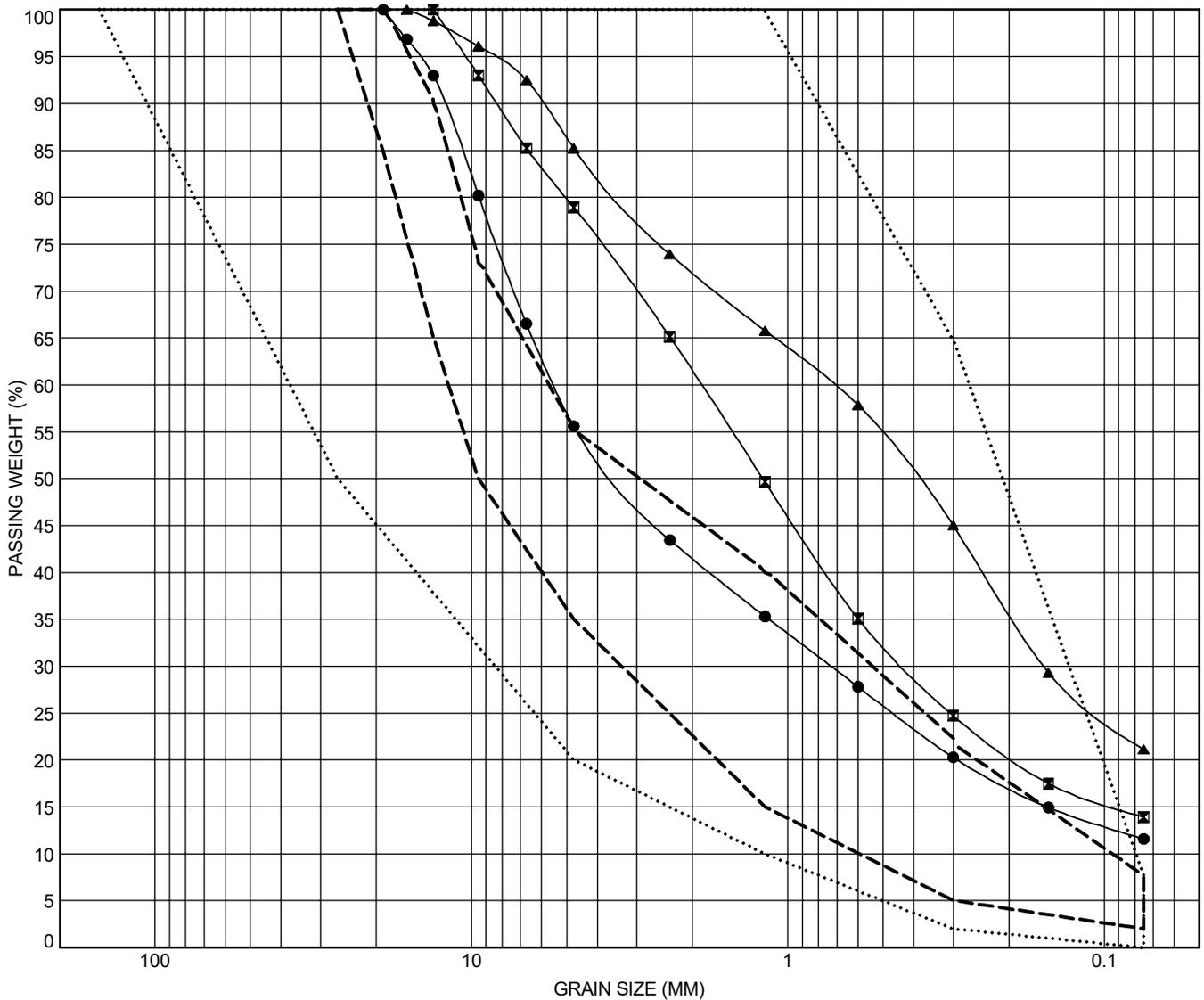


GeoPro Consulting Limited

Geotechnical-Hydrogeology-Environmental-Materials-Inspection

FIGURES

13 - GEOPRO_GS OPSS 1010 A & B GEOPRO 18-2325GHE BH LOG 20220809-IB-DX-IR-MY-IG-DX-IG-IG-NZ-IG-GPJ 2022-08-09 15:17



COBBLES	GRAVEL		SAND			FINES
	coarse	fine	coarse	medium	fine	

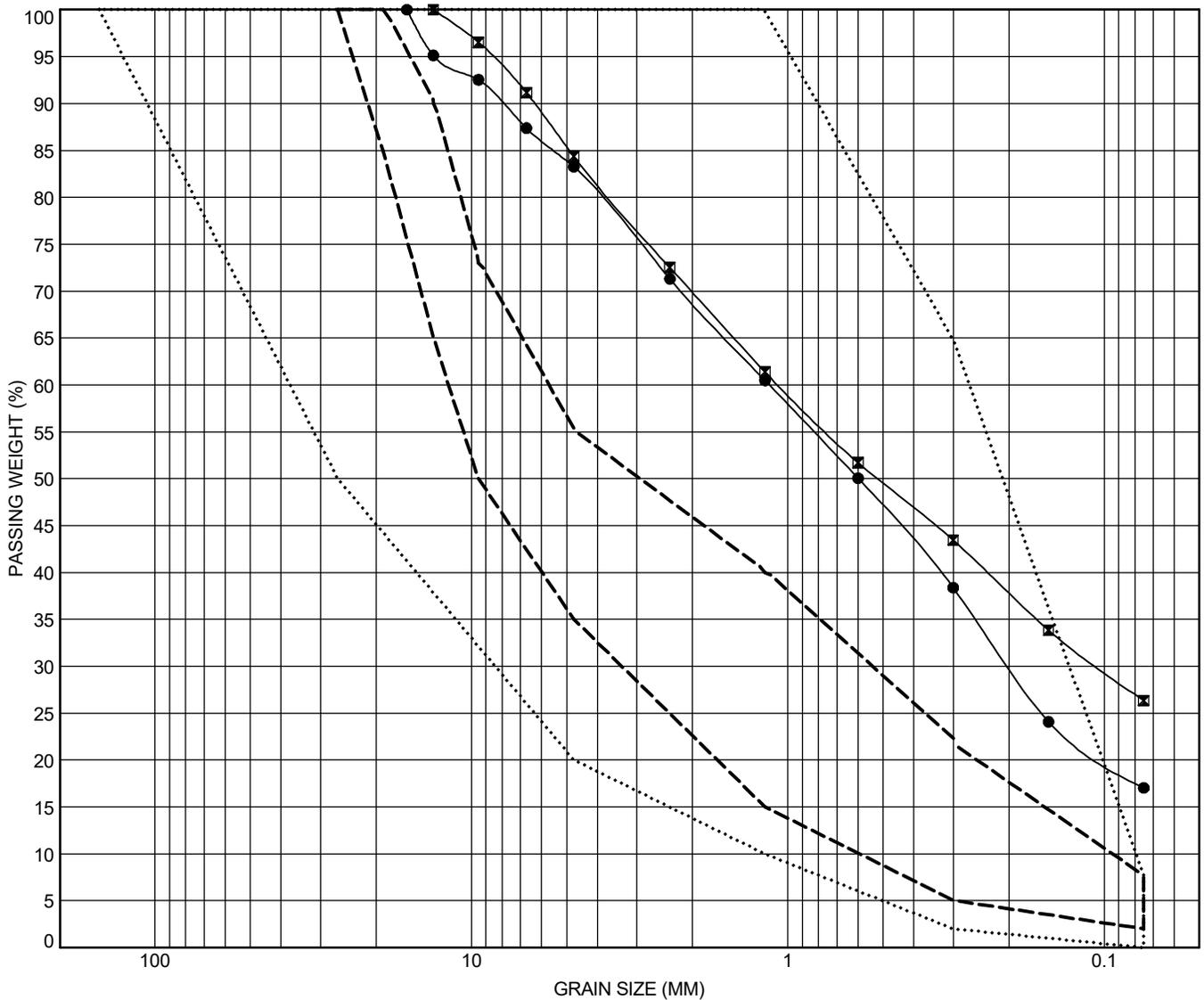
----- OPSS 1010 GRANULAR A

..... OPSS 1010 GRANULAR B TYPE I

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Fines
● BH101 AS1A 0.20	19	5.457	0.731		44.4	44.0	11.6
■ BH114 AS1A 0.22	13.2	1.876	0.427		21.1	65.0	13.9
▲ BH116 AS1B 0.36	16	0.72	0.155		14.8	64.1	21.1

 <p>Unit 57, 40 Vogell Road, Richmond Hill, Ontario L4B 3N6 Tel: 905-237-8336 Fax: 905-248-3699 office@geoproconsulting.ca www.geoproconsulting.ca</p>	GRAIN SIZE DISTRIBUTION	
	PROJECT: Geotechnical Investigation for Proposed Road Improvements	
	LOCATION: Bramalea Road, Brampton, Ontario	
	PROJECT NO.: 18-2325GHE	SAMPLED ON: 2022-03-14
	FIGURE NO.: 1	TESTED ON: 2022-03-30

13 - GEOPRO_GS OPSS 1010 A & B GEOPRO 18-2325GHE BH LOG 20220809-18-DX-IR-MY-IG-DX-IG-NZ-IG-GPJ 2022-08-09 15:48



COBBLES	GRAVEL		SAND			FINES
	coarse	fine	coarse	medium	fine	

----- OPSS 1010 GRANULAR A

..... OPSS 1010 GRANULAR B TYPE I

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Fines
● BH117 AS1B 0.44	16	1.143	0.2		16.7	66.2	17.0
■ BH124 AS1 0.17	13.2	1.072	0.105		15.6	58.0	26.3



Unit 57, 40 Vogell Road, Richmond Hill, Ontario L4B 3N6
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 office@geoproconsulting.ca www.geoproconsulting.ca

GRAIN SIZE DISTRIBUTION

PROJECT: Geotechnical Investigation for Proposed Road Improvements

LOCATION: Bramalea Road, Brampton, Ontario

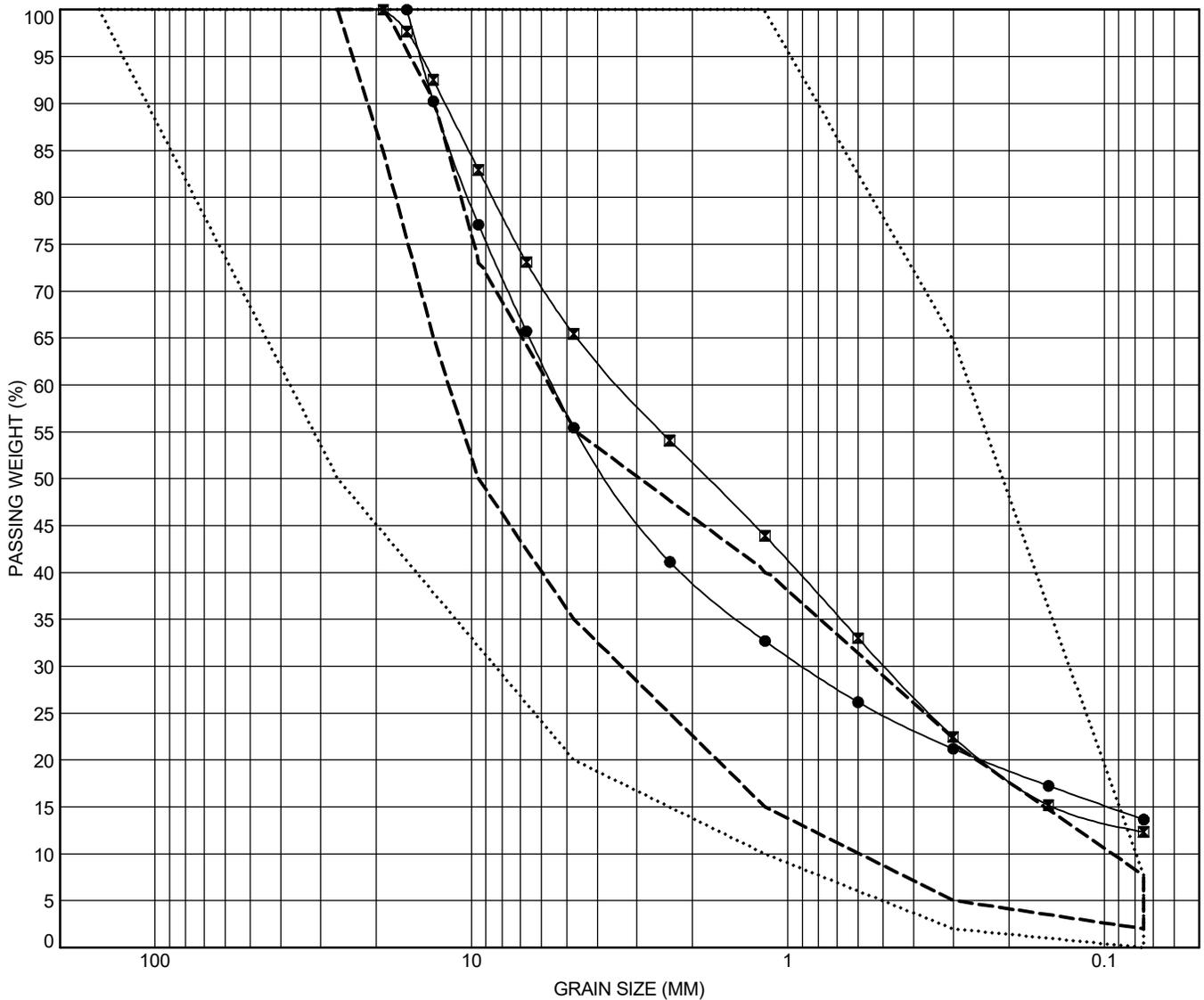
PROJECT NO.: 18-2325GHE

SAMPLED ON: 2022-01-14

FIGURE NO.: 2

TESTED ON: 2022-02-23

13 - GEOPRO_GS OPSS 1010 A & B GEOPRO 18-2325GHE BH LOG 20220608-IB-DX-IR-MY-IG-DX-IG-NZ-IG-GPJ 2022-06-08 15:49



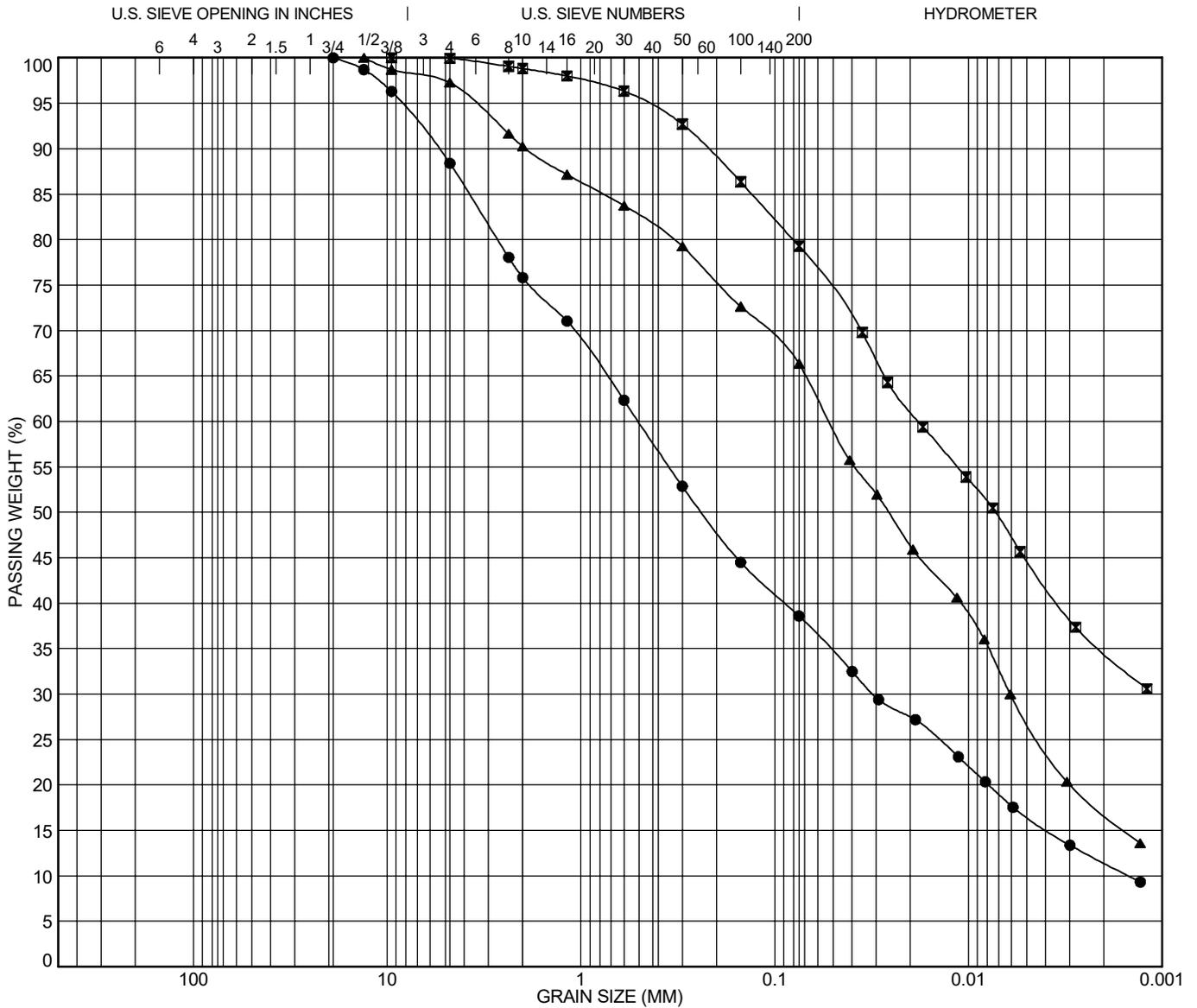
COBBLES	GRAVEL		SAND			FINES
	coarse	fine	coarse	medium	fine	

----- OPSS 1010 GRANULAR A

..... OPSS 1010 GRANULAR B TYPE I

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Fines
● BH139 AS1A 0.15	16	5.535	0.893		44.6	41.8	13.7
■ BH306 AS1A 0.40	19	3.4	0.493		34.6	53.1	12.3

 <p>Unit 57, 40 Vogell Road, Richmond Hill, Ontario L4B 3N6 Tel: 905-237-8336 Fax: 905-248-3699 office@geoproconsulting.ca www.geoproconsulting.ca</p>	GRAIN SIZE DISTRIBUTION	
	PROJECT: Geotechnical Investigation for Proposed Road Improvements	
	LOCATION: Bramalea Road, Brampton, Ontario	
	PROJECT NO.: 18-2325GHE	SAMPLED ON: 2022-06-08
	FIGURE NO.: 3	TESTED ON: 2022-06-15



COBBLES	GRAVEL		SAND			SILT	CLAY
	coarse	fine	coarse	medium	fine		

Specimen Identification			Classification				LL	PL	PI	Cc	Cu
●	BH207	AS2	0.76							1.27	338.26
■	BH210	AS4	2.29								
▲	BH212	AS3	1.52								
Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay	
●	BH207	AS2	0.76	19	0.506	0.031	0.001	11.6	49.8	27.2	11.4
■	BH210	AS4	2.29	9.5	0.018			0.1	20.7	44.6	34.7
▲	BH212	AS3	1.52	13.2	0.052	0.006		2.7	30.9	49.4	16.9



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GRAIN SIZE DISTRIBUTION

PROJECT: Geotechnical Investigation for Proposed Road Improvements

LOCATION: Bramalea Road, Brampton, Ontario

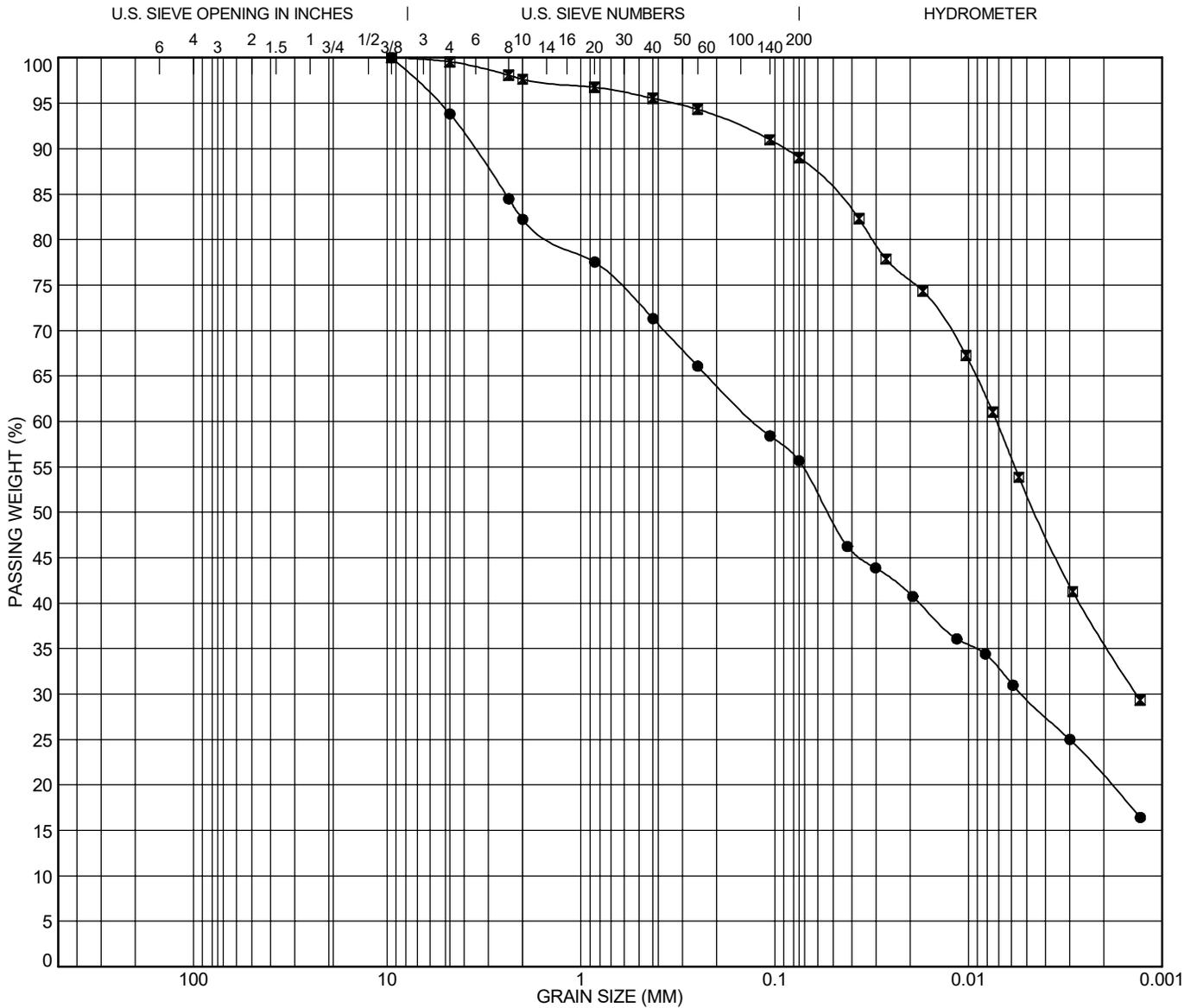
PROJECT NO.: 18-2325GHE

SAMPLED ON: 2022-03-02

FIGURE NO.: 5

TESTED ON: 2022-03-29

11 - GEOPRO_GRAIN_SIZE_GEOPRO_18-2325GHE_BH LOG 20220609-18-DX-JR-MY-IG-DX-(I-G-IG-NZ-IG-GPJ_2022-08-09 16:07



COBBLES	GRAVEL		SAND			SILT	CLAY
	coarse	fine	coarse	medium	fine		

Specimen Identification				Classification					LL	PL	PI	Cc	Cu
●	BH406	SS6A	4.57										
☒	BH408	SS4	2.29										
Specimen Identification				D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
●	BH406	SS6A	4.57	9.5	0.127	0.005		6.2	38.2	34.8	20.8		
☒	BH408	SS4	2.29	9.5	0.007	0.001		0.4	10.5	53.3	35.7		

 <p>Unit 57, 40 Vogell Road, Richmond Hill, Ontario L4B 3N6 Tel: 905-237-8336 Fax: 905-248-3699 office@geoproconsulting.ca www.geoproconsulting.ca</p>	GRAIN SIZE DISTRIBUTION	
	PROJECT: Geotechnical Investigation for Proposed Road Improvements	
	LOCATION: Bramalea Road, Brampton, Ontario	
	PROJECT NO.: 18-2325GHE	SAMPLED ON: 2022-04-26
	FIGURE NO.: 7	TESTED ON: 2022-05-05

11 - GEOPRO_GRAIN_SIZE_GEOPRO_18-2325GHE_BH LOG 20220505-IP-DX-JR-MY-IG-DX-(G-IG-NZ-IG-GPJ_2022-08-09 16:13



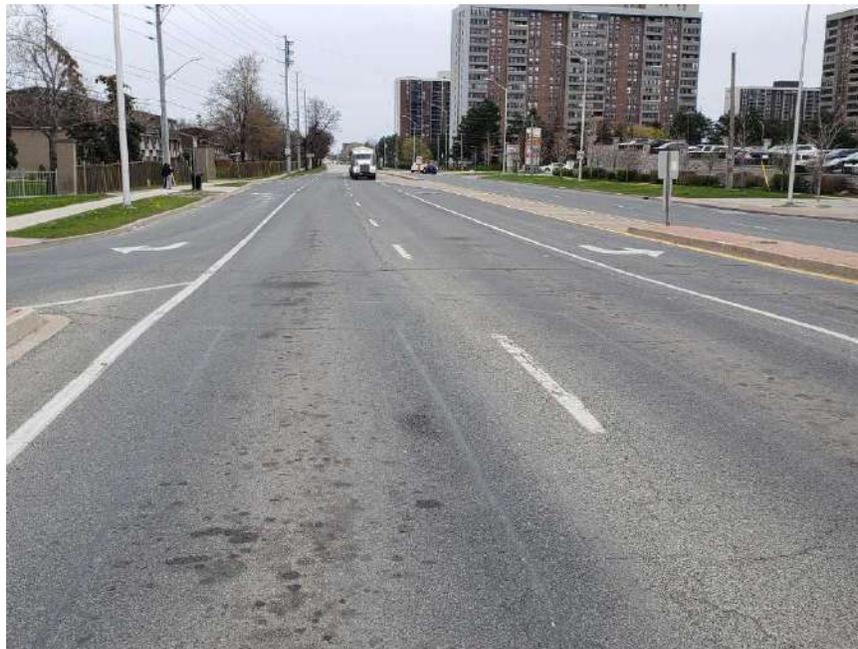
GeoPro Consulting Limited

Geotechnical-Hydrogeology-Environmental-Materials-Inspection

APPENDIX A



Photograph 1 – Bramalea Road, looking South, near the intersection of Queen Street East and Bramalea Road, showing moderate to severe longitudinal and transverse cracking associated with slight to moderate random cracking and slight pavement raveling.



Photograph 2 – Bramalea Road, Northbound, looking South, near the intersection of Queen Street East and Bramalea Road, showing moderate longitudinal and transverse cracking associated with slight to moderate random cracking, slight pavement edge cracking and slight pavement raveling.



Photograph 3 – Bramalea Road, Southbound, looking South, near the intersection of Queen Street East and Bramalea Road, showing moderate longitudinal and transverse cracking associated with slight to moderate random cracking, slight alligator cracking and slight pavement raveling.



Photograph 4 – Bramalea Road, Northbound, looking North, approximately 105 m South of Queen Street East, showing moderate longitudinal and transverse cracking associated with slight to moderate random cracking, slight block cracking, slight to moderate alligator cracking, slight potholes, moderate to severe pavement edge cracking and slight pavement raveling. Noting sections of patching.



Photograph 5 – Bramalea Road, Southbound, looking North, approximately 110 m South of Queen Street East, showing moderate longitudinal and transverse cracking associated with slight to moderate random cracking, slight potholes, slight pavement edge cracking and slight pavement raveling.



Photograph 6 – Bramalea Road, Southbound, looking North, approximately 135 m South of Queen Street East, showing moderate longitudinal and transverse cracking associated with moderate random cracking, slight to moderate pavement edge cracking and slight pavement raveling.



Photograph 7 – Bramalea Road, looking South, near the intersection of Kensington Road and Bramalea Road, showing moderate to severe longitudinal and transverse cracking associated with slight to moderate random cracking and slight pavement raveling. Noting sections of patching.



Photograph 8 – Bramalea Road, Northbound, looking South, at the intersection of Kensington Road and Bramalea Road, showing moderate longitudinal and transverse cracking associated with moderate random cracking, slight pavement edge cracking and slight pavement raveling. Noting sections of patching.



Photograph 9 – Bramalea Road, Northbound, looking North, near the intersection of Kensington Road and Bramalea Road, showing moderate longitudinal and transverse cracking associated with slight random cracking, slight pavement edge cracking and slight pavement raveling.



Photograph 10 – Bramalea Road, Northbound, looking North, near the South intersection of Gates of Bramalea and Bramalea Road, showing moderate longitudinal and transverse cracking associated with slight random cracking, slight pavement edge cracking and slight pavement raveling. Noting sections of patching.



Photograph 11 – Bramalea Road, Northbound, looking South, near the South intersection of Gates of Bramalea and Bramalea Road, showing slight to moderate longitudinal and transverse cracking associated with slight random cracking, slight pavement edge cracking and slight pavement raveling. Noting sections of patching.



Photograph 12 – Bramalea Road, Northbound, looking South, approximately 70 m North of Fleetwood Crescent, showing slight to moderate longitudinal and transverse cracking associated with slight random cracking, slight pavement edge cracking and slight to moderate pavement raveling.



Photograph 13 – Bramalea Road, Northbound, looking North, approximately 85 m North of Fleetwood Crescent, showing moderate longitudinal and transverse cracking associated with slight random cracking, slight to moderate pavement edge cracking and slight to moderate pavement raveling. Noting patching around catch basin.



Photograph 14 – Bramalea Road, looking North, near the intersection of Fleetwood Crescent and Bramalea Road, showing moderate longitudinal and transverse cracking associated with slight random cracking, slight pavement edge cracking and slight pavement raveling. Noting utility patching.



Photograph 15 – Bramalea Road, Southbound, looking North, in the vicinity of the intersection of Bramalea Road and Fleetwood Crescent, showing moderate to severe longitudinal and transverse cracking associated with moderate random cracking, slight potholes, slight to moderate pavement raveling and moderate pavement edge cracking.



Photograph 16 – Bramalea Road, Southbound, looking South, approximately 70 m South of Fleetwood Crescent, showing moderate to severe longitudinal and transverse cracking associated with slight to moderate random cracking, slight pavement depressions, slight to moderate pavement raveling and slight to moderate pavement edge cracking.



Photograph 17 – Bramalea Road, Southbound, looking North, approximately 105 m South of Fleetwood Crescent, showing moderate longitudinal and transverse cracking associated with slight to moderate random cracking, slight pavement raveling, slight alligator cracking and moderate pavement edge cracking.



Photograph 18 – Bramalea Road, Southbound, looking North, approximately 125 m South of Fleetwood Crescent, showing moderate to severe longitudinal and transverse cracking associated with moderate random cracking, slight to moderate pavement raveling and slight to moderate pavement edge cracking.



Photograph 19 – Bramalea Road, Southbound, looking South, approximately 150 m South of Fleetwood Crescent, showing moderate to severe longitudinal and transverse cracking associated with moderate random cracking, slight pavement depressions, slight to moderate pavement raveling and slight pavement edge cracking.



Photograph 20 – Bramalea Road, Northbound, looking South, approximately 150 m South of Fleetwood Crescent, showing moderate longitudinal and transverse cracking associated with moderate random cracking, slight pavement depressions, slight to moderate pavement raveling, slight potholes and moderate to severe pavement edge cracking.



Photograph 21 – Bramalea Road, Southbound, looking South, approximately 100 m North of Clark Boulevard, showing moderate to severe longitudinal and transverse cracking associated with slight to moderate random cracking, slight to moderate pavement raveling and slight pavement edge cracking. Noting patching around catch basin and manhole.



Photograph 22 – Bramalea Road, Southbound, looking North, approximately 75 m North of Clark Boulevard, showing moderate to severe longitudinal and transverse cracking associated with moderate random cracking, slight block cracking, slight to moderate pavement raveling, and slight to moderate pavement edge cracking. Noting patching around catch basin and manhole.



Photograph 23 – Bramalea Road, Northbound, looking South, approximately 50 m North of Clark Boulevard, showing moderate to severe longitudinal and transverse cracking associated with moderate to severe random cracking, slight alligator cracking, slight pavement raveling and moderate to severe pavement edge cracking.



Photograph 24 – Bramalea Road, Southbound, looking North, near the intersection of Bramalea Road and Clark Boulevard, showing moderate longitudinal and transverse cracking associated with slight to moderate random cracking, slight to moderate alligator cracking, slight to moderate pavement raveling and moderate to severe pavement edge cracking. Noting moderate to severe alligator cracking around catch basin.



Photograph 25 – Bramalea Road, Southbound, looking East, near the intersection of Bramalea Road and Clark Boulevard, showing moderate to severe longitudinal and transverse cracking associated with moderate to severe random cracking, slight to moderate pavement raveling and slight to moderate pavement edge cracking.



Photograph 26 – Bramalea Road, Northbound, looking South, near the intersection of Bramalea Road and Clark Boulevard, showing moderate longitudinal and transverse cracking associated with slight to moderate random cracking, slight pavement raveling and slight pavement edge cracking.



Photograph 27 – Bramalea Road, Northbound, looking South, near the intersection of Bramalea Road and Clark Boulevard, showing slight to moderate longitudinal and transverse cracking associated with moderate random cracking, slight to moderate alligator cracking, slight pavement raveling and slight to moderate pavement edge cracking.



Photograph 28 – Bramalea Road, Northbound, looking South, approximately 90 m South of Clark Boulevard, showing moderate to severe longitudinal and transverse cracking associated with moderate to severe random cracking, slight to moderate alligator cracking, slight to moderate pavement raveling and moderate pavement edge cracking.



Photograph 29 – Bramalea Road, Southbound, looking North, approximately 100 m South of Clark Boulevard, showing severe block cracking associated with moderate to severe longitudinal and transverse cracking, moderate random cracking, slight pavement raveling and slight to moderate pavement edge cracking.



Photograph 30 – Bramalea Road, Northbound, looking South, approximately 120 m South of Clark Boulevard, showing severe alligator cracking associated with moderate to severe longitudinal and transverse cracking, moderate to severe random cracking, moderate pavement raveling, moderate block cracking, slight pavement depressions and moderate to severe pavement edge cracking.



Photograph 31 – Bramalea Road, Southbound, looking South, approximately 130 m South of Clark Boulevard, showing severe longitudinal and transverse cracking associated with moderate block cracking, moderate random cracking, slight pavement raveling, slight pavement depressions, slight alligator cracking and moderate pavement edge cracking.



Photograph 32 – Bramalea Road, Northbound, looking South, approximately 145 m South of Clark Boulevard, showing severe longitudinal and transverse cracking associated with slight to moderate random cracking, slight alligator cracking, slight to moderate pavement raveling, slight potholes and moderate pavement edge cracking.



Photograph 33 – Bramalea Road, Southbound, looking North, approximately 170 m South of Clark Boulevard, showing moderate to severe longitudinal and transverse cracking associated with slight to moderate random cracking, slight pavement raveling and slight to moderate pavement edge cracking.



Photograph 34 – Bramalea Road, Southbound, looking South, approximately 175 m South of Clark Boulevard, showing moderate to severe longitudinal and transverse cracking associated with moderate random cracking, slight pavement raveling, slight potholes and moderate pavement edge cracking.



Photograph 35 – Bramalea Road, Northbound, looking South, approximately 200 m South of Clark Boulevard, showing moderate longitudinal and transverse cracking associated with slight to moderate random cracking, slight alligator cracking, slight pavement raveling and slight to moderate pavement edge cracking.



Photograph 36 – Bramalea Road, Southbound, looking North, approximately 250 m South of Clark Boulevard, showing moderate longitudinal and transverse cracking associated with slight to moderate random cracking, slight pavement raveling and slight to moderate pavement edge cracking.



Photograph 37 – Bramalea Road, Southbound, looking South, approximately 280 m South of Bramalea Road and Clark Boulevard, showing moderate to severe longitudinal and transverse cracking associated with moderate random cracking, slight to moderate block cracking, slight pavement raveling and slight to moderate pavement edge cracking.



Photograph 38 – Bramalea Road, Northbound, looking South, approximately 300 m South of Clark Boulevard, showing moderate to severe longitudinal and transverse cracking associated with moderate random cracking, slight to moderate pavement raveling and slight to moderate pavement edge cracking.



Photograph 39 – Bramalea Road, Southbound, looking North, approximately 325 m South of Clark Boulevard, showing moderate to severe longitudinal and transverse cracking associated with slight to moderate random cracking, slight pavement raveling and slight to moderate pavement edge cracking.



Photograph 40 – Bramalea Road, Northbound, looking South, approximately 320 m North of Balmoral Drive, showing moderate to severe longitudinal and transverse cracking associated with moderate random cracking, moderate alligator cracking, slight potholes, slight to moderate pavement raveling and slight to moderate pavement edge cracking.



Photograph 41 – Bramalea Road, Southbound, looking South, approximately 305 m North of Balmoral Drive, showing moderate to severe longitudinal and transverse cracking associated with moderate random cracking, slight alligator cracking, slight pavement raveling and slight to moderate pavement edge cracking.



Photograph 42 – Bramalea Road, Northbound, looking South, approximately 235 m North of Balmoral Drive, showing moderate to severe longitudinal and transverse cracking associated with slight to moderate random cracking, slight pavement raveling and slight to moderate pavement edge cracking.



Photograph 43 – Bramalea Road, Southbound, looking South, approximately 210 m North of Balmoral Drive, showing moderate to severe longitudinal and transverse cracking associated with slight to moderate random cracking, slight pavement raveling and slight to moderate pavement edge cracking.



Photograph 44 – Bramalea Road, Southbound, looking East, approximately 205 m North of Balmoral Drive, showing severe longitudinal and transverse cracking associated with moderate random cracking, slight to moderate potholes and slight pavement raveling.



Photograph 45 – Bramalea Road, Northbound, looking South, approximately 200 m North of Balmoral Drive, showing moderate to severe longitudinal and transverse cracking associated with slight to moderate random cracking, slight pavement depressions, slight to moderate pavement raveling and moderate to severe pavement edge cracking.



Photograph 46 – Bramalea Road, Southbound, looking South, approximately 180 m North of Balmoral Drive, showing moderate to severe longitudinal and transverse cracking associated with moderate random cracking, moderate to severe alligator cracking, slight pavement raveling, slight pavement depressions, and moderate pavement edge cracking. Noting severe alligator cracking around catch basin.



Photograph 47 – Bramalea Road, Southbound, looking North, approximately 100 m North of Balmoral Drive, showing moderate to severe longitudinal and transverse cracking associated with moderate random cracking, slight alligator cracking, slight pavement raveling and moderate to severe pavement edge cracking. Noting sections of patching.



Photograph 48 – Bramalea Road, Northbound, looking South, approximately 95 m North of Balmoral Drive, showing severe longitudinal and transverse cracking associated with moderate random cracking, slight pavement depressions, slight to moderate pavement raveling and moderate pavement edge cracking.



Photograph 49 – Bramalea Road, Southbound, looking North, near the intersection of Bramalea Road and Balmoral Drive, showing moderate to severe longitudinal and transverse cracking associated with moderate random cracking, moderate block cracking, slight to moderate potholes and slight pavement raveling.



Photograph 50 – Bramalea Road, looking North, near the intersection of Bramalea Road and Balmoral Drive, showing severe longitudinal and transverse cracking associated with moderate random cracking, slight alligator cracking and slight pavement raveling.



Photograph 51 – Bramalea Road, Northbound, looking South, near the intersection of Bramalea Road and Balmoral Drive, showing moderate to severe longitudinal and transverse cracking associated with moderate random cracking, slight to moderate alligator cracking, moderate to severe block cracking, slight pavement raveling and moderate to severe pavement edge cracking.



Photograph 52 – Bramalea Road, Southbound, looking North, approximately 70 m South of Balmoral Drive, showing moderate longitudinal and transverse cracking associated with moderate random cracking, severe alligator cracking, slight to moderate pavement raveling, slight to moderate potholes and severe pavement edge cracking.



Photograph 53 – Bramalea Road, Southbound, looking North, approximately 95 m South of Balmoral Drive, showing slight to moderate longitudinal and transverse cracking associated with severe alligator cracking, moderate pavement depressions, slight to moderate pavement raveling, slight pavement patching, and moderate to severe pavement edge cracking.



Photograph 54 – Bramalea Road, Northbound, looking South, approximately 100 m South of Bramalea Road, showing severe longitudinal and transverse cracking associated with moderate random cracking, slight to moderate pavement raveling and slight to moderate pavement edge cracking.



Photograph 55 – Bramalea Road, Southbound, looking East, approximately 145 m South of Balmoral Drive, showing moderate longitudinal and transverse cracking associated with slight to moderate random cracking, slight pavement raveling, and moderate pavement edge cracking. Noting severe alligator cracking around catch basin and sections of patching.



Photograph 56 – Bramalea Road, Northbound, looking South, approximately 60 m North of Darras Court, showing moderate to severe longitudinal and transverse cracking associated with slight to moderate random cracking, moderate alligator cracking, slight to moderate pavement raveling, slight pavement depressions, and moderate pavement edge cracking. Noting severe alligator cracking around catch basin.



Photograph 57 – Bramalea Road, Southbound, looking South, near the intersection of Bramalea Road and Darras Court, showing moderate longitudinal and transverse cracking associated with slight random cracking, slight to moderate pavement raveling and slight pavement edge cracking. Noting severe alligator cracking around catch basin and sections of patching.



Photograph 58 – Bramalea Road, Southbound, looking South, near the intersection of Bramalea Road and Algonquin Boulevard, showing moderate longitudinal and transverse cracking associated with slight to moderate random cracking and slight to moderate pavement raveling.



Photograph 59 – Bramalea Road, Northbound, looking South, approximately 50 m South of Algonquin Boulevard, showing severe longitudinal and transverse cracking associated with moderate random cracking, moderate block cracking, slight pavement raveling and moderate to severe pavement edge cracking.



Photograph 60 – Bramalea Road, Southbound, looking North, approximately 75 m South of Algonquin Boulevard, showing moderate to severe longitudinal and transverse cracking associated with moderate random cracking, slight pavement depressions, moderate pavement raveling, severe alligator cracking and moderate to severe pavement edge cracking.



Photograph 61 – Bramalea Road, Northbound, looking South, approximately 155 m South of Algonquin Boulevard, showing moderate longitudinal and transverse cracking associated with slight to moderate random cracking, slight to moderate pavement raveling and slight to moderate pavement edge cracking. Noting severe random cracking around catch basin.



Photograph 62 – Bramalea Road, Southbound, looking North, approximately 150 m North of Alexandria Gate, showing moderate longitudinal and transverse cracking associated with moderate random cracking, moderate pavement raveling, moderate alligator cracking and moderate to severe pavement edge cracking.



Photograph 63 – Bramalea Road, Northbound, looking South, approximately 75 m North of Alexandria Gate, showing moderate longitudinal and transverse cracking associated with slight random cracking, slight alligator cracking, slight pavement raveling and slight pavement edge cracking.



Photograph 64 – Bramalea Road, Southbound, looking North, approximately 40 m North of Alexandria Gate, showing moderate longitudinal and transverse cracking associated with slight to moderate random cracking, slight to moderate pavement raveling, moderate to severe alligator cracking, and moderate to severe pavement edge cracking.



Photograph 65 – Bramalea Road, Southbound, looking South, near the intersection of Bramalea Road and Alexandria Gate, showing moderate longitudinal and transverse cracking associated with slight random cracking and slight pavement raveling. Noting sections of patching along the pavement edge.



Photograph 66 – Bramalea Road, Northbound, looking South, near the intersection of Bramalea Road and Alexandria Gate, showing severe longitudinal and transverse cracking associated with moderate random cracking, moderate block cracking, slight alligator cracking, and slight pavement raveling.



Photograph 67 – Bramalea Road, Southbound, looking North, approximately 60 m South of Alexandria Gate, showing moderate longitudinal and transverse cracking associated with slight random cracking, slight to moderate pavement raveling and severe pavement edge cracking.



Photograph 68 – Bramalea Road, Northbound, looking South, approximately 100 m South of Alexandria Gate, showing moderate longitudinal and transverse cracking associated with slight random cracking, moderate pavement raveling, slight alligator cracking, slight to moderate block cracking and moderate pavement edge cracking.



Photograph 69 – Bramalea Road, Southbound, looking North, approximately 170 m South of Alexandria Gate, showing moderate longitudinal and transverse cracking associated with slight random cracking, slight to moderate pavement raveling and moderate pavement edge cracking. Noting patching around catch basin.



Photograph 70 – Bramalea Road, Northbound, looking South, approximately 155 m North of Avondale Boulevard, showing moderate to severe longitudinal and transverse cracking associated with slight to moderate random cracking, slight pavement raveling and slight to moderate pavement edge cracking.



Photograph 71 – Bramalea Road, Northbound, looking South, approximately 115 m North of Avondale Boulevard, showing moderate longitudinal and transverse cracking associated with slight random cracking, slight to moderate pavement raveling and slight pavement edge cracking.



Photograph 72 – Bramalea Road, Southbound, looking South, near the intersection of Bramalea Road and Avondale Boulevard, showing slight longitudinal cracking associated with slight random cracking.



Photograph 73 – Bramalea Road, looking West, near the intersection of Bramalea Road and Avondale Boulevard, showing slight longitudinal and transverse cracking associated with slight random cracking. Noting sections of patching.



Photograph 74 – Bramalea Road, Northbound, looking South, near the intersection of Bramalea Road and Avondale Boulevard, showing relatively newly paved asphalt concrete.



Photograph 75 – Bramalea Road, Southbound, looking North, approximately 105 m South of Avondale Boulevard, showing relatively newly paved asphalt concrete.



Photograph 76 – Bramalea Road, Southbound, looking South, approximately 75 m north of East Drive, showing relatively newly paved asphalt concrete.



Photograph 77 – Bramalea Road, Northbound, looking South, near the intersection of Bramalea Road and East Drive, showing slight relatively newly paved asphalt concrete.



Photograph 78 – Bramalea Road, looking North, approximately 90 m South of Bramalea Road/East Drive, showing relatively newly paved asphalt concrete.



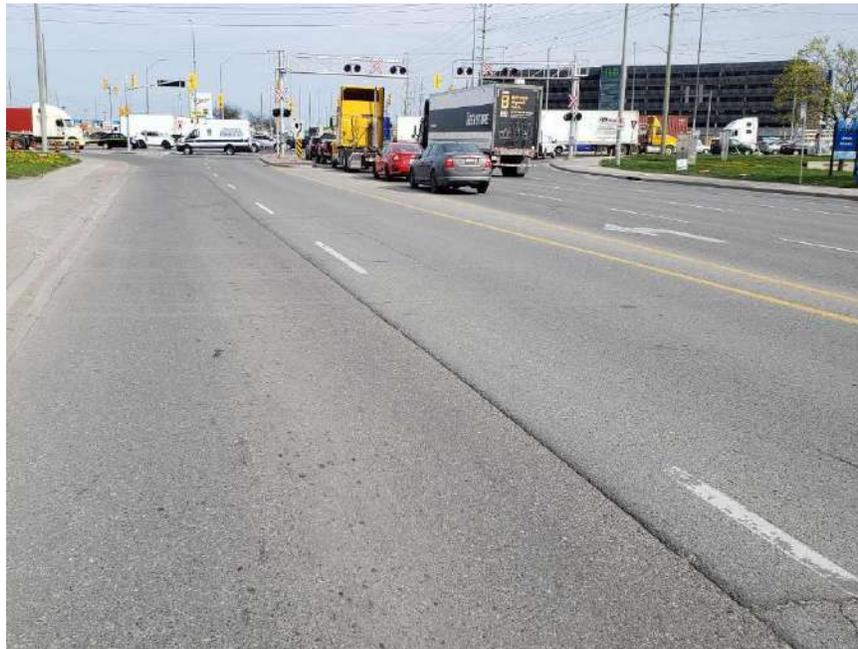
Photograph 79 – Bramalea Road, Southbound, looking South, approximately 120 m South of East Drive, showing relatively newly paved asphalt concrete.



Photograph 80 – Bramalea Road, Southbound, looking North, approximately 35 m North of Orenda Road, showing relatively newly paved asphalt concrete.



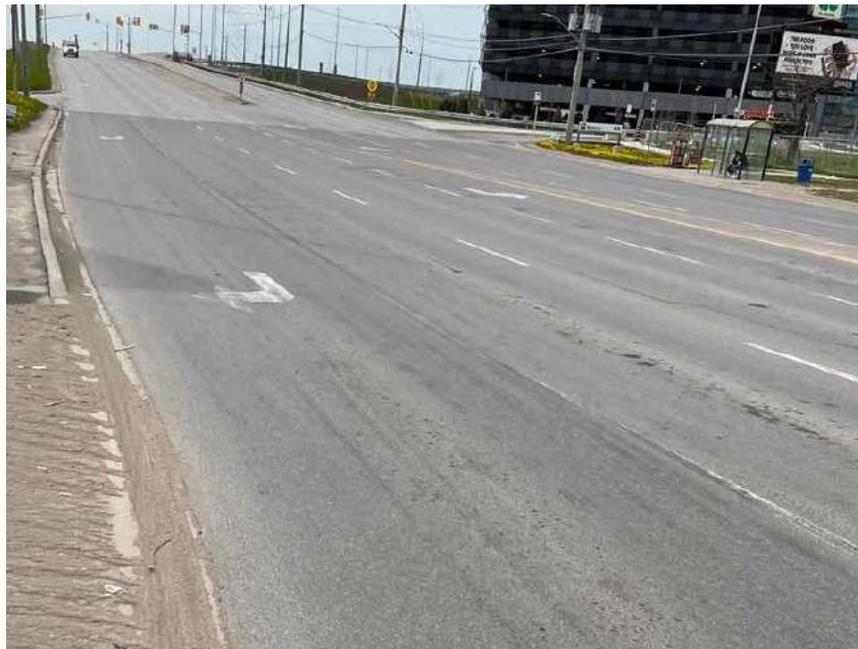
Photograph 81 – Bramalea Road, looking South, near the intersection of Bramalea Road and Oronda Road, showing slight to moderate longitudinal and transverse cracking associated with slight random cracking and slight pavement raveling.



Photograph 82 – Bramalea Road, Northbound, looking South, approximately 65 m North of Steeles Avenue East, showing slight to moderate longitudinal and transverse cracking associated with slight random cracking, slight longitudinal construction joint and slight pavement raveling.



Photograph 83 – Bramalea Road, Southbound, looking South, near the intersection of Bramalea Road and Steeles Avenue East, showing moderate longitudinal and transverse cracking associated with moderate random cracking, slight block cracking and slight pavement raveling.



Photograph 84 – Bramalea Road, Northbound, looking South, near the intersection of Bramalea Road and Steeles Avenue East, showing slight longitudinal and transverse cracking associated with slight random cracking and slight pavement raveling.



Photograph 85 – Bramalea Road, Northbound, looking South, approximately 120 m South of Steeles Avenue East, showing moderate to severe longitudinal and transverse cracking associated with moderate to severe random cracking, moderate to severe block cracking and slight pavement raveling.



Photograph 86 – Bramalea Road, Southbound, looking North, approximately 140 m South of Steeles Avenue East, showing moderate longitudinal and transverse cracking associated with slight to moderate random cracking, slight block cracking and slight to moderate pavement raveling.



Photograph 87 – Bramalea Road, Northbound, looking South, approximately 160 m South of Steeles Avenue East, showing severe longitudinal and transverse cracking associated with severe random cracking, severe block cracking, moderate alligator cracking, moderate pavement edge cracking and slight to moderate pavement raveling.



Photograph 88 – Bramalea Road, Southbound, looking North, approximately 170 m South of Steeles Avenue East, showing moderate to severe longitudinal and transverse cracking associated with severe random cracking, severe block cracking, moderate alligator cracking, moderate pavement edge cracking and moderate pavement raveling.



Photograph 89 – Bramalea Road, Northbound, looking South, approximately 150 m North of Railway, showing severe longitudinal and transverse cracking associated with severe random cracking, severe block cracking, moderate alligator cracking and moderate pavement raveling.



Photograph 90 – Bramalea Road, Northbound, looking South, approximately 100 m North of Railway, showing severe longitudinal and transverse cracking associated with severe random cracking, severe block cracking, moderate alligator cracking and moderate pavement raveling.



Photograph 91 – Bramalea Road, Southbound, looking North, approximately 100 m North of Railway, showing moderate to severe longitudinal and transverse cracking associated with moderate random cracking, moderate to severe block cracking, moderate alligator cracking and moderate pavement raveling.



Photograph 92 – Bramalea Road, Northbound, looking South, near Railway, showing severe longitudinal and transverse cracking associated with severe random cracking, moderate block cracking, moderate alligator cracking, moderate pavement raveling and slight pavement edge cracking.



Photograph 93 – Bramalea Road, Southbound, looking North, approximately 55 m South of Railway, showing moderate longitudinal and transverse cracking associated with slight random cracking and moderate pavement raveling.



Photograph 94 – Bramalea Road, Northbound, looking South, approximately 100 m South of Railway, showing severe longitudinal and transverse cracking associated with moderate random cracking, moderate block cracking, moderate pavement raveling and moderate pavement edge cracking.



Photograph 95 – Bramalea Road, Northbound, looking South, approximately 130 m South of Railway, showing severe longitudinal and transverse cracking associated with moderate random cracking, moderate pavement raveling and slight block cracking.



Photograph 96 – Bramalea Road, Southbound, looking North, approximately 170 m South of Railway, showing moderate to severe longitudinal and transverse cracking associated with moderate random cracking, moderate pavement raveling, slight block cracking and slight alligator cracking.



Photograph 97 – Bramalea Road, Northbound, looking South, approximately 120 m North of the crossing over Highway 407, showing severe longitudinal and transverse cracking associated with severe random cracking, moderate alligator cracking, moderate block cracking and moderate pavement raveling.



Photograph 98 – Bramalea Road, Southbound, looking North, approximately 80 m North of the crossing over Highway 407, showing moderate longitudinal and transverse cracking associated with moderate random cracking, moderate pavement raveling and slight alligator cracking.



Photograph 99 – Bramalea Road, Northbound, looking South, approximately 90 m South of Highway 407, showing moderate to severe longitudinal and transverse cracking associated with moderate to severe random cracking, moderate alligator cracking, severe pavement edge cracking and moderate pavement raveling.



Photograph 100 – Bramalea Road, Southbound, looking North, near West-South Ramp of Highway 407, showing slight longitudinal and transverse cracking associated with slight to moderate random cracking, slight alligator cracking, and moderate pavement raveling.



Photograph 101 – Bramalea Road, Northbound, looking South, near East-South ramp of Highway 407, showing moderate longitudinal and transverse cracking associated with moderate random cracking, moderate pavement edge cracking and slight to moderate pavement raveling.



Photograph 102 – Bramalea Road, Southbound, looking North, approximately 235 m South of Highway 407, showing slight to moderate longitudinal and transverse cracking associated with slight to moderate random cracking and slight to moderate pavement raveling.



Photograph 103 – Bramalea Road, Northbound, looking South, approximately 290 m South of Highway 407, showing slight to moderate longitudinal and transverse cracking associated with slight random cracking, slight alligator cracking and slight pavement raveling.



Photograph 104 – Bramalea Road, Southbound, looking North, approximately 320 m South of Highway 407, showing slight to moderate longitudinal cracking associated with slight random cracking and slight to moderate pavement raveling.



Photograph 105 – Bramalea Road, Northbound, looking South, approximately 370 m South of Highway 407, showing moderate longitudinal and transverse cracking associated with slight random cracking, slight longitudinal construction joint and slight to moderate pavement raveling.



Photograph 106 – Bramalea Road, Southbound, looking North, approximately 420 m South of Highway 407, showing moderate longitudinal and transverse cracking associated with slight to moderate random cracking and slight to moderate pavement raveling.



Photograph 107 – Bramalea Road, Southbound, looking North, approximately 445 m South of Highway 407, showing slight longitudinal and transverse cracking associated with slight random cracking and slight to moderate pavement raveling.



Photograph 108 – Bramalea Road, Northbound, looking South, approximately 515 m South of Highway 407, showing moderate longitudinal and transverse cracking associated with moderate random cracking and slight to moderate pavement raveling. Noting utility patching.



Photograph 109 – Bramalea Road, Southbound, looking North, approximately 570 m South of Highway 407, showing slight to moderate longitudinal and transverse cracking associated with slight to moderate random cracking and slight to moderate pavement raveling.



Photograph 110 – Bramalea Road, Northbound, looking South, approximately 645 m South of Highway 407, showing moderate longitudinal and transverse cracking associated with slight to moderate random cracking and moderate pavement raveling.



Photograph 111 – Bramalea Road, Northbound, looking South, approximately 700 m South of Highway 407, showing moderate longitudinal and transverse cracking associated with moderate random cracking, slight block cracking and moderate to severe pavement raveling.



Photograph 112 – Bramalea Road, Northbound, looking South, approximately 720 m South of Highway 407, showing severe longitudinal and transverse cracking associated with moderate to severe random cracking, severe blocking cracking, slight longitudinal construction joint and moderate pavement raveling. Noting sections of patching.



Photograph 113 – Bramalea Road, Northbound, looking South, approximately 790 m South of Highway 407, showing severe longitudinal and transverse cracking associated with moderate to severe random cracking, severe block cracking, slight longitudinal construction joint and moderate pavement raveling. Noting sections of patching.



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APPENDIX B



Photograph 1 : CH1



Photograph 2 : CH2



Photograph 3 : CH3



Photograph 4 : CH4



Photograph 5 : CH5



Photograph 6 : CH6



Photograph 7 : CH7



Photograph 8 : CH8



Photograph 9 : CH9



Photograph 10 : CH10



Photograph 11 : CH11



Photograph 12 : CH12



Photograph 13 : CH13



Photograph 14 : CH14



Photograph 15 : CH15



Photograph 16 : CH16



Photograph 17 : CH17



Photograph 18 : CH18



Photograph 19 : CH19



Photograph 20 : CH20



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APPENDIX C

Final report

Client : Eurofins Environment Testing Canada - Ottawa
 Contact :
 Address : 146 Colonnade Road Unit 8.
 Ottawa
 Ontario, Canada
 K2E 7Y1

Telephone : (613) 727-5692
 Fax : -

Sampling Date : July 22, 2022	Reception Date : July 25, 2022	Result Date : July 29, 2022	Approval Date : August 1, 2022
----------------------------------	-----------------------------------	--------------------------------	-----------------------------------

Contractor : Geo Pro Consulting # Installation :
 Project number or Purchase Order (PO) : 40 Vogell Rd, Unit 57, Richmond Hill
 : L4B 3K6
 Sampled by : N/A

01 : Sample identification : Ottawa Project: 1982480

Sampling point location : 18-2325GHE-2362 / BH101 Sample condition : Compliant Our reference to the MDDELCC :
 Type of sample : Building material Sample origin : Sampling point :

Analysis of Asbestos and Materials

Analysis	Method	Ini.
Asbestos Bulk Material Analysis (PLM) - Ontario - reg. - Layer #1 Composition: Dark brown asphalt ASBESTOS FIBERS: Not detected Non-fibrous material: >90% Natural fibers: <1%	Microscopy, polarization and dispersion of colors - EPA METHOD EPA/600/R-93/116 (modified)	MK

02 : Sample identification : Ottawa Project: 1982480

Sampling point location : 18-2325GHE-2362 / BH104 Sample condition : Compliant Our reference to the MDDELCC :
 Type of sample : Building material Sample origin : Sampling point :

Analysis of Asbestos and Materials

Analysis	Method	Ini.
Asbestos Bulk Material Analysis (PLM) - Ontario - reg. - Layer #1 Composition: Dark brown asphalt ASBESTOS FIBERS: Detected (+) Asbestos type: Chrysotile 0.5 to 1% Non-fibrous material: >90% Natural fibers: <1%	Microscopy, polarization and dispersion of colors - EPA METHOD EPA/600/R-93/116 (modified)	MK

03 : Sample identification : Ottawa Project: 1982480

Sampling point location : 18-2325GHE-2362 / BH113 Sample condition : Compliant Our reference to the MDDELCC :
 Type of sample : Building material Sample origin : Sampling point :

Analysis of Asbestos and Materials

Analysis	Method	Ini.
Asbestos Bulk Material Analysis (PLM) - Ontario - reg. - Layer #1 Composition: Black asphalt ASBESTOS FIBERS: Not detected Non-fibrous material: >90% Natural fibers: <1%	Microscopy, polarization and dispersion of colors - EPA METHOD EPA/600/R-93/116 (modified)	MK

04 : Sample identification : Ottawa Project: 1982480

Sampling point location : 18-2325GHE-2362 / BH119

Sample condition : Compliant

Our reference to the MDDELCC :

Type of sample : Building material

Sample origin :

Sampling point :

Analysis of Asbestos and Materials

Analysis	Method	Ini.
Asbestos Bulk Material Analysis (PLM) - Ontario - reg. - Layer #1 Composition: Black asphalt ASBESTOS FIBERS: Not detected Non-fibrous material: >90% Natural fibers: <1%	Microscopy, polarization and dispersion of colors - EPA METHOD EPA/600/R-93/116 (modified)	MK

05 : Sample identification : Ottawa Project: 1982480

Sampling point location : 18-2325GHE-2362 / BH125

Sample condition : Compliant

Our reference to the MDDELCC :

Type of sample : Building material

Sample origin :

Sampling point :

Analysis of Asbestos and Materials

Analysis	Method	Ini.
Asbestos Bulk Material Analysis (PLM) - Ontario - reg. - Layer #1 Composition: Black asphalt ASBESTOS FIBERS: Not detected Non-fibrous material: >90% Natural fibers: <1%	Microscopy, polarization and dispersion of colors - EPA METHOD EPA/600/R-93/116 (modified)	MK

06 : Sample identification : Ottawa Project: 1982480

Sampling point location : 18-2325GHE-2362 / BH133

Sample condition : Compliant

Our reference to the MDDELCC :

Type of sample : Building material

Sample origin :

Sampling point :

Analysis of Asbestos and Materials

Analysis	Method	Ini.
Asbestos Bulk Material Analysis (PLM) - Ontario - reg. - Layer #1 Composition: Dark brown asphalt ASBESTOS FIBERS: Not detected Non-fibrous material: >90% Natural fibers: <1%	Microscopy, polarization and dispersion of colors - EPA METHOD EPA/600/R-93/116 (modified)	MK

07 : Sample identification : Ottawa Project: 1982480

Sampling point location : 18-2325GHE-2362 / BH136

Sample condition : Compliant

Our reference to the MDDELCC :

Type of sample : Building material

Sample origin :

Sampling point :

Analysis of Asbestos and Materials

Analysis	Method	Ini.
Asbestos Bulk Material Analysis (PLM) - Ontario - reg. - Layer #1 Composition: Black asphalt ASBESTOS FIBERS: Detected (+) Asbestos type: Chrysotile 0.5 to 1% Non-fibrous material: >90% Natural fibers: <1%	Microscopy, polarization and dispersion of colors - EPA METHOD EPA/600/R-93/116 (modified)	MK

08 : Sample identification : Ottawa Project: 1982480

Sampling point location : 18-2325GHE-2362 / BH141

Sample condition : Compliant

Our reference to the MDDELCC :

Type of sample : Building material

Sample origin :

Sampling point :

Analysis of Asbestos and Materials

Analysis	Method	Ini.
Asbestos Bulk Material Analysis (PLM) - Ontario - reg. - Layer #1 Composition: Black asphalt ASBESTOS FIBERS: Not detected Non-fibrous material: >90% Natural fibers: <1%	Microscopy, polarization and dispersion of colors - EPA METHOD EPA/600/R-93/116 (modified)	MK

09 : Sample identification : Ottawa Project: 1982480

Sampling point location : 18-2325GHE-2362 / BH147

Sample condition : Compliant

Our reference to the MDDELCC :

Type of sample : Building material

Sample origin :

Sampling point :

Analysis of Asbestos and Materials

Analysis	Method	Ini.
Asbestos Bulk Material Analysis (PLM) - Ontario - reg. - Layer #1 Composition: Black asphalt ASBESTOS FIBERS: Not detected Non-fibrous material: >90% Natural fibers: <1%	Microscopy, polarization and dispersion of colors - EPA METHOD EPA/600/R-93/116 (modified)	MK

Comments : Date of sampling:

BH101: 2021-12-03

BH104: 2021-11-25

BH113: 2022-02-11

BH119: 2022-02-10

BH125: 2022-02-11

BH133: 2022-04-20

BH136: 2022-06-23

BH141: 2022-07-22

BH147: 2022-04-26

N.B. : The mention "asbestos fibers: Detected" confirms that the concentration is estimated to be greater than 0.5%.
This analytical method is semi-quantitative. The domain of applicability of the method varies from <1% to 100% (v/v).

Legend for bulk asbestos analysis

Results confirming allowed norm :

Negative (none-detected) / Trace (<0,5%)

Results confirming the presence of asbestos:

Detected (+); <1% / 1-5% / 5-10% / 10-25% / 25-50% / 50-75% / 75-90% / >90%

Approvals by :


Antoine Godefroid, Anplante

Analyses are performed in Eurofins-EnviroX Laboratories of Quebec. These are accredited by the Ministère de l'Environnement et de la Lutte contre les Changements Climatiques (MELCC), we follow the accreditation program for analytical laboratories (PALA). PALA is based on the international standard ISO / IEC 17025.

Our asbestos department participate to the «BAPAT» program, is certified proficient by the AIHA and is recognized by the IRSST.

Our air Microbiology department at Québec city laboratory, participate to the «EMPAT» program from AIHA and is recognized proficient by this body.

This certificate may not be reproduced except in full, without written permission from the laboratory. Results are only applicable to the samples provided for analysis, as received at the laboratory.

CLIENT INFORMATION				INVOICE INFORMATION (SAME AS CLIENT INFORMATION: YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>)																		
Company: GeoPro Consulting Limited				Company:				Fax:														
Contact: ELab elab@geoproconsulting.ca				Contact:				Email: #1:														
Address: 40 Vogell Road, unit 23, Richmond Hill, ON L4B 3N6				Address:				Email: #2:														
Telephone: 905-237-8336		Cell:		Telephone:				PO #:														
Email: #1: dylanx@geoproconsulting.ca; kriska@geoproconsulting.ca				REGULATION/GUIDELINE REQUIRED <input type="checkbox"/> Sanitary Sewer, City: _____ <input type="checkbox"/> Storm Sewer, City: _____ <input type="checkbox"/> ODWSOG <input type="checkbox"/> PWQO <input type="checkbox"/> O. Reg 347/558 <input checked="" type="checkbox"/> Other: ASBESTOS <input type="checkbox"/> None <input type="checkbox"/> O. Reg 153 Table # ____, Course / Fine, Surface / subsurface. Type: Com-Ind / Res-Park / Agri / GW / All Other / Sediment <input type="checkbox"/> Excess Soil, Table: _____ Type: _____ The sample results from this submission will form part of a formal Record of Site Condition (RSC) under O.Reg. 153/04 <input type="checkbox"/> Yes <input type="checkbox"/> No																		
Email: #2: elab@geoproconsulting.ca; irisg@geoproconsulting.ca																						
Project: 18-2325GHE-2362		Quote #: 191248																				
TURN-AROUND TIME (Business Days)																						
<input type="checkbox"/> 1 Day* (100%)	<input type="checkbox"/> 2 Day** (50%)	<input type="checkbox"/> 3-5 Days (25%)	<input checked="" type="checkbox"/> 5-7 Days (Standard)																			
Please contact Lab in advance to determine rush availability. *For results reported after rush due date, surcharges will apply: before 12:00 - 100%, after 12:00 - 50%. **For results reported after rush due date, surcharges will apply: before 12:00 - 50%, after 12:00 - 25%.																						
The optimal temperature conditions during transport should be less than 10°C. Sample(s) cannot be frozen, unless otherwise indicated or agreed upon with the Laboratory. Note that this COC is not to be used for drinking water samples. The COC must be complete upon submission of the samples, there will be a \$25 surcharge if required information is missing (required fields are shaded in grey).				Sample Details				Sample Analysis Required								RN# (Lab Use Only)						
				Field Filtered -->				O.Reg.153 parameters														
Sample ID		Date/Time Collected		Sample Matrix	# of Containers	PHC F1 - FA	BTEX	VOCS	PAHs	PCBs	Metals + Inorganics	Metals only	ASBESTOS									
BH101		12/03/2021		ASP	1								✓									
BH104		11/25/2021		ASP	1								✓									
BH113		02/11/2022		ASP	1								✓									
BH119		02/10/2022		ASP	1								✓									
BH125		02/11/2022		ASP	1								✓									
BH133		04/20/2022		ASP	1								✓									
BH136		06/23/2022		ASP	1								✓									
BH141		07/22/2022		ASP	1								✓									
BH147		04/26/2022		ASP	1								✓									
PRINT				SIGN				DATE/TIME				TEMP (°C)				COMMENTS:						
Sampled By:				SIGN				DATE/TIME				TEMP (°C)										
Relinquished By: KJ				SIGN				DATE/TIME				TEMP (°C)										
Received By: Victor Gallant				SIGN				DATE/TIME				TEMP (°C)										
								July 25, 2022				21.0°C				CUSTODY SEAL: <input type="checkbox"/> YES <input type="checkbox"/> NO Ice packs submitted: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No						



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APPENDIX D

TRAFFIC DATA AND ESTIMATED EQUIVALENT SINGLE AXLE LOAD (ESAL)

Bramalea Road

From Queen Street to South City Limit

YEAR	AVERAGE ANNUAL DAILY TRAFFIC	No. OF LANES	ESTIMATED CUMULATIVE ANNUAL ESALS
2016	24,000	4	
2017	24,240	4	
2018	24,482	4	
2019	24,727	4	
2020	24,974	4	
2021	25,224	4	
2022	25,476	4	
2023	25,731	4	507,500
2024	25,989	4	1,020,100
2025	26,248	4	1,537,800
2026	26,511	4	2,060,700
2027	26,776	4	2,588,800
2028	27,044	4	3,122,200
2029	27,314	4	3,661,000
2030	27,587	4	4,205,200
2031	27,863	4	4,754,800
2032	28,142	4	5,309,900
2033	28,423	4	5,870,500
2034	28,708	4	6,436,700
2035	28,995	4	7,008,600
2036	29,285	4	7,586,200
2037	29,577	4	8,169,600
2038	29,873	4	8,758,800
2039	30,172	4	9,353,900
2040	30,474	4	9,955,000
2041	30,778	4	10,562,100
2042	31,086	4	11,175,300

Directional Factor (DF) =	0.5
Lane Distribution Factor (LDF) =	0.8
Combined Truck Factor (CTF) =	1.93
Percent Trucks =	7.0%
Annual Traffic Growth Rate =	1.0%
Days Per Year for Truck Traffic =	365
Number of Lanes in One Direction =	2

Flexible Structural Design Calculated Design Structural Number

The screenshot shows a software window titled "Asphalt Design Inputs" with a standard Windows-style title bar (minimize, maximize, close buttons). The window is divided into two main sections. The top section, titled "Asphalt Pavement Design/Analysis Inputs", contains several input fields and a calculation button. The bottom section, titled "Asphalt Pavement Design/Analysis", shows the result of the calculation and a "Solve For" button. On the right side of the window, there are two buttons: "Save and Close" and "Help".

Parameter	Value	Unit
Asphalt Structural Number	145.64	
Total Flexible ESALs	11,175,300	
Reliability	90.00	%
Overall Standard Deviation	0.46	
Subgrade Resilient Modulus	30.0	MPa
Initial Serviceability	4.50	
Terminal Serviceability	2.50	

Asphalt Structural Number: 145.64

WinPAS

Pavement Thickness Design According to
1993 AASHTO Guide for Design of Pavements Structures
American Concrete Pavement Association

Flexible Design Inputs

Project Name: GeoPro Project: 18-2325GHE Geotechnical Investigation - Proposed R
Route:
Location: Bramalea Road from Queen Street to South City Limit, City of Brampto
Owner/Agency:
Design Engineer:

Flexible Pavement Design/Evaluation

Structural Number	94.91	Subgrade Resilient Modulus	30.00 MPa
Total Flexible ESALs	11,175,300	Initial Serviceability	4.50
Reliability	90.00 percent	Terminal Serviceability	2.50
Overall Standard Deviation	0.46		

Layer Pavement Design/Evaluation

Layer Material	Layer Coefficient	Drainage Coefficient	Layer Thickness	Layer SN
Existing Hot Mix Asphalt	0.26	1.00	175.00	45.50
Existing Granular Base/Subbase	0.09	0.90	610.00	49.41
			Σ SN	94.91

WinPAS

Pavement Thickness Design According to
1993 AASHTO Guide for Design of Pavements Structures
American Concrete Pavement Association

Flexible Design Inputs

Project Name: GeoPro Project: 18-2325GHE Geotechnical Investigation - Proposed R
Route:
Location: Bramalea Road from Queen Street to South City Limit, City of Brampto
Owner/Agency:
Design Engineer:

Flexible Pavement Design/Evaluation

Structural Number	94.91	Subgrade Resilient Modulus	30.00 MPa
Total Flexible ESALs	11,175,300	Initial Serviceability	4.50
Reliability	90.00 percent	Terminal Serviceability	2.50
Overall Standard Deviation	0.46		

Layer Pavement Design/Evaluation

Layer Material	Layer Coefficient	Drainage Coefficient	Layer Thickness	Layer SN
New Hot Mix Asphalt	0.42	1.00	180.00	75.60
Pulverized Materials	0.12	1.00	270.00	32.40
Existing Granular Base/Subbase	0.09	0.90	475.00	38.48
			Σ SN	146.48

WinPAS

Pavement Thickness Design According to
1993 AASHTO Guide for Design of Pavements Structures
American Concrete Pavement Association

Flexible Design Inputs

Project Name: GeoPro Project: 18-2325GHE Geotechnical Investigation - Proposed R
Route:
Location: Bramalea Road from Queen Street to South City Limit, City of Brampto
Owner/Agency:
Design Engineer:

Flexible Pavement Design/Evaluation

Structural Number	94.91	Subgrade Resilient Modulus	30.00 MPa
Total Flexible ESALs	11,175,300	Initial Serviceability	4.50
Reliability	90.00 percent	Terminal Serviceability	2.50
Overall Standard Deviation	0.46		

Layer Pavement Design/Evaluation

Layer Material	Layer Coefficient	Drainage Coefficient	Layer Thickness	Layer SN
New Hot Mix Asphalt	0.42	1.00	200.00	84.00
New Granular A Native Base	0.14	1.00	250.00	35.00
Existing Granular Base/Subbase	0.09	0.90	335.00	27.14
			Σ SN	146.14

WinPAS

Pavement Thickness Design According to
1993 AASHTO Guide for Design of Pavements Structures
American Concrete Pavement Association

Flexible Design Inputs

Project Name: GeoPro Project: 18-2325GHE Geotechnical Investigation - Proposed R
Route:
Location: Bramalea Road from Queen Street to South City Limit, City of Brampto
Owner/Agency:
Design Engineer:

Flexible Pavement Design/Evaluation

Structural Number	94.91	Subgrade Resilient Modulus	30.00 MPa
Total Flexible ESALs	11,175,300	Initial Serviceability	4.50
Reliability	90.00 percent	Terminal Serviceability	2.50
Overall Standard Deviation	0.46		

Layer Pavement Design/Evaluation

Layer Material	Layer Coefficient	Drainage Coefficient	Layer Thickness	Layer SN
New Hot Mix Asphalt	0.42	1.00	180.00	75.60
New Granular A Native Base	0.14	1.00	150.00	21.00
New Granular B Type I Subbase	0.09	1.00	550.00	49.50
			Σ SN	146.10



GeoPro Consulting Limited

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APPENDIX E



GeoPro Consulting Limited (Richmond Hill)
ATTN: Sarena Medina
40 Vogell Road
Unit 57
Richmond Hill ON L4B 3N6

Date Received: 18-JAN-22
Report Date: 27-JAN-22 11:06 (MT)
Version: FINAL

Client Phone: 905-237-8336

Certificate of Analysis

Lab Work Order #: L2679647
Project P.O. #: NOT SUBMITTED
Job Reference: 18-2325GHE-2170
C of C Numbers:
Legal Site Desc:

Costas Farassoglou
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 5730 Coopers Avenue, Unit #26, Mississauga, ON L4Z 2E9 Canada | Phone: +1 905 507 6910 | Fax: +1 905 507 6927
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

Summary of Guideline Exceedances

Guideline		Grouping	Analyte	Result	Guideline Limit	Unit
ALS ID	Client ID					
Ontario Regulation 153/04 - April 15, 2011 Standards - T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use						
L2679647-1	BH215 AS2	Physical Tests	Conductivity	1.54	0.57	mS/cm
		Saturated Paste Extractables	SAR	37.4	2.4	SAR
		Hydrocarbons	F2 (C10-C16)	41	10	ug/g
			F3 (C16-C34)	536	240	ug/g
			F4 (C34-C50)	1600	120	ug/g
			F4G-SG (GHH-Silica)	4340	120	ug/g
L2679647-2	BH111 AS2	Physical Tests	Conductivity	2.06	0.57	mS/cm
		Saturated Paste Extractables	SAR	50.0	2.4	SAR
L2679647-3	BH102 AS2	Physical Tests	Conductivity	2.68	0.57	mS/cm
		Saturated Paste Extractables	SAR	17.7	2.4	SAR
L2679647-4	BH209 AS2	Physical Tests	Conductivity	1.61	0.57	mS/cm
		Saturated Paste Extractables	SAR	6.90	2.4	SAR

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Physical Tests - SOIL

Lab ID	L2679647-1	L2679647-2	L2679647-3	L2679647-4
Sample Date	07-JAN-22	07-JAN-22	29-DEC-21	29-DEC-21
Sample ID	BH215 AS2	BH111 AS2	BH102 AS2	BH209 AS2

Analyte	Unit	Guide Limits					
		#1	#2				
Conductivity	mS/cm	0.57	-	1.54	2.06	2.68	1.61
% Moisture	%	-	-	7.30	10.8	18.3	15.8
pH	pH units	-	-	8.14	7.97	7.75	7.39

Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

- Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
- Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Cyanides - SOIL

Lab ID	L2679647-1	L2679647-2	L2679647-3	L2679647-4
Sample Date	07-JAN-22	07-JAN-22	29-DEC-21	29-DEC-21
Sample ID	BH215 AS2	BH111 AS2	BH102 AS2	BH209 AS2

Analyte	Unit	Guide Limits					
		#1	#2				
Cyanide, Weak Acid Diss	ug/g	0.051	-	<0.050	<0.050	<0.050	<0.050

Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

- Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
- Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Saturated Paste Extractables - SOIL

Lab ID	L2679647-1	L2679647-2	L2679647-3	L2679647-4
Sample Date	07-JAN-22	07-JAN-22	29-DEC-21	29-DEC-21
Sample ID	BH215 AS2	BH111 AS2	BH102 AS2	BH209 AS2

Analyte	Unit	Guide Limits					
		#1	#2				
SAR	SAR	2.4	-	37.4 ^{SAR:M}	50.0 ^{SAR:M}	17.7	6.90
Calcium (Ca)	mg/L	-	-	4.25	4.10	36.8	69.8
Magnesium (Mg)	mg/L	-	-	<0.50	<0.50	6.21	8.74
Sodium (Na)	mg/L	-	-	280	368	442	230

Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

- Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
- Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Metals - SOIL

Analyte	Unit	Guide Limits					
		#1	#2				
Antimony (Sb)	ug/g	1.3	-	<1.0	<1.0	<1.0	<1.0
Arsenic (As)	ug/g	18	-	5.3	3.1	5.8	5.2
Barium (Ba)	ug/g	220	-	57.7	41.4	117	112
Beryllium (Be)	ug/g	2.5	-	0.71	<0.50	1.02	0.93
Boron (B)	ug/g	36	-	12.5	<5.0	7.6	9.2
Boron (B), Hot Water Ext.	ug/g	36	-	0.35	0.11	0.11	0.55
Cadmium (Cd)	ug/g	1.2	-	<0.50	<0.50	<0.50	<0.50
Chromium (Cr)	ug/g	70	-	32.7	15.4	31.6	34.8
Cobalt (Co)	ug/g	21	-	10.5	5.2	12.8	11.7
Copper (Cu)	ug/g	92	-	36.3	15.8	29.8	29.0
Lead (Pb)	ug/g	120	-	21.8	7.6	12.6	51.2
Mercury (Hg)	ug/g	0.27	-	0.0103	0.0095	0.0295	0.0339
Molybdenum (Mo)	ug/g	2	-	1.5	<1.0	<1.0	1.1
Nickel (Ni)	ug/g	82	-	23.7	10.0	26.3	23.0
Selenium (Se)	ug/g	1.5	-	<1.0	<1.0	<1.0	<1.0
Silver (Ag)	ug/g	0.5	-	<0.20	<0.20	<0.20	<0.20
Thallium (Tl)	ug/g	1	-	<0.50	<0.50	<0.50	<0.50
Uranium (U)	ug/g	2.5	-	<1.0	<1.0	<1.0	<1.0
Vanadium (V)	ug/g	86	-	31.7	19.8	42.0	39.6
Zinc (Zn)	ug/g	290	-	95.9	36.8	68.1	93.0

Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

- Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
- Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Speciated Metals - SOIL

		Lab ID					
		L2679647-1	L2679647-2	L2679647-3	L2679647-4		
		Sample Date					
		07-JAN-22	07-JAN-22	29-DEC-21	29-DEC-21		
		Sample ID					
		BH215 AS2	BH111 AS2	BH102 AS2	BH209 AS2		
Guide Limits							
Analyte	Unit	#1	#2				
Chromium, Hexavalent	ug/g	0.66	-	0.34	0.22	0.30	<0.20

Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

- Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
- Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Volatile Organic Compounds - SOIL

Lab ID	L2679647-1	L2679647-2
Sample Date	07-JAN-22	07-JAN-22
Sample ID	BH215 AS2	BH111 AS2

Analyte	Unit	Guide Limits			
		#1	#2		
Acetone	ug/g	0.5	-	<0.50	<0.50
Benzene	ug/g	0.02	-	<0.0068	<0.0068
Bromodichloromethane	ug/g	0.05	-	<0.050	<0.050
Bromoform	ug/g	0.05	-	<0.050	<0.050
Bromomethane	ug/g	0.05	-	<0.050	<0.050
Carbon tetrachloride	ug/g	0.05	-	<0.050	<0.050
Chlorobenzene	ug/g	0.05	-	<0.050	<0.050
Dibromochloromethane	ug/g	0.05	-	<0.050	<0.050
Chloroform	ug/g	0.05	-	<0.050	<0.050
1,2-Dibromoethane	ug/g	0.05	-	<0.050	<0.050
1,2-Dichlorobenzene	ug/g	0.05	-	<0.050	<0.050
1,3-Dichlorobenzene	ug/g	0.05	-	<0.050	<0.050
1,4-Dichlorobenzene	ug/g	0.05	-	<0.050	<0.050
Dichlorodifluoromethane	ug/g	0.05	-	<0.050	<0.050
1,1-Dichloroethane	ug/g	0.05	-	<0.050	<0.050
1,2-Dichloroethane	ug/g	0.05	-	<0.050	<0.050
1,1-Dichloroethylene	ug/g	0.05	-	<0.050	<0.050
cis-1,2-Dichloroethylene	ug/g	0.05	-	<0.050	<0.050
trans-1,2-Dichloroethylene	ug/g	0.05	-	<0.050	<0.050
Methylene Chloride	ug/g	0.05	-	<0.050	<0.050
1,2-Dichloropropane	ug/g	0.05	-	<0.050	<0.050
cis-1,3-Dichloropropene	ug/g	-	-	<0.030	<0.030
trans-1,3-Dichloropropene	ug/g	-	-	<0.030	<0.030
1,3-Dichloropropene (cis & trans)	ug/g	0.05	-	<0.042	<0.042
Ethylbenzene	ug/g	0.05	-	<0.018	<0.018
n-Hexane	ug/g	0.05	-	<0.050	<0.050
Methyl Ethyl Ketone	ug/g	0.5	-	<0.50	<0.50
Methyl Isobutyl Ketone	ug/g	0.5	-	<0.50	<0.50
MTBE	ug/g	0.05	-	<0.050	<0.050
Styrene	ug/g	0.05	-	<0.050	<0.050

Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Volatile Organic Compounds - SOIL

Lab ID	L2679647-1	L2679647-2
Sample Date	07-JAN-22	07-JAN-22
Sample ID	BH215 AS2	BH111 AS2

Analyte	Unit	Guide Limits			
		#1	#2		
1,1,1,2-Tetrachloroethane	ug/g	0.05	-	<0.050	<0.050
1,1,2,2-Tetrachloroethane	ug/g	0.05	-	<0.050	<0.050
Tetrachloroethylene	ug/g	0.05	-	<0.050	<0.050
Toluene	ug/g	0.2	-	<0.080	<0.080
1,1,1-Trichloroethane	ug/g	0.05	-	<0.050	<0.050
1,1,2-Trichloroethane	ug/g	0.05	-	<0.050	<0.050
Trichloroethylene	ug/g	0.05	-	<0.010	<0.010
Trichlorofluoromethane	ug/g	0.25	-	<0.050	<0.050
Vinyl chloride	ug/g	0.02	-	<0.020	<0.020
o-Xylene	ug/g	-	-	<0.020	<0.020
m+p-Xylenes	ug/g	-	-	<0.030	<0.030
Xylenes (Total)	ug/g	0.05	-	<0.050	<0.050
Surrogate: 4-Bromofluorobenzene	%	-	-	71.5	74.7
Surrogate: 1,4-Difluorobenzene	%	-	-	97.1	99.6

Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

- Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
- Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Hydrocarbons - SOIL

Lab ID	L2679647-1	L2679647-2
Sample Date	07-JAN-22	07-JAN-22
Sample ID	BH215 AS2	BH111 AS2

Analyte	Unit	Guide Limits			
		#1	#2		
F1 (C6-C10)	ug/g	25	-	<5.0	<5.0
F1-BTEX	ug/g	25	-	<5.0	<5.0
F2 (C10-C16)	ug/g	10	-	41	<10
F3 (C16-C34)	ug/g	240	-	536	<50
F4 (C34-C50)	ug/g	120	-	1600	<50
F4G-SG (GHH-Silica)	ug/g	120	-	4340	
Total Hydrocarbons (C6-C50)	ug/g	-	-	2180	<72
Chrom. to baseline at nC50		-	-	NO	YES
Surrogate: 2-Bromobenzotrifluoride	%	-	-	101.1	87.8
Surrogate: 3,4-Dichlorotoluene	%	-	-	69.2	83.8

Guide Limit #1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

- Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
- Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Reference Information

Qualifiers for Individual Parameters Listed:

Qualifier	Description
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SAR:M Reported SAR represents a maximum value. Actual SAR may be lower if both Ca and Mg were detectable.

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**
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B-HWS-R511-WT Soil Boron-HWE-O.Reg 153/04 (July 2011) HW EXTR, EPA 6010B

A dried solid sample is extracted with calcium chloride, the sample undergoes a heating process. After cooling the sample is filtered and analyzed by ICP/OES.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011 and as of November 30, 2020), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

CN-WAD-R511-WT Soil Cyanide (WAD)-O.Reg 153/04 (July 2011) MOE 3015/APHA 4500CN I-WAD

The sample is extracted with a strong base for 16 hours, and then filtered. The filtrate is then distilled where the cyanide is converted to cyanogen chloride by reacting with chloramine-T, the cyanogen chloride then reacts with a combination of barbituric acid and isonicotinic acid to form a highly colored complex.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011 and as of November 30, 2020), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

CR-CR6-IC-WT Soil Hexavalent Chromium in Soil SW846 3060A/7199

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 7199, published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

EC-WT Soil Conductivity (EC) MOEE E3138

A representative subsample is tumbled with de-ionized (DI) water. The ratio of water to soil is 2:1 v/w. After tumbling the sample is then analyzed by a conductivity meter.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

F1-F4-511-CALC-WT Soil F1-F4 Hydrocarbon Calculated Parameters CCME CWS-PHC, Pub #1310, Dec 2001-S

Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.

Hydrocarbon results are expressed on a dry weight basis.

In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.

In samples where BTEX and F1 were analyzed, F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.

In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:

1. All extraction and analysis holding times were met.

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**
		2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene. 3. Linearity of gasoline response within 15% throughout the calibration range.	
		Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges: 1. All extraction and analysis holding times were met. 2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average. 3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors. 4. Linearity of diesel or motor oil response within 15% throughout the calibration range.	
F1-HS-511-WT	Soil	F1-O.Reg 153/04 (July 2011)	E3398/CCME TIER 1-HS
		Fraction F1 is determined by extracting a soil or sediment sample as received with methanol, then analyzing by headspace-GC/FID.	
		Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011 and as of November 30, 2020), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).	
F2-F4-511-WT	Soil	F2-F4-O.Reg 153/04 (July 2011)	CCME Tier 1
		Petroleum Hydrocarbons (F2-F4 fractions) are extracted from soil with 1:1 hexane:acetone using a rotary extractor. Extracts are treated with silica gel to remove polar organic interferences. F2, F3, & F4 are analyzed by GC-FID. F4G-sg is analyzed gravimetrically.	
		Notes:	
		1. F2 (C10-C16): Sum of all hydrocarbons that elute between nC10 and nC16. 2. F3 (C16-C34): Sum of all hydrocarbons that elute between nC16 and nC34. 3. F4 (C34-C50): Sum of all hydrocarbons that elute between nC34 and nC50. 4. F4G: Gravimetric Heavy Hydrocarbons 5. F4G-sg: Gravimetric Heavy Hydrocarbons (F4G) after silica gel treatment. 6. Where both F4 (C34-C50) and F4G-sg are reported for a sample, the larger of the two values is used for comparison against the relevant CCME guideline for F4. 7. F4G-sg cannot be added to the C6 to C50 hydrocarbon results to obtain an estimate of total extractable hydrocarbons. 8. This method is validated for use. 9. Data from analysis of validation and quality control samples is available upon request. 10. Reported results are expressed as milligrams per dry kilogram, unless otherwise indicated.	
		Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011 and as of November 30, 2020), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).	
F4G-ADD-511-WT	Soil	F4G SG-O.Reg 153/04 (July 2011)	MOE DECPH-E3398/CCME TIER 1
		F4G, gravimetric analysis, is determined if the chromatogram does not return to baseline at or before C50. A soil sample is extracted with a solvent mix, the solvent is evaporated and the weight of the residue is determined.	
		Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011 and as of November 30, 2020), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).	
HG-200.2-CVAA-WT	Soil	Mercury in Soil by CVAAS	EPA 200.2/1631E (mod)
		Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CVAAS.	
		Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).	
MET-200.2-CCMS-WT	Soil	Metals in Soil by CRC ICPMS	EPA 200.2/6020B (mod)

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**
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Soil/sediment is dried, disaggregated, and sieved (2 mm). For tests intended to support Ontario regulations, the <2mm fraction is ground to pass through a 0.355 mm sieve. Strong Acid Leachable Metals in the <2mm fraction are solubilized by heated digestion with nitric and hydrochloric acids. Instrumental analysis is by Collision / Reaction Cell ICPMS.

Limitations: This method is intended to liberate environmentally available metals. Silicate minerals are not solubilized. Some metals may be only partially recovered (matrix dependent), including Al, Ba, Be, Cr, S, Sr, Ti, Tl, V, W, and Zr. Elemental Sulfur may be poorly recovered by this method. Volatile forms of sulfur (e.g. sulfide, H₂S) may be excluded if lost during sampling, storage, or digestion.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

MOISTURE-WT	Soil	% Moisture	CCME PHC in Soil - Tier 1 (mod)
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PH-WT	Soil	pH	MOEE E3137A
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A minimum 10g portion of the sample is extracted with 20mL of 0.01M calcium chloride solution by shaking for at least 30 minutes. The aqueous layer is separated from the soil and then analyzed using a pH meter and electrode.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

SAR-R511-WT	Soil	SAR-O.Reg 153/04 (July 2011)	SW846 6010C
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A dried, disaggregated solid sample is extracted with deionized water, the aqueous extract is separated from the solid, acidified and then analyzed using a ICP/OES. The concentrations of Na, Ca and Mg are reported as per CALA requirements for calculated parameters. These individual parameters are not for comparison to any guideline.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011 and as of November 30, 2020), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

VOC-1,3-DCP-CALC-WT	Soil	Regulation 153 VOCs	SW8260B/SW8270C
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VOC-511-HS-WT	Soil	VOC-O.Reg 153/04 (July 2011)	SW846 8260 (511)
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Soil and sediment samples are extracted in methanol and analyzed by headspace-GC/MS.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011 and as of November 30, 2020), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

XYLENES-SUM-CALC-WT	Soil	Sum of Xylene Isomer Concentrations	CALCULATION
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Total xylenes represents the sum of o-xylene and m&p-xylene.

**ALS test methods may incorporate modifications from specified reference methods to improve performance.

Chain of Custody Numbers:

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
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WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA
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Reference Information

L2679647 CONT'D....
Job Reference: 18-2325GHE-2170
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GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guideline limits are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.



Quality Control Report

Workorder: L2679647

Report Date: 05-JUL-22

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Client: GeoPro Consulting Limited (Richmond Hill)
 40 Vogell Road Unit 57
 Richmond Hill ON L4B 3N6

Contact: Sarena Medina

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
B-HWS-R511-WT								
	Soil							
Batch	R5708639							
WG3688717-4	DUP	L2679635-14						
Boron (B), Hot Water Ext.		<0.10	<0.10	RPD-NA	ug/g	N/A	30	26-JAN-22
WG3688717-2	IRM	WT SAR4						
Boron (B), Hot Water Ext.			72.7		%		70-130	26-JAN-22
WG3688717-3	LCS							
Boron (B), Hot Water Ext.			96.9		%		70-130	26-JAN-22
WG3688717-1	MB							
Boron (B), Hot Water Ext.			<0.10		ug/g		0.1	26-JAN-22
CN-WAD-R511-WT								
	Soil							
Batch	R5703696							
WG3686777-3	DUP	L2679134-70						
Cyanide, Weak Acid Diss		<0.050	<0.050	RPD-NA	ug/g	N/A	35	21-JAN-22
WG3686777-2	LCS							
Cyanide, Weak Acid Diss			91.2		%		80-120	21-JAN-22
WG3686777-1	MB							
Cyanide, Weak Acid Diss			<0.050		ug/g		0.05	21-JAN-22
WG3686777-4	MS	L2679134-70						
Cyanide, Weak Acid Diss			90.8		%		70-130	21-JAN-22
Batch	R5705196							
WG3687212-3	DUP	L2679561-5						
Cyanide, Weak Acid Diss		<0.050	<0.050	RPD-NA	ug/g	N/A	35	21-JAN-22
WG3687212-2	LCS							
Cyanide, Weak Acid Diss			97.5		%		80-120	21-JAN-22
WG3687212-1	MB							
Cyanide, Weak Acid Diss			<0.050		ug/g		0.05	21-JAN-22
WG3687212-4	MS	L2679561-5						
Cyanide, Weak Acid Diss			103.3		%		70-130	21-JAN-22
Batch	R5707000							
WG3687850-3	DUP	L2680131-10						
Cyanide, Weak Acid Diss		<0.050	<0.050	RPD-NA	ug/g	N/A	35	25-JAN-22
WG3687850-2	LCS							
Cyanide, Weak Acid Diss			91.7		%		80-120	25-JAN-22
WG3687850-1	MB							
Cyanide, Weak Acid Diss			<0.050		ug/g		0.05	25-JAN-22
WG3687850-4	MS	L2680131-10						
Cyanide, Weak Acid Diss			91.5		%		70-130	25-JAN-22

CR-CR6-IC-WT **Soil**



Quality Control Report

Workorder: L2679647

Report Date: 05-JUL-22

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Client: GeoPro Consulting Limited (Richmond Hill)
 40 Vogell Road Unit 57
 Richmond Hill ON L4B 3N6

Contact: Sarena Medina

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CR-CR6-IC-WT		Soil						
Batch	R5707666							
WG3687841-4	CRM	WT-SQC012						
Chromium, Hexavalent			80.3		%		70-130	25-JAN-22
WG3687841-3	DUP	L2679955-8						
Chromium, Hexavalent		0.75	<0.20	DUP-H,J	ug/g	N/A	35	25-JAN-22
WG3687841-2	LCS							
Chromium, Hexavalent			83.4		%		80-120	25-JAN-22
WG3687841-1	MB							
Chromium, Hexavalent			<0.20		ug/g		0.2	25-JAN-22
EC-WT		Soil						
Batch	R5708254							
WG3688778-4	DUP	WG3688778-3						
Conductivity		0.254	0.260		mS/cm	2.3	20	26-JAN-22
WG3688778-2	IRM	WT SAR4						
Conductivity			110.3		%		70-130	26-JAN-22
WG3689080-1	LCS							
Conductivity			94.5		%		90-110	26-JAN-22
WG3688778-1	MB							
Conductivity			<0.0040		mS/cm		0.004	26-JAN-22
F1-HS-511-WT		Soil						
Batch	R5700384							
WG3686363-4	DUP	WG3686363-3						
F1 (C6-C10)		<5.0	<5.0	RPD-NA	ug/g	N/A	30	19-JAN-22
WG3686363-2	LCS							
F1 (C6-C10)			106.9		%		80-120	19-JAN-22
WG3686363-1	MB							
F1 (C6-C10)			<5.0		ug/g		5	19-JAN-22
Surrogate: 3,4-Dichlorotoluene			103.5		%		60-140	19-JAN-22
WG3686363-5	MS	WG3686363-3						
F1 (C6-C10)			101.8		%		60-140	19-JAN-22
F2-F4-511-WT		Soil						
Batch	R5703359							
WG3686618-3	DUP	WG3686618-5						
F2 (C10-C16)		<100	<100	RPD-NA	ug/g	N/A	30	21-JAN-22
F3 (C16-C34)		540	<500	RPD-NA	ug/g	N/A	30	21-JAN-22
F4 (C34-C50)		1600	1340		ug/g	18	30	21-JAN-22
WG3686618-2	LCS							
F2 (C10-C16)			99.2		%		80-120	21-JAN-22



Quality Control Report

Workorder: L2679647

Report Date: 05-JUL-22

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Client: GeoPro Consulting Limited (Richmond Hill)
 40 Vogell Road Unit 57
 Richmond Hill ON L4B 3N6

Contact: Sarena Medina

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F2-F4-511-WT								
	Soil							
Batch	R5703359							
WG3686618-2	LCS							
F3 (C16-C34)			98.1		%		80-120	21-JAN-22
F4 (C34-C50)			105.9		%		80-120	21-JAN-22
WG3686618-1	MB							
F2 (C10-C16)			<10		ug/g		10	21-JAN-22
F3 (C16-C34)			<50		ug/g		50	21-JAN-22
F4 (C34-C50)			<50		ug/g		50	21-JAN-22
Surrogate: 2-Bromobenzotrifluoride			94.1		%		60-140	21-JAN-22
WG3686618-4	MS	WG3686618-5						
F2 (C10-C16)			87.3		%		60-140	21-JAN-22
F3 (C16-C34)			75.1		%		60-140	21-JAN-22
F4 (C34-C50)			N/A	MS-B	%		-	21-JAN-22
F4G-ADD-511-WT								
	Soil							
Batch	R5703757							
WG3687543-3	DUP	L2679647-1						
F4G-SG (GHH-Silica)		4340	3900		ug/g	11	40	20-JAN-22
WG3687543-2	LCS							
F4G-SG (GHH-Silica)			97.9		%		60-140	20-JAN-22
WG3687543-1	MB							
F4G-SG (GHH-Silica)			<250		ug/g		250	20-JAN-22
HG-200.2-CVAA-WT								
	Soil							
Batch	R5707858							
WG3688656-2	CRM	WT-SS-2						
Mercury (Hg)			102.8		%		70-130	26-JAN-22
WG3688656-6	DUP	WG3688656-5						
Mercury (Hg)		0.0230	0.0245		ug/g	6.7	40	26-JAN-22
WG3688656-3	LCS							
Mercury (Hg)			101.5		%		80-120	26-JAN-22
WG3688656-1	MB							
Mercury (Hg)			<0.0050		mg/kg		0.005	26-JAN-22
MET-200.2-CCMS-WT								
	Soil							
Batch	R5708387							
WG3688656-2	CRM	WT-SS-2						
Antimony (Sb)			111.3		%		70-130	26-JAN-22
Arsenic (As)			107.0		%		70-130	26-JAN-22
Barium (Ba)			109.2		%		70-130	26-JAN-22



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 40 Vogell Road Unit 57
 Richmond Hill ON L4B 3N6

Contact: Sarena Medina

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT								
Soil								
Batch	R5708387							
WG3688656-2	CRM	WT-SS-2						
Beryllium (Be)			114.0		%		70-130	26-JAN-22
Boron (B)			9.8		mg/kg		3.5-13.5	26-JAN-22
Cadmium (Cd)			99.6		%		70-130	26-JAN-22
Chromium (Cr)			106.0		%		70-130	26-JAN-22
Cobalt (Co)			104.9		%		70-130	26-JAN-22
Copper (Cu)			104.0		%		70-130	26-JAN-22
Lead (Pb)			109.9		%		70-130	26-JAN-22
Molybdenum (Mo)			111.3		%		70-130	26-JAN-22
Nickel (Ni)			105.8		%		70-130	26-JAN-22
Selenium (Se)			0.14		mg/kg		0-0.34	26-JAN-22
Silver (Ag)			112.0		%		70-130	26-JAN-22
Thallium (Tl)			0.080		mg/kg		0.029-0.129	26-JAN-22
Uranium (U)			100.5		%		70-130	26-JAN-22
Vanadium (V)			103.9		%		70-130	26-JAN-22
Zinc (Zn)			106.9		%		70-130	26-JAN-22
WG3688656-6	DUP	WG3688656-5						
Antimony (Sb)		0.23	0.37	J	ug/g	0.14	0.2	26-JAN-22
Arsenic (As)		5.82	6.03		ug/g	3.5	30	26-JAN-22
Barium (Ba)		114	111		ug/g	2.4	40	26-JAN-22
Beryllium (Be)		0.91	0.92		ug/g	1.4	30	26-JAN-22
Boron (B)		12.3	12.5		ug/g	1.5	30	26-JAN-22
Cadmium (Cd)		0.179	0.190		ug/g	6.0	30	26-JAN-22
Chromium (Cr)		27.5	28.2		ug/g	2.4	30	26-JAN-22
Cobalt (Co)		12.4	12.9		ug/g	3.6	30	26-JAN-22
Copper (Cu)		32.2	32.5		ug/g	1.0	30	26-JAN-22
Lead (Pb)		17.6	18.1		ug/g	2.5	40	26-JAN-22
Molybdenum (Mo)		0.50	0.50		ug/g	1.0	40	26-JAN-22
Nickel (Ni)		28.2	28.7		ug/g	1.9	30	26-JAN-22
Selenium (Se)		<0.20	<0.20	RPD-NA	ug/g	N/A	30	26-JAN-22
Silver (Ag)		0.12	0.11		ug/g	5.4	40	26-JAN-22
Thallium (Tl)		0.152	0.152		ug/g	0.1	30	26-JAN-22
Uranium (U)		0.710	0.731		ug/g	3.0	30	26-JAN-22
Vanadium (V)		36.7	37.2		ug/g	1.5	30	26-JAN-22



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Client: GeoPro Consulting Limited (Richmond Hill)
 40 Vogell Road Unit 57
 Richmond Hill ON L4B 3N6

Contact: Sarena Medina

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT								
	Soil							
Batch	R5708387							
WG3688656-6	DUP	WG3688656-5						
Zinc (Zn)		109	109		ug/g	0.8	30	26-JAN-22
WG3688656-4	LCS							
Antimony (Sb)			106.9		%		80-120	26-JAN-22
Arsenic (As)			105.0		%		80-120	26-JAN-22
Barium (Ba)			107.9		%		80-120	26-JAN-22
Beryllium (Be)			108.8		%		80-120	26-JAN-22
Boron (B)			100.7		%		80-120	26-JAN-22
Cadmium (Cd)			101.5		%		80-120	26-JAN-22
Chromium (Cr)			100.1		%		80-120	26-JAN-22
Cobalt (Co)			104.9		%		80-120	26-JAN-22
Copper (Cu)			98.5		%		80-120	26-JAN-22
Lead (Pb)			106.7		%		80-120	26-JAN-22
Molybdenum (Mo)			101.2		%		80-120	26-JAN-22
Nickel (Ni)			103.9		%		80-120	26-JAN-22
Selenium (Se)			109.1		%		80-120	26-JAN-22
Silver (Ag)			99.4		%		80-120	26-JAN-22
Thallium (Tl)			107.2		%		80-120	26-JAN-22
Uranium (U)			100.4		%		80-120	26-JAN-22
Vanadium (V)			104.9		%		80-120	26-JAN-22
Zinc (Zn)			101.3		%		80-120	26-JAN-22
WG3688656-1	MB							
Antimony (Sb)			<0.10		mg/kg		0.1	26-JAN-22
Arsenic (As)			<0.10		mg/kg		0.1	26-JAN-22
Barium (Ba)			<0.50		mg/kg		0.5	26-JAN-22
Beryllium (Be)			<0.10		mg/kg		0.1	26-JAN-22
Boron (B)			<5.0		mg/kg		5	26-JAN-22
Cadmium (Cd)			<0.020		mg/kg		0.02	26-JAN-22
Chromium (Cr)			<0.50		mg/kg		0.5	26-JAN-22
Cobalt (Co)			<0.10		mg/kg		0.1	26-JAN-22
Copper (Cu)			<0.50		mg/kg		0.5	26-JAN-22
Lead (Pb)			<0.50		mg/kg		0.5	26-JAN-22
Molybdenum (Mo)			<0.10		mg/kg		0.1	26-JAN-22
Nickel (Ni)			<0.50		mg/kg		0.5	26-JAN-22
Selenium (Se)			<0.20		mg/kg		0.2	26-JAN-22



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Client: GeoPro Consulting Limited (Richmond Hill)
 40 Vogell Road Unit 57
 Richmond Hill ON L4B 3N6

Contact: Sarena Medina

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed	
MET-200.2-CCMS-WT									
Soil									
Batch R5708387									
WG3688656-1 MB									
Silver (Ag)			<0.10		mg/kg		0.1	26-JAN-22	
Thallium (Tl)			<0.050		mg/kg		0.05	26-JAN-22	
Uranium (U)			<0.050		mg/kg		0.05	26-JAN-22	
Vanadium (V)			<0.20		mg/kg		0.2	26-JAN-22	
Zinc (Zn)			<2.0		mg/kg		2	26-JAN-22	
MOISTURE-WT									
Soil									
Batch R5702897									
WG3687220-3 DUP									
% Moisture		L2679635-13	10.4	10.6	%	2.1	20	21-JAN-22	
WG3687220-2 LCS									
% Moisture			99.7		%		90-110	21-JAN-22	
WG3687220-1 MB									
% Moisture			<0.25		%		0.25	21-JAN-22	
PH-WT									
Soil									
Batch R5705256									
WG3687494-1 DUP									
pH		L2679647-3	7.75	7.73	J	pH units	0.02	0.3	24-JAN-22
WG3688046-1 LCS									
pH			7.05			pH units	6.9-7.1	24-JAN-22	
SAR-R511-WT									
Soil									
Batch R5708817									
WG3688778-4 DUP									
Calcium (Ca)		WG3688778-3	16.0	14.9		mg/L	7.1	30	26-JAN-22
Sodium (Na)			11.6	11.3		mg/L	2.6	30	26-JAN-22
Magnesium (Mg)			10.9	10.2		mg/L	6.6	30	26-JAN-22
WG3688778-2 IRM									
WT SAR4									
Calcium (Ca)			110.9			%	70-130	26-JAN-22	
Sodium (Na)			115.0			%	70-130	26-JAN-22	
Magnesium (Mg)			114.7			%	70-130	26-JAN-22	
WG3688778-5 LCS									
Calcium (Ca)			110.7			%	80-120	26-JAN-22	
Sodium (Na)			110.4			%	80-120	26-JAN-22	
Magnesium (Mg)			109.2			%	80-120	26-JAN-22	
WG3688778-1 MB									
Calcium (Ca)			<0.50		mg/L		0.5	26-JAN-22	



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Client: GeoPro Consulting Limited (Richmond Hill)
 40 Vogell Road Unit 57
 Richmond Hill ON L4B 3N6

Contact: Sarena Medina

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SAR-R511-WT	Soil							
Batch R5708817								
WG3688778-1 MB								
Sodium (Na)			<0.50		mg/L		0.5	26-JAN-22
Magnesium (Mg)			<0.50		mg/L		0.5	26-JAN-22
VOC-511-HS-WT	Soil							
Batch R5700384								
WG3686363-4 DUP		WG3686363-3						
1,1,1,2-Tetrachloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	19-JAN-22
1,1,2,2-Tetrachloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	19-JAN-22
1,1,1-Trichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	19-JAN-22
1,1,2-Trichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	19-JAN-22
1,1-Dichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	19-JAN-22
1,1-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	19-JAN-22
1,2-Dibromoethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	19-JAN-22
1,2-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	19-JAN-22
1,2-Dichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	19-JAN-22
1,2-Dichloropropane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	19-JAN-22
1,3-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	19-JAN-22
1,4-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	19-JAN-22
Acetone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	19-JAN-22
Benzene		<0.0068	<0.0068	RPD-NA	ug/g	N/A	40	19-JAN-22
Bromodichloromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	19-JAN-22
Bromoform		<0.050	<0.050	RPD-NA	ug/g	N/A	40	19-JAN-22
Bromomethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	19-JAN-22
Carbon tetrachloride		<0.050	<0.050	RPD-NA	ug/g	N/A	40	19-JAN-22
Chlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	19-JAN-22
Chloroform		<0.050	<0.050	RPD-NA	ug/g	N/A	40	19-JAN-22
cis-1,2-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	19-JAN-22
cis-1,3-Dichloropropene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	19-JAN-22
Dibromochloromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	19-JAN-22
Dichlorodifluoromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	19-JAN-22
Ethylbenzene		<0.018	<0.018	RPD-NA	ug/g	N/A	40	19-JAN-22
n-Hexane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	19-JAN-22
Methylene Chloride		<0.050	<0.050	RPD-NA	ug/g	N/A	40	19-JAN-22
MTBE		<0.050	<0.050	RPD-NA	ug/g	N/A	40	19-JAN-22



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Client: GeoPro Consulting Limited (Richmond Hill)
 40 Vogell Road Unit 57
 Richmond Hill ON L4B 3N6

Contact: Sarena Medina

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT		Soil						
Batch	R5700384							
WG3686363-4	DUP	WG3686363-3						
m+p-Xylenes		<0.030	<0.030	RPD-NA	ug/g	N/A	40	19-JAN-22
Methyl Ethyl Ketone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	19-JAN-22
Methyl Isobutyl Ketone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	19-JAN-22
o-Xylene		<0.020	<0.020	RPD-NA	ug/g	N/A	40	19-JAN-22
Styrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	19-JAN-22
Tetrachloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	19-JAN-22
Toluene		<0.080	<0.080	RPD-NA	ug/g	N/A	40	19-JAN-22
trans-1,2-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	19-JAN-22
trans-1,3-Dichloropropene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	19-JAN-22
Trichloroethylene		<0.010	<0.010	RPD-NA	ug/g	N/A	40	19-JAN-22
Trichlorofluoromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	19-JAN-22
Vinyl chloride		<0.020	<0.020	RPD-NA	ug/g	N/A	40	19-JAN-22
WG3686363-2	LCS							
1,1,1,2-Tetrachloroethane			103.9		%		60-130	19-JAN-22
1,1,2,2-Tetrachloroethane			88.5		%		60-130	19-JAN-22
1,1,1-Trichloroethane			112.7		%		60-130	19-JAN-22
1,1,2-Trichloroethane			104.0		%		60-130	19-JAN-22
1,1-Dichloroethane			108.5		%		60-130	19-JAN-22
1,1-Dichloroethylene			109.5		%		60-130	19-JAN-22
1,2-Dibromoethane			108.1		%		70-130	19-JAN-22
1,2-Dichlorobenzene			116.5		%		70-130	19-JAN-22
1,2-Dichloroethane			109.5		%		60-130	19-JAN-22
1,2-Dichloropropane			108.2		%		70-130	19-JAN-22
1,3-Dichlorobenzene			123.3		%		70-130	19-JAN-22
1,4-Dichlorobenzene			124.6		%		70-130	19-JAN-22
Acetone			97.1		%		60-140	19-JAN-22
Benzene			107.1		%		70-130	19-JAN-22
Bromodichloromethane			117.1		%		50-140	19-JAN-22
Bromoform			88.6		%		70-130	19-JAN-22
Bromomethane			104.1		%		50-140	19-JAN-22
Carbon tetrachloride			105.4		%		70-130	19-JAN-22
Chlorobenzene			113.0		%		70-130	19-JAN-22
Chloroform			112.1		%		70-130	19-JAN-22



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Client: GeoPro Consulting Limited (Richmond Hill)
 40 Vogell Road Unit 57
 Richmond Hill ON L4B 3N6

Contact: Sarena Medina

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT		Soil						
Batch	R5700384							
WG3686363-2	LCS							
cis-1,2-Dichloroethylene			115.1		%		70-130	19-JAN-22
cis-1,3-Dichloropropene			115.3		%		70-130	19-JAN-22
Dibromochloromethane			98.7		%		60-130	19-JAN-22
Dichlorodifluoromethane			57.8		%		50-140	19-JAN-22
Ethylbenzene			112.3		%		70-130	19-JAN-22
n-Hexane			99.2		%		70-130	19-JAN-22
Methylene Chloride			111.6		%		70-130	19-JAN-22
MTBE			109.0		%		70-130	19-JAN-22
m+p-Xylenes			114.7		%		70-130	19-JAN-22
Methyl Ethyl Ketone			89.3		%		60-140	19-JAN-22
Methyl Isobutyl Ketone			84.3		%		60-140	19-JAN-22
o-Xylene			109.4		%		70-130	19-JAN-22
Styrene			103.4		%		70-130	19-JAN-22
Tetrachloroethylene			113.0		%		60-130	19-JAN-22
Toluene			111.3		%		70-130	19-JAN-22
trans-1,2-Dichloroethylene			109.2		%		60-130	19-JAN-22
trans-1,3-Dichloropropene			105.8		%		70-130	19-JAN-22
Trichloroethylene			112.4		%		60-130	19-JAN-22
Trichlorofluoromethane			101.0		%		50-140	19-JAN-22
Vinyl chloride			83.3		%		60-140	19-JAN-22
WG3686363-1	MB							
1,1,1,2-Tetrachloroethane			<0.050		ug/g		0.05	19-JAN-22
1,1,2,2-Tetrachloroethane			<0.050		ug/g		0.05	19-JAN-22
1,1,1-Trichloroethane			<0.050		ug/g		0.05	19-JAN-22
1,1,2-Trichloroethane			<0.050		ug/g		0.05	19-JAN-22
1,1-Dichloroethane			<0.050		ug/g		0.05	19-JAN-22
1,1-Dichloroethylene			<0.050		ug/g		0.05	19-JAN-22
1,2-Dibromoethane			<0.050		ug/g		0.05	19-JAN-22
1,2-Dichlorobenzene			<0.050		ug/g		0.05	19-JAN-22
1,2-Dichloroethane			<0.050		ug/g		0.05	19-JAN-22
1,2-Dichloropropane			<0.050		ug/g		0.05	19-JAN-22
1,3-Dichlorobenzene			<0.050		ug/g		0.05	19-JAN-22
1,4-Dichlorobenzene			<0.050		ug/g		0.05	19-JAN-22
Acetone			<0.50		ug/g		0.5	19-JAN-22



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Client: GeoPro Consulting Limited (Richmond Hill)
 40 Vogell Road Unit 57
 Richmond Hill ON L4B 3N6

Contact: Sarena Medina

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT								
	Soil							
Batch	R5700384							
WG3686363-1	MB							
Benzene			<0.0068		ug/g		0.0068	19-JAN-22
Bromodichloromethane			<0.050		ug/g		0.05	19-JAN-22
Bromoform			<0.050		ug/g		0.05	19-JAN-22
Bromomethane			<0.050		ug/g		0.05	19-JAN-22
Carbon tetrachloride			<0.050		ug/g		0.05	19-JAN-22
Chlorobenzene			<0.050		ug/g		0.05	19-JAN-22
Chloroform			<0.050		ug/g		0.05	19-JAN-22
cis-1,2-Dichloroethylene			<0.050		ug/g		0.05	19-JAN-22
cis-1,3-Dichloropropene			<0.030		ug/g		0.03	19-JAN-22
Dibromochloromethane			<0.050		ug/g		0.05	19-JAN-22
Dichlorodifluoromethane			<0.050		ug/g		0.05	19-JAN-22
Ethylbenzene			<0.018		ug/g		0.018	19-JAN-22
n-Hexane			<0.050		ug/g		0.05	19-JAN-22
Methylene Chloride			<0.050		ug/g		0.05	19-JAN-22
MTBE			<0.050		ug/g		0.05	19-JAN-22
m+p-Xylenes			<0.030		ug/g		0.03	19-JAN-22
Methyl Ethyl Ketone			<0.50		ug/g		0.5	19-JAN-22
Methyl Isobutyl Ketone			<0.50		ug/g		0.5	19-JAN-22
o-Xylene			<0.020		ug/g		0.02	19-JAN-22
Styrene			<0.050		ug/g		0.05	19-JAN-22
Tetrachloroethylene			<0.050		ug/g		0.05	19-JAN-22
Toluene			<0.080		ug/g		0.08	19-JAN-22
trans-1,2-Dichloroethylene			<0.050		ug/g		0.05	19-JAN-22
trans-1,3-Dichloropropene			<0.030		ug/g		0.03	19-JAN-22
Trichloroethylene			<0.010		ug/g		0.01	19-JAN-22
Trichlorofluoromethane			<0.050		ug/g		0.05	19-JAN-22
Vinyl chloride			<0.020		ug/g		0.02	19-JAN-22
Surrogate: 1,4-Difluorobenzene			110.2		%		50-140	19-JAN-22
Surrogate: 4-Bromofluorobenzene			83.7		%		50-140	19-JAN-22
WG3686363-5	MS	WG3686363-3						
1,1,1,2-Tetrachloroethane			99.0		%		50-140	19-JAN-22
1,1,2,2-Tetrachloroethane			84.0		%		50-140	19-JAN-22
1,1,1-Trichloroethane			108.4		%		50-140	19-JAN-22
1,1,2-Trichloroethane			99.7		%		50-140	19-JAN-22



Quality Control Report

Workorder: L2679647

Report Date: 05-JUL-22

Page 11 of 14

Client: GeoPro Consulting Limited (Richmond Hill)
 40 Vogell Road Unit 57
 Richmond Hill ON L4B 3N6

Contact: Sarena Medina

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT								
	Soil							
Batch	R5700384							
WG3686363-5 MS		WG3686363-3						
1,1-Dichloroethane			104.3		%		50-140	19-JAN-22
1,1-Dichloroethylene			110.6		%		50-140	19-JAN-22
1,2-Dibromoethane			103.6		%		50-140	19-JAN-22
1,2-Dichlorobenzene			109.7		%		50-140	19-JAN-22
1,2-Dichloroethane			105.1		%		50-140	19-JAN-22
1,2-Dichloropropane			103.2		%		50-140	19-JAN-22
1,3-Dichlorobenzene			116.4		%		50-140	19-JAN-22
1,4-Dichlorobenzene			116.9		%		50-140	19-JAN-22
Acetone			91.8		%		50-140	19-JAN-22
Benzene			106.7		%		50-140	19-JAN-22
Bromodichloromethane			114.7		%		50-140	19-JAN-22
Bromoform			88.3		%		50-140	19-JAN-22
Bromomethane			111.3		%		50-140	19-JAN-22
Carbon tetrachloride			102.3		%		50-140	19-JAN-22
Chlorobenzene			106.7		%		50-140	19-JAN-22
Chloroform			111.1		%		50-140	19-JAN-22
cis-1,2-Dichloroethylene			111.1		%		50-140	19-JAN-22
cis-1,3-Dichloropropene			107.1		%		50-140	19-JAN-22
Dibromochloromethane			98.2		%		50-140	19-JAN-22
Dichlorodifluoromethane			102.3		%		50-140	19-JAN-22
Ethylbenzene			110.2		%		50-140	19-JAN-22
n-Hexane			105.9		%		50-140	19-JAN-22
Methylene Chloride			109.0		%		50-140	19-JAN-22
MTBE			108.6		%		50-140	19-JAN-22
m+p-Xylenes			110.0		%		50-140	19-JAN-22
Methyl Ethyl Ketone			81.8		%		50-140	19-JAN-22
Methyl Isobutyl Ketone			76.5		%		50-140	19-JAN-22
o-Xylene			107.1		%		50-140	19-JAN-22
Styrene			101.1		%		50-140	19-JAN-22
Tetrachloroethylene			107.7		%		50-140	19-JAN-22
Toluene			110.6		%		50-140	19-JAN-22
trans-1,2-Dichloroethylene			106.4		%		50-140	19-JAN-22
trans-1,3-Dichloropropene			98.8		%		50-140	19-JAN-22



Quality Control Report

Workorder: L2679647

Report Date: 05-JUL-22

Page 12 of 14

Client: GeoPro Consulting Limited (Richmond Hill)
 40 Vogell Road Unit 57
 Richmond Hill ON L4B 3N6

Contact: Sarena Medina

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT								
	Soil							
Batch	R5700384							
WG3686363-5 MS		WG3686363-3						
Trichloroethylene			107.4		%		50-140	19-JAN-22
Trichlorofluoromethane			107.4		%		50-140	19-JAN-22
Vinyl chloride			97.5		%		50-140	19-JAN-22

Quality Control Report

Workorder: L2679647

Report Date: 05-JUL-22

Client: GeoPro Consulting Limited (Richmond Hill)
40 Vogell Road Unit 57
Richmond Hill ON L4B 3N6

Page 13 of 14

Contact: Sarena Medina

Legend:

Limit ALS Control Limit (Data Quality Objectives)
DUP Duplicate
RPD Relative Percent Difference
N/A Not Available
LCS Laboratory Control Sample
SRM Standard Reference Material
MS Matrix Spike
MSD Matrix Spike Duplicate
ADE Average Desorption Efficiency
MB Method Blank
IRM Internal Reference Material
CRM Certified Reference Material
CCV Continuing Calibration Verification
CVS Calibration Verification Standard
LCSD Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
DUP-H,J	Duplicate results outside ALS DQO, due to sample heterogeneity. Duplicate results and limits are expressed in terms of absolute difference.
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2679647

Report Date: 05-JUL-22

Client: GeoPro Consulting Limited (Richmond Hill)
40 Vogell Road Unit 57
Richmond Hill ON L4B 3N6

Page 14 of 14

Contact: Sarena Medina

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Cyanides							
Cyanide (WAD)-O.Reg 153/04 (July 2011)							
	3	29-DEC-21	24-JAN-22 01:00	14	26	days	EHTR
	4	29-DEC-21	24-JAN-22 01:00	14	26	days	EHTR

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR: Exceeded ALS recommended hold time prior to sample receipt.
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT: Exceeded ALS recommended hold time prior to analysis.
Rec. HT: ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2679647 were received on 18-JAN-22 11:30.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

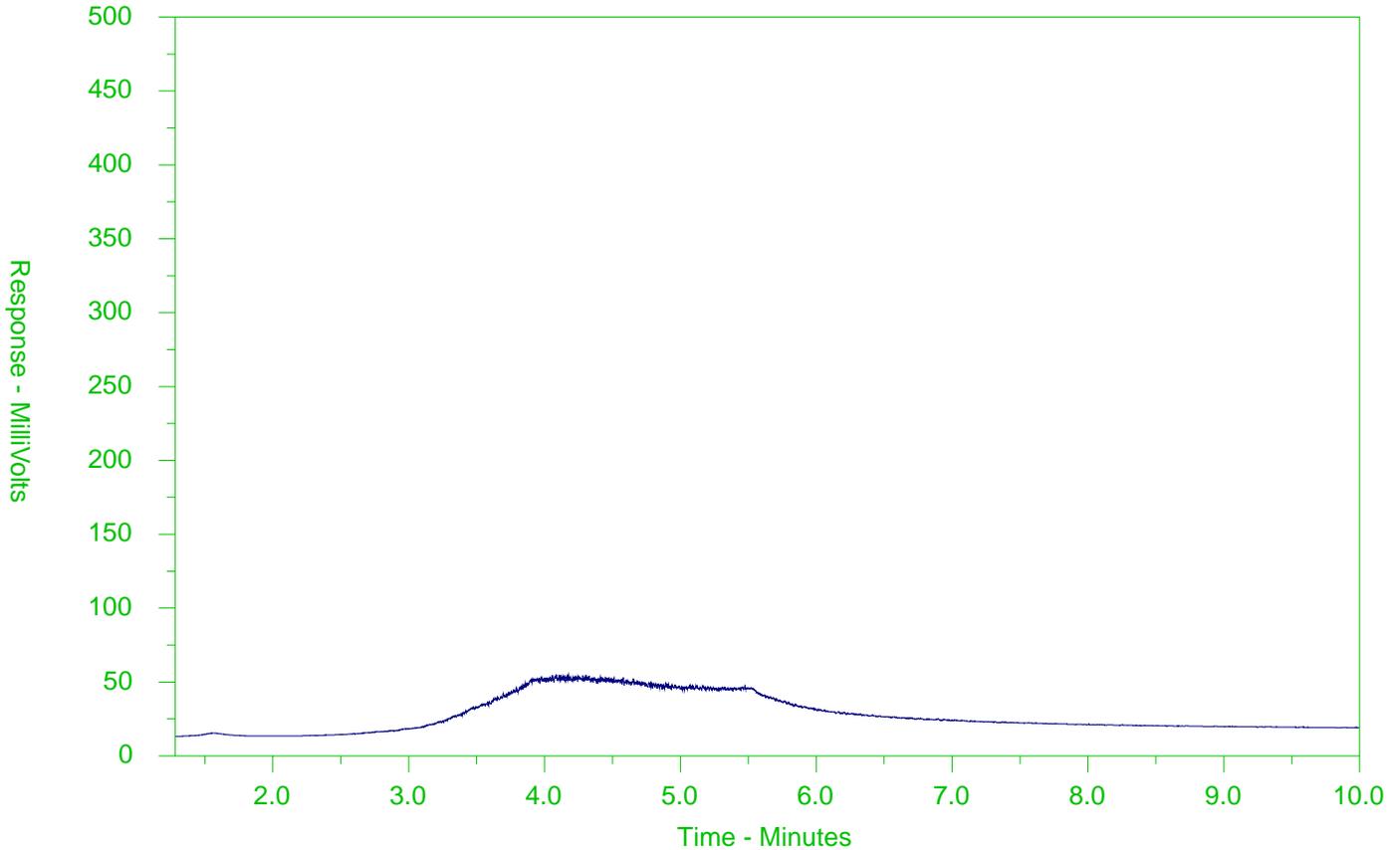
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2679647-1
 Client Sample ID: BH215 AS2



← F2 →		← F3 →		← F4 →	
nC10	nC16	nC34	nC50		
174°C	287°C	481°C	575°C		
346°F	549°F	898°F	1067°F		
← Gasoline →			← Motor Oils/Lube Oils/Grease →		
← Diesel/Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

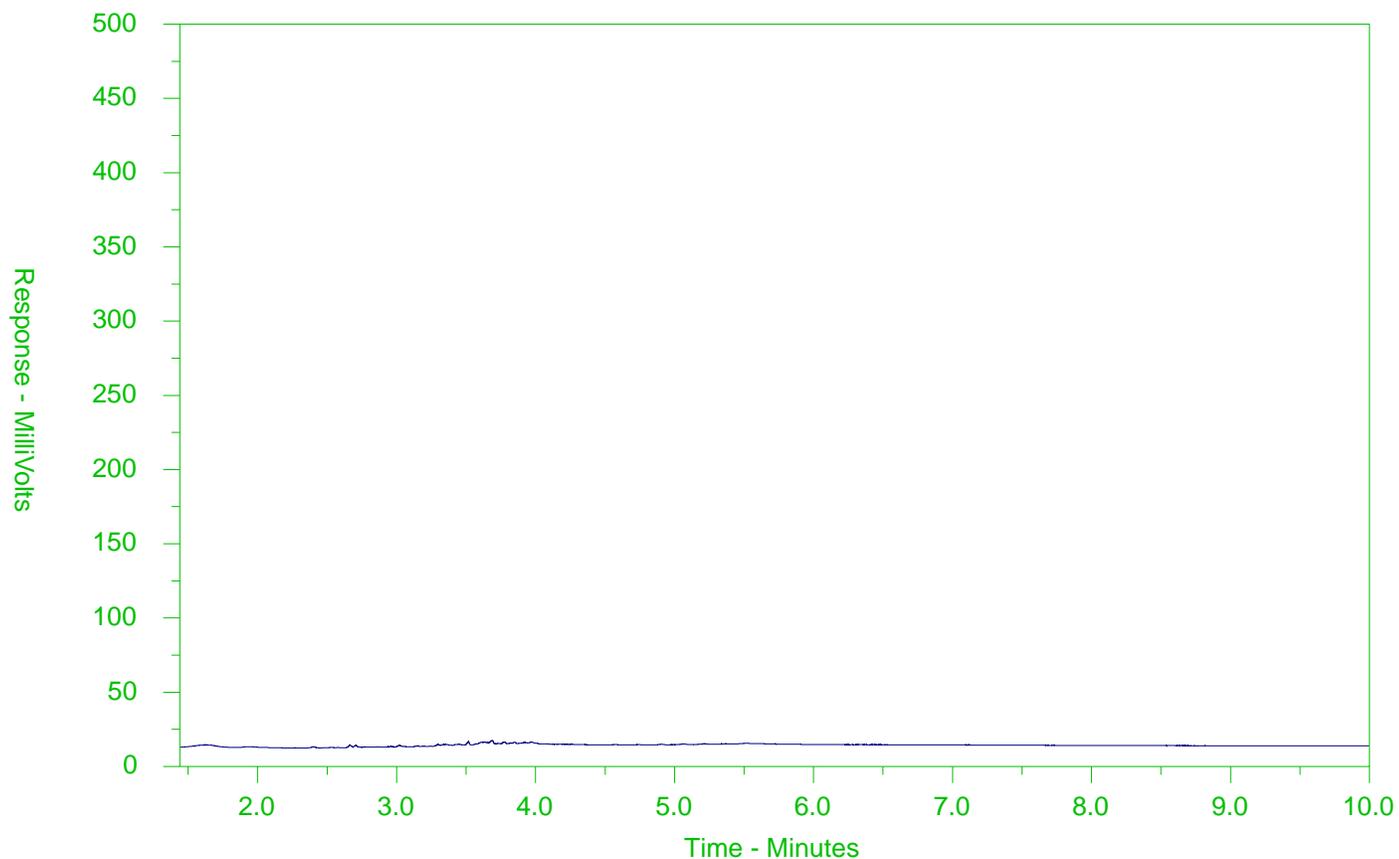
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2679647-2
 Client Sample ID: BH111 AS2



← F2 →		← F3 →		← F4 →	
nC10	nC16		nC34		nC50
174°C	287°C		481°C		575°C
346°F	549°F		898°F		1067°F
Gasoline →			← Motor Oils/Lube Oils/Grease		
← Diesel/Jet Fuels →					

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

code label here
(ie only)



L2679647-COFC

Chain of Custody
Request

Canada Toll Free



www.alsglobal.com

Report To Contact and company name below will appear on the final report		Report Format / Distribution Select Report Format: <input type="checkbox"/> PDF <input type="checkbox"/> EXCEL <input type="checkbox"/> EDD (DIGITAL) Quality Control (QC) Report with Report <input type="checkbox"/> YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked Select Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX	
Company: GeoPro Consulting Limited Contact: Elab elab@geoproconsulting.ca Phone: (905) 237-8336 Company address below will appear on the final report		Email 1 or Fax: elab@geoproconsulting.ca Email 2: elab@geoproconsulting.ca Email 3: irisg@geoproconsulting.ca; kriska@geoproconsulting.ca	
Street: 40 Vogell Road, Unit 23 City/Province: Richmond Hill, ON		Select Invoice Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX Email 1 or Fax: office@geoproconsulting.ca Email 2: elab@geoproconsulting.ca	
Postal Code: L4B 3N6		Invoice Distribution	
Invoice To: Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO Copy of invoice with Report <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		Select Invoice Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX Email 1 or Fax: office@geoproconsulting.ca Email 2: elab@geoproconsulting.ca	
Company:		AFE/Cost Center: PO#	
Contact:		Major/Minor Code: Routing Code:	
ALS Account # / Quote #: Q84031		Requisitioner:	
Job #: 18-2325GHE-2170		Location:	
PO / AFE:		Oil and Gas Required Fields (client use)	
LSD:		Project Information	
ALS Lab Work Order # (lab use only) L2679647-3D		AFE/Cost Center: PO#	
ALS Sample # (lab use only)		Major/Minor Code: Routing Code:	
Sample Identification and/or Coordinates (This description will appear on the report)		Requisitioner:	
BH215 AS2		Location:	
BH111 AS2		ALS Contact:	
BH102 AS2		Date (dd-mm-yy)	
BH209 AS2		Time (hh:mm)	
Date (dd-mm-yy)		Sampler:	
Time (hh:mm)		Date (dd-mm-yy)	
Sample Type		Time (hh:mm)	
Soil		Date (dd-mm-yy)	
Soil		Time (hh:mm)	
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M&T		Date (dd-mm-yy)	
VOCs		Time (hh:mm)	
P&C		Date (dd-mm-yy)	
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Client: Geo Pro Consulting
40 Vogell Rd, Unit 57
Richmond Hill, Ontario
L4B 3K6
Attention: Dylan X
Invoice to: Geo Pro Consulting
PO#:

Report Number: 1971936
Date Submitted: 2022-02-16
Date Reported: 2022-03-01
Project: 18-2325GHE-2214
COC #: 886325
Temperature (C): 16
Custody Seal:

Page 1 of 15

Dear Dylan X:

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:

Yasna Hassanabadi, Organics Technician

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 <http://www.cala.ca/scopes/2602.pdf>

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: Geo Pro Consulting
 40 Vogell Rd, Unit 57
 Richmond Hill, Ontario
 L4B 3K6
 Attention: Dylan X
 PO#:
 Invoice to: Geo Pro Consulting

Report Number: 1971936
 Date Submitted: 2022-02-16
 Date Reported: 2022-03-01
 Project: 18-2325GHE-2214
 COC #: 886325

O.Reg 153-T1-All Other Soils

Exceedence Summary

Sample I.D.	Analyte	Result	Units	Criteria
Inorganics				
BH113 AS2	Electrical Conductivity	4.82	mS/cm	STD 0.57
BH113 AS2	Sodium Adsorption Ratio	30.0		STD 2.4
BH118 AS2	Electrical Conductivity	1.55	mS/cm	STD 0.57
BH118 AS2	Sodium Adsorption Ratio	10.1		STD 2.4

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Guideline = O.Reg 153-T1-All Other Soils - Res/Par/Ins/Ind/Com/Prop

Hydrocarbons

Lab I.D. 1610875
 Sample Matrix Soil153
 Sample Type
 Sample Date 2022-02-11
 Sampling Time
 Sample I.D. BH118 AS2

Analyte	Batch No	MRL	Units	Guideline	
PHC's F1	417809	10	ug/g	STD 25	<10
PHC's F1-BTEX	417823	10	ug/g		<10
PHC's F2	417541	2	ug/g	STD 10	<2
PHC's F3	417541	20	ug/g	STD 240	30
PHC's F4	417541	20	ug/g	STD 120	60

Metals

Lab I.D. 1610875
 Sample Matrix Soil153
 Sample Type
 Sample Date 2022-02-11
 Sampling Time
 Sample I.D. BH118 AS2

1610876
 Soil153
 2022-02-11
 BH113 AS2

Analyte	Batch No	MRL	Units	Guideline		
Antimony	417527	1	ug/g	STD 1.3	<1	<1
Arsenic	417527	1	ug/g	STD 18	4	4
Barium	417527	1	ug/g	STD 220	76	87
Beryllium	417527	1	ug/g	STD 2.5	<1	<1
Boron (Hot Water Soluble)	417570	0.5	ug/g		<0.5	<0.5
Boron (total)	417527	5	ug/g	STD 36	5	5
Cadmium	417527	0.4	ug/g	STD 1.2	<0.4	<0.4
Chromium Total	417527	1	ug/g	STD 70	25	26
Chromium VI	417545	0.20	ug/g	STD 0.66	<0.20	<0.20
Cobalt	417527	1	ug/g	STD 21	10	8
Copper	417527	1	ug/g	STD 92	31	27
Lead	417527	1	ug/g	STD 120	9	12
Mercury	417527	0.1	ug/g	STD 0.27	<0.1	<0.1

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Metals

Lab I.D. 1610875
 Sample Matrix Soil153
 Sample Type
 Sample Date 2022-02-11
 Sampling Time
 Sample I.D. BH118
 AS2

1610876
 Soil153
 2022-02-11
 BH113
 AS2

Analyte	Batch No	MRL	Units	Guideline		
Molybdenum	417527	1	ug/g	STD 2	<1	<1
Nickel	417527	1	ug/g	STD 82	24	20
Selenium	417527	0.5	ug/g	STD 1.5	<0.5	<0.5
Silver	417527	0.2	ug/g	STD 0.5	<0.2	<0.2
Thallium	417527	1	ug/g	STD 1	<1	<1
Uranium	417527	0.5	ug/g	STD 2.5	0.6	<0.5
Vanadium	417527	2	ug/g	STD 86	25	25
Zinc	417527	2	ug/g	STD 290	50	61

Volatiles

Lab I.D. 1610875
 Sample Matrix Soil153
 Sample Type
 Sample Date 2022-02-11
 Sampling Time
 Sample I.D. BH118
 AS2

Analyte	Batch No	MRL	Units	Guideline		
Acetone	417808	0.50	ug/g	STD 0.5	<0.50	
Benzene	417808	0.0068	ug/g	STD 0.02	<0.0068	
Bromodichloromethane	417808	0.05	ug/g	STD 0.05	<0.05	
Bromoform	417808	0.05	ug/g	STD 0.05	<0.05	
Bromomethane	417808	0.05	ug/g	STD 0.05	<0.05	
Carbon Tetrachloride	417808	0.05	ug/g	STD 0.05	<0.05	
Chlorobenzene	417808	0.05	ug/g	STD 0.05	<0.05	
Chloroform	417808	0.05	ug/g	STD 0.05	<0.05	
Dibromochloromethane	417808	0.05	ug/g	STD 0.05	<0.05	
Dichlorobenzene, 1,2-	417808	0.05	ug/g	STD 0.05	<0.05	
Dichlorobenzene, 1,3-	417808	0.05	ug/g	STD 0.05	<0.05	

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Volatiles

Lab I.D. 1610875
 Sample Matrix Soil153
 Sample Type
 Sample Date 2022-02-11
 Sampling Time
 Sample I.D. BH118
 AS2

Analyte	Batch No	MRL	Units	Guideline	
Dichlorobenzene, 1,4-	417808	0.05	ug/g	STD 0.05	<0.05
Dichlorodifluoromethane	417808	0.05	ug/g	STD 0.05	<0.05
Dichloroethane, 1,1-	417808	0.05	ug/g	STD 0.05	<0.05
Dichloroethane, 1,2-	417808	0.05	ug/g	STD 0.05	<0.05
Dichloroethylene, 1,1-	417808	0.05	ug/g	STD 0.05	<0.05
Dichloroethylene, 1,2-cis-	417808	0.05	ug/g	STD 0.05	<0.05
Dichloroethylene, 1,2-trans-	417808	0.05	ug/g	STD 0.05	<0.05
Dichloropropane, 1,2-	417808	0.05	ug/g	STD 0.05	<0.05
Dichloropropene,1,3-	417807	0.05	ug/g	STD 0.05	<0.05
Dichloropropene,1,3-cis-	417808	0.05	ug/g		<0.05
Dichloropropene,1,3-trans-	417808	0.05	ug/g		<0.05
Ethylbenzene	417808	0.018	ug/g	STD 0.05	<0.018
Ethylene dibromide	417808	0.05	ug/g	STD 0.05	<0.05
Hexane (n)	417808	0.05	ug/g	STD 0.05	<0.05
Methyl Ethyl Ketone	417808	0.50	ug/g	STD 0.5	<0.50
Methyl Isobutyl Ketone	417808	0.50	ug/g	STD 0.5	<0.50
Methyl tert-Butyl Ether (MTBE)	417808	0.05	ug/g	STD 0.05	<0.05
Methylene Chloride	417808	0.05	ug/g	STD 0.05	<0.05
Styrene	417808	0.05	ug/g	STD 0.05	<0.05
Tetrachloroethane, 1,1,1,2-	417808	0.05	ug/g	STD 0.05	<0.05
Tetrachloroethane, 1,1,2,2-	417808	0.05	ug/g	STD 0.05	<0.05
Tetrachloroethylene	417808	0.05	ug/g	STD 0.05	<0.05
Toluene	417808	0.08	ug/g	STD 0.2	<0.08

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Volatiles

Lab I.D. 1610875
 Sample Matrix Soil153
 Sample Type
 Sample Date 2022-02-11
 Sampling Time
 Sample I.D. BH118
 AS2

Analyte	Batch No	MRL	Units	Guideline	
Trichloroethane, 1,1,1,-	417808	0.05	ug/g	STD 0.05	<0.05
Trichloroethane, 1,1,2,-	417808	0.05	ug/g	STD 0.05	<0.05
Trichloroethylene	417808	0.01	ug/g	STD 0.05	<0.01
Trichlorofluoromethane	417808	0.05	ug/g	STD 0.25	<0.05
Vinyl Chloride	417808	0.02	ug/g	STD 0.02	<0.02
Xylene Mixture	417822	0.05	ug/g	STD 0.05	<0.05
Xylene, m/p-	417808	0.05	ug/g		<0.05
Xylene, o-	417808	0.05	ug/g		<0.05

Inorganics

Lab I.D. 1610875
 Sample Matrix Soil153
 Sample Type
 Sample Date 2022-02-11
 Sampling Time 2022-02-11
 Sample I.D. BH118
 AS2

Analyte	Batch No	MRL	Units	Guideline		
Cyanide (CN-)	417512	0.005	ug/g	STD 0.051	<0.005	<0.005
Electrical Conductivity	417500	0.05	mS/cm	STD 0.57	1.55*	4.82*
pH - CaCl2	417564	2.00			7.69	7.70
Sodium Adsorption Ratio	417517	0.01		STD 2.4	10.1*	30.0*

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Moisture

Lab I.D. 1610875
 Sample Matrix Soil153
 Sample Type
 Sample Date 2022-02-11
 Sampling Time
 Sample I.D. BH118
 AS2

Analyte	Batch No	MRL	Units	Guideline
Moisture-Humidite	417541	0.1	%	15.8

PHC Surrogate

Lab I.D. 1610875
 Sample Matrix Soil153
 Sample Type
 Sample Date 2022-02-11
 Sampling Time
 Sample I.D. BH118
 AS2

Analyte	Batch No	MRL	Units	Guideline
Alpha-androstrane	417541	0	%	60

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VOCs Surrogates

Lab I.D. 1610875
 Sample Matrix Soil153
 Sample Type
 Sample Date 2022-02-11
 Sampling Time
 Sample I.D. BH118
 AS2

Analyte	Batch No	MRL	Units	Guideline
1,2-dichloroethane-d4	417808	0	%	108
4-bromofluorobenzene	417808	0	%	116
Toluene-d8	417808	0	%	95

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Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
417500	Electrical Conductivity	<0.05	98	90-110			0	0-10
417512	Cyanide (CN-)	<0.005 ug/g	92	75-125	119	70-130	0	0-20
417517	Sodium Adsorption Ratio	<0.01					1	
417527	Silver	<0.2 ug/g	111	70-130	115	70-130	0	0-20
417527	Arsenic	<1 ug/g	89	70-130	92	70-130	0	0-20
417527	Boron (total)	<5 ug/g	98	70-130	77	70-130	0	0-20
417527	Barium	<1 ug/g	90	70-130	91	70-130	13	0-20
417527	Beryllium	<1 ug/g	94	70-130	88	70-130	0	0-20
417527	Cadmium	<0.4 ug/g	99	70-130	106	70-130	0	0-20
417527	Cobalt	<1 ug/g	97	70-130	98	70-130	0	0-20
417527	Chromium Total	<1 ug/g	97	70-130	54	70-130	27	0-20
417527	Copper	<1 ug/g	105	70-130	107	70-130	10	0-20
417527	Mercury	<0.1 ug/g	80	70-130	87	70-130	0	0-20
417527	Molybdenum	<1 ug/g	92	70-130	94	70-130	0	0-20
417527	Nickel	<1 ug/g	102	70-130	74	70-130	23	0-20
417527	Lead	<1 ug/g	92	70-130	100	70-130	0	0-20
417527	Antimony	<1 ug/g	99	70-130	96	70-130	0	0-20
417527	Selenium	<0.5 ug/g	103	70-130	78	70-130	0	0-20
417527	Thallium	<1 ug/g	93	70-130	100	70-130	0	0-20
417527	Uranium	<0.5 ug/g	89	70-130	96	70-130	0	0-20
417527	Vanadium	<2 ug/g	95	70-130	125	70-130	11	0-20
417527	Zinc	<2 ug/g	90	70-130	87	70-130	14	0-20
417541	PHC's F2	<2 ug/g	99	80-120	103	60-140	0	0-30
417541	PHC's F3	<20 ug/g	100	80-120	103	60-140	2	0-30
417541	PHC's F4	<20 ug/g	100	80-120	103	60-140	4	0-30
417541	Moisture-Humidite	<0.1 %	100	80-120			7	
417545	Chromium VI	<0.20 ug/g	95	80-120	87	70-130	0	0-35
417564	pH - CaCl2	6.64	101	90-110			0	
417570	Boron (Hot Water Soluble)	<0.5 ug/g	86	70-130	80	75-125	0	0-30
417807	Dichloropropene, 1,3-	<0.05 ug/g						
417808	Tetrachloroethane, 1,1,1,2-	<0.05 ug/g	99	60-130	96	50-140	0	0-50
417808	Trichloroethane, 1,1,1-	<0.05 ug/g	87	60-130	100	50-140	0	0-50

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Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
417808	Tetrachloroethane, 1,1,2,2-	<0.05 ug/g	88	60-130	92	50-140	0	0-30
417808	Trichloroethane, 1,1,2-	<0.05 ug/g	107	60-130	103	50-140	0	0-50
417808	Dichloroethane, 1,1-	<0.05 ug/g	94	60-130	107	50-140	0	0-50
417808	Dichloroethylene, 1,1-	<0.05 ug/g	83	60-130	110	50-140	0	0-50
417808	Dichlorobenzene, 1,2-	<0.05 ug/g	98	60-130	94	50-140	0	0-50
417808	Dichloroethane, 1,2-	<0.05 ug/g	88	60-130	113	50-140	0	0-50
417808	Dichloropropane, 1,2-	<0.05 ug/g	100	60-130	101	50-140	0	0-50
417808	Dichlorobenzene, 1,3-	<0.05 ug/g	81	60-130	76	50-140	0	0-50
417808	Dichlorobenzene, 1,4-	<0.05 ug/g	98	60-130	92	50-140	0	0-50
417808	Acetone	<0.50 ug/g	94	60-130	119	50-140	0	0-50
417808	Benzene	<0.0068	85	60-130	106	50-140	0	0-50
417808	Bromodichloromethane	<0.05 ug/g	106	60-130	100	50-140	0	0-50
417808	Bromoform	<0.05 ug/g	100	60-130	102	50-140	0	0-50
417808	Bromomethane	<0.05 ug/g	80	60-130	100	50-140	0	0-50
417808	Dichloroethylene, 1,2-cis-	<0.05 ug/g	89	60-130	106	50-140	0	0-50
417808	Dichloropropene,1,3-cis-	<0.05 ug/g	108	60-130	91	50-140	0	0-50
417808	Carbon Tetrachloride	<0.05 ug/g	94	60-130	102	50-140	0	0-50
417808	Chloroform	<0.05 ug/g	84	60-130	104	50-140	0	0-50
417808	Dibromochloromethane	<0.05 ug/g	106	60-130	100	50-140	0	0-50
417808	Dichlorodifluoromethane	<0.05 ug/g	90	60-130	75	50-140	0	0-50
417808	Methylene Chloride	<0.05 ug/g	83	60-130	109	50-140	0	0-50
417808	Ethylbenzene	<0.018 ug/g	85	60-130	95	50-140	0	0-50
417808	Ethylene dibromide	<0.05 ug/g	101	60-130		50-140		0-50
417808	Hexane (n)	<0.05 ug/g	82	60-130	84	50-140	0	0-50
417808	Xylene, m/p-	<0.05 ug/g	90	60-130	86	50-140	0	0-50
417808	Methyl Ethyl Ketone	<0.50 ug/g	90	60-130	118	50-140	0	0-50
417808	Methyl Isobutyl Ketone	<0.50 ug/g	85	60-130	85	50-140	0	0-50
417808	Methyl tert-Butyl Ether (MTBE)	<0.05 ug/g	128	60-130	104	50-140	0	0-50
417808	Chlorobenzene	<0.05 ug/g	83	60-130	98	50-140	0	0-50
417808	Xylene, o-	<0.05 ug/g	90	60-130	103	50-140	0	0-50
417808	Styrene	<0.05 ug/g	103	60-130	96	50-140	0	0-50
417808	Dichloroethylene, 1,2-trans-	<0.05 ug/g	88	60-130	105	50-140	0	0-50
417808	Dichloropropene,1,3-trans-	<0.05 ug/g	103	60-130	98	50-140	0	0-50

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Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
417808	Tetrachloroethylene	<0.05 ug/g	107	60-130	93	50-140	0	0-50
417808	Toluene	<0.08 ug/g	92	60-130	107	50-140	0	0-50
417808	Trichloroethylene	<0.01 ug/g	101	60-130	99	50-140	0	0-50
417808	Trichlorofluoromethane	<0.05 ug/g	83	60-130	80	50-140	0	0-50
417808	Vinyl Chloride	<0.02 ug/g	80	60-130	117	50-140	0	0-50
417809	PHC's F1	<10 ug/g	107	80-120	100	60-140	.0	0-30
417822	Xylene Mixture							
417823	PHC's F1-BTEX							

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Test Summary

Batch No	Analyte	Instrument	Preparation Date	Analysis Date	Analyst	Method
417500	Electrical Conductivity	Electrical Conductivity Mete	2022-02-23	2022-02-23	Z_S	Cond-Soil
417512	Cyanide (CN-)	Skalar CN Analyzer	2022-02-23	2022-02-23	Z_S	MOECC E3015
417517	Sodium Adsorption Ratio	iCAP OES	2022-02-23	2022-02-23	Z_S	Ag Soil
417527	Silver	ICAPQ-MS	2022-02-23	2022-02-23	SD	EPA 200.8/6020
417527	Arsenic	ICAPQ-MS	2022-02-23	2022-02-23	SD	EPA 200.8/6020
417527	Boron (total)	ICAPQ-MS	2022-02-23	2022-02-23	SD	EPA 200.8/6020
417527	Barium	ICAPQ-MS	2022-02-23	2022-02-23	SD	EPA 200.8/6020
417527	Beryllium	ICAPQ-MS	2022-02-23	2022-02-23	SD	EPA 200.8/6020
417527	Cadmium	ICAPQ-MS	2022-02-23	2022-02-23	SD	EPA 200.8/6020
417527	Cobalt	ICAPQ-MS	2022-02-23	2022-02-23	SD	EPA 200.8/6020
417527	Chromium Total	ICAPQ-MS	2022-02-23	2022-02-23	SD	EPA 200.8/6020
417527	Copper	ICAPQ-MS	2022-02-23	2022-02-23	SD	EPA 200.8/6020
417527	Mercury	ICAPQ-MS	2022-02-23	2022-02-23	SD	EPA 200.8/6020
417527	Molybdenum	ICAPQ-MS	2022-02-23	2022-02-23	SD	EPA 200.8/6020
417527	Nickel	ICAPQ-MS	2022-02-23	2022-02-23	SD	EPA 200.8/6020
417527	Lead	ICAPQ-MS	2022-02-23	2022-02-23	SD	EPA 200.8/6020
417527	Antimony	ICAPQ-MS	2022-02-23	2022-02-23	SD	EPA 200.8/6020
417527	Selenium	ICAPQ-MS	2022-02-23	2022-02-23	SD	EPA 200.8/6020
417527	Thallium	ICAPQ-MS	2022-02-23	2022-02-23	SD	EPA 200.8/6020
417527	Uranium	ICAPQ-MS	2022-02-23	2022-02-23	SD	EPA 200.8/6020
417527	Vanadium	ICAPQ-MS	2022-02-23	2022-02-23	SD	EPA 200.8/6020
417527	Zinc	ICAPQ-MS	2022-02-23	2022-02-23	SD	EPA 200.8/6020
417541	PHC's F2	GC/FID	2022-02-24	2022-02-24	R_G	CCME
417541	PHC's F3	GC/FID	2022-02-24	2022-02-24	R_G	CCME
417541	PHC's F4	GC/FID	2022-02-24	2022-02-24	R_G	CCME
417541	Moisture-Humidite	Oven	2022-02-24	2022-02-24	R_G	ASTM 2216
417545	Chromium VI	FAA	2022-02-24	2022-02-24	MW	M US EPA 3060A
417564	pH - CaCl2	pH Meter	2022-02-24	2022-02-24	IP	Ag Soil
417570	Boron (Hot Water Soluble)	iCAP OES	2022-02-24	2022-02-24	Z_S	MOECC E3470
417807	Dichloropropene, 1,3-	GC-MS	2022-02-28	2022-02-28	YH	V 8260B
417808	Tetrachloroethane, 1,1,1,2-	GC-MS	2022-02-25	2022-02-25	YH	V 8260B
417808	Trichloroethane, 1,1,1-	GC-MS	2022-02-25	2022-02-25	YH	V 8260B

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Client: Geo Pro Consulting
 40 Vogell Rd, Unit 57
 Richmond Hill, Ontario
 L4B 3K6
 Attention: Dylan X
 PO#:
 Invoice to: Geo Pro Consulting

Report Number: 1971936
 Date Submitted: 2022-02-16
 Date Reported: 2022-03-01
 Project: 18-2325GHE-2214
 COC #: 886325

Test Summary

Batch No	Analyte	Instrument	Preparation Date	Analysis Date	Analyst	Method
417808	Tetrachloroethane, 1,1,2,2-	GC-MS	2022-02-25	2022-02-25	YH	V 8260B
417808	Trichloroethane, 1,1,2-	GC-MS	2022-02-25	2022-02-25	YH	V 8260B
417808	Dichloroethane, 1,1-	GC-MS	2022-02-25	2022-02-25	YH	V 8260B
417808	Dichloroethylene, 1,1-	GC-MS	2022-02-25	2022-02-25	YH	V 8260B
417808	Dichlorobenzene, 1,2-	GC-MS	2022-02-25	2022-02-25	YH	V 8260B
417808	Dichloroethane, 1,2-	GC-MS	2022-02-25	2022-02-25	YH	V 8260B
417808	Dichloropropane, 1,2-	GC-MS	2022-02-25	2022-02-25	YH	V 8260B
417808	Dichlorobenzene, 1,3-	GC-MS	2022-02-25	2022-02-25	YH	V 8260B
417808	Dichlorobenzene, 1,4-	GC-MS	2022-02-25	2022-02-25	YH	V 8260B
417808	Acetone	GC-MS	2022-02-25	2022-02-25	YH	V 8260B
417808	Benzene	GC-MS	2022-02-25	2022-02-25	YH	V 8260B
417808	Bromodichloromethane	GC-MS	2022-02-25	2022-02-25	YH	V 8260B
417808	Bromoform	GC-MS	2022-02-25	2022-02-25	YH	V 8260B
417808	Bromomethane	GC-MS	2022-02-25	2022-02-25	YH	V 8260B
417808	Dichloroethylene, 1,2-cis-	GC-MS	2022-02-25	2022-02-25	YH	V 8260B
417808	Dichloropropene, 1,3-cis-	GC-MS	2022-02-25	2022-02-25	YH	V 8260B
417808	Carbon Tetrachloride	GC-MS	2022-02-25	2022-02-25	YH	V 8260B
417808	Chloroform	GC-MS	2022-02-25	2022-02-25	YH	V 8260B
417808	Dibromochloromethane	GC-MS	2022-02-25	2022-02-25	YH	V 8260B
417808	Dichlorodifluoromethane	GC-MS	2022-02-25	2022-02-25	YH	V 8260B
417808	Methylene Chloride	GC-MS	2022-02-25	2022-02-25	YH	V 8260B
417808	Ethylbenzene	GC-MS	2022-02-25	2022-02-25	YH	V 8260B
417808	Ethylene dibromide	GC-MS	2022-02-25	2022-02-25	YH	V 8260B
417808	Hexane (n)	GC-MS	2022-02-25	2022-02-25	YH	V 8260B
417808	Xylene, m/p-	GC-MS	2022-02-25	2022-02-25	YH	V 8260B
417808	Methyl Ethyl Ketone	GC-MS	2022-02-25	2022-02-25	YH	V 8260B
417808	Methyl Isobutyl Ketone	GC-MS	2022-02-25	2022-02-25	YH	V 8260B
417808	Methyl tert-Butyl Ether (MTBE)	GC-MS	2022-02-25	2022-02-25	YH	V 8260B
417808	Chlorobenzene	GC-MS	2022-02-25	2022-02-25	YH	V 8260B
417808	Xylene, o-	GC-MS	2022-02-25	2022-02-25	YH	V 8260B
417808	Styrene	GC-MS	2022-02-25	2022-02-25	YH	V 8260B
417808	Dichloroethylene, 1,2-trans-	GC-MS	2022-02-25	2022-02-25	YH	V 8260B
417808	Dichloropropene, 1,3-trans-	GC-MS	2022-02-25	2022-02-25	YH	V 8260B

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Client: Geo Pro Consulting
 40 Vogell Rd, Unit 57
 Richmond Hill, Ontario
 L4B 3K6
 Attention: Dylan X
 PO#:
 Invoice to: Geo Pro Consulting

Report Number: 1971936
 Date Submitted: 2022-02-16
 Date Reported: 2022-03-01
 Project: 18-2325GHE-2214
 COC #: 886325

Test Summary

Batch No	Analyte	Instrument	Preparation Date	Analysis Date	Analyst	Method
417808	Tetrachloroethylene	GC-MS	2022-02-25	2022-02-25	YH	V 8260B
417808	Toluene	GC-MS	2022-02-25	2022-02-25	YH	V 8260B
417808	Trichloroethylene	GC-MS	2022-02-25	2022-02-25	YH	V 8260B
417808	Trichlorofluoromethane	GC-MS	2022-02-25	2022-02-25	YH	V 8260B
417808	Vinyl Chloride	GC-MS	2022-02-25	2022-02-25	YH	V 8260B
417809	PHC's F1	GC/FID	2022-02-28	2022-02-28	YH	CCME
417822	Xylene Mixture	GC-MS	2022-03-01	2022-03-01	YH	V 8260B
417823	PHC's F1-BTEX	GC/FID	2022-03-01	2022-03-01	YH	CCME

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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.

Client: Geo Pro Consulting
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Richmond Hill, Ontario
L4B 3K6
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PO#:

Report Number: 1973534
Date Submitted: 2022-03-17
Date Reported: 2022-03-25
Project: 18-2325GHE-2249
COC #: 887487
Temperature (C): 26
Custody Seal:

Page 1 of 15

Dear Dylan X:

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:

Addrine Thomas, Inorganics Supervisor

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 <http://www.cala.ca/scopes/2602.pdf>

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: Geo Pro Consulting
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 Richmond Hill, Ontario
 L4B 3K6
 Attention: Dylan X
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Report Number: 1973534
 Date Submitted: 2022-03-17
 Date Reported: 2022-03-25
 Project: 18-2325GHE-2249
 COC #: 887487

O.Reg 153-T1-All Other Soils

Exceedence Summary

Sample I.D.	Analyte	Result	Units	Criteria
Inorganics				
BH122 AS1C	Electrical Conductivity	1.68	mS/cm	STD 0.57
BH122 AS1C	Sodium Adsorption Ratio	47.8		STD 2.4
BH224 AS2B	Electrical Conductivity	2.76	mS/cm	STD 0.57
BH224 AS2B	Sodium Adsorption Ratio	76.1		STD 2.4

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 Date Reported: 2022-03-25
 Project: 18-2325GHE-2249
 COC #: 887487

Guideline = O.Reg 153-T1-All Other Soils - Res/Par/Ins/Ind/Com/Prop

Hydrocarbons

Lab I.D. 1615027
 Sample Matrix Soil153
 Sample Type
 Sample Date 2022-03-15
 Sampling Time
 Sample I.D. BH122
 AS1C

Analyte	Batch No	MRL	Units	Guideline	
PHC's F1	419042	10	ug/g	STD 25	<10
PHC's F1-BTEX	419047	10	ug/g		<10
PHC's F2	418990	2	ug/g	STD 10	2
PHC's F3	418990	20	ug/g	STD 240	<20
PHC's F4	418990	20	ug/g	STD 120	<20

Metals

Lab I.D. 1615027
 Sample Matrix Soil153
 Sample Type
 Sample Date 2022-03-15
 Sampling Time
 Sample I.D. BH122
 AS1C

1615028
 Soil153
 2022-03-15
 BH224
 AS2B

Analyte	Batch No	MRL	Units	Guideline		
Antimony	418867	1	ug/g	STD 1.3	<1	<1
Arsenic	418867	1	ug/g	STD 18	5	4
Barium	418867	1	ug/g	STD 220	60	38
Beryllium	418867	1	ug/g	STD 2.5	<1	<1
Boron (Hot Water Soluble)	419011	0.5	ug/g		<0.5	<0.5
Boron (total)	418867	5	ug/g	STD 36	<5	<5
Cadmium	418867	0.4	ug/g	STD 1.2	<0.4	<0.4
Chromium Total	418867	1	ug/g	STD 70	17	18
Chromium VI	418905	0.20	ug/g	STD 0.66	<0.20	<0.20
Cobalt	418867	1	ug/g	STD 21	9	7
Copper	418867	1	ug/g	STD 92	34	28
Lead	418867	1	ug/g	STD 120	7	6
Mercury	418867	0.1	ug/g	STD 0.27	<0.1	<0.1

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 Date Submitted: 2022-03-17
 Date Reported: 2022-03-25
 Project: 18-2325GHE-2249
 COC #: 887487

Guideline = O.Reg 153-T1-All Other Soils - Res/Par/Ins/Ind/Com/Prop

Metals

Lab I.D.	1615027	1615028
Sample Matrix	Soil153	Soil153
Sample Type		
Sample Date	2022-03-15	2022-03-15
Sampling Time		
Sample I.D.	BH122	BH224
	AS1C	AS2B

Analyte	Batch No	MRL	Units	Guideline		
Molybdenum	418867	1	ug/g	STD 2	<1	<1
Nickel	418867	1	ug/g	STD 82	19	14
Selenium	418867	0.5	ug/g	STD 1.5	<0.5	<0.5
Silver	418867	0.2	ug/g	STD 0.5	<0.2	<0.2
Thallium	418867	1	ug/g	STD 1	<1	<1
Uranium	418867	0.5	ug/g	STD 2.5	<0.5	<0.5
Vanadium	418867	2	ug/g	STD 86	24	22
Zinc	418867	2	ug/g	STD 290	47	38

Volatiles

Lab I.D.	1615027
Sample Matrix	Soil153
Sample Type	
Sample Date	2022-03-15
Sampling Time	
Sample I.D.	BH122
	AS1C

Analyte	Batch No	MRL	Units	Guideline	
Acetone	419045	0.50	ug/g	STD 0.5	<0.50
Benzene	419045	0.0068	ug/g	STD 0.02	<0.0068
Bromodichloromethane	419045	0.05	ug/g	STD 0.05	<0.05
Bromoform	419045	0.05	ug/g	STD 0.05	<0.05
Bromomethane	419045	0.05	ug/g	STD 0.05	<0.05
Carbon Tetrachloride	419045	0.05	ug/g	STD 0.05	<0.05
Chlorobenzene	419045	0.05	ug/g	STD 0.05	<0.05
Chloroform	419045	0.05	ug/g	STD 0.05	<0.05
Dibromochloromethane	419045	0.05	ug/g	STD 0.05	<0.05
Dichlorobenzene, 1,2-	419045	0.05	ug/g	STD 0.05	<0.05
Dichlorobenzene, 1,3-	419045	0.05	ug/g	STD 0.05	<0.05

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 L4B 3K6
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Report Number: 1973534
 Date Submitted: 2022-03-17
 Date Reported: 2022-03-25
 Project: 18-2325GHE-2249
 COC #: 887487

Guideline = O.Reg 153-T1-All Other Soils - Res/Par/Ins/Ind/Com/Prop

Volatiles

Lab I.D. 1615027
 Sample Matrix Soil153
 Sample Type
 Sample Date 2022-03-15
 Sampling Time
 Sample I.D. BH122
 AS1C

Analyte	Batch No	MRL	Units	Guideline	
Dichlorobenzene, 1,4-	419045	0.05	ug/g	STD 0.05	<0.05
Dichlorodifluoromethane	419045	0.05	ug/g	STD 0.05	<0.05
Dichloroethane, 1,1-	419045	0.05	ug/g	STD 0.05	<0.05
Dichloroethane, 1,2-	419045	0.05	ug/g	STD 0.05	<0.05
Dichloroethylene, 1,1-	419045	0.05	ug/g	STD 0.05	<0.05
Dichloroethylene, 1,2-cis-	419045	0.05	ug/g	STD 0.05	<0.05
Dichloroethylene, 1,2-trans-	419045	0.05	ug/g	STD 0.05	<0.05
Dichloropropane, 1,2-	419045	0.05	ug/g	STD 0.05	<0.05
Dichloropropene,1,3-	419045	0.05	ug/g	STD 0.05	<0.05
Dichloropropene,1,3-cis-	419045	0.05	ug/g		<0.05
Dichloropropene,1,3-trans-	419045	0.05	ug/g		<0.05
Ethylbenzene	419045	0.018	ug/g	STD 0.05	<0.018
Ethylene dibromide	419045	0.05	ug/g	STD 0.05	<0.05
Hexane (n)	419045	0.05	ug/g	STD 0.05	<0.05
Methyl Ethyl Ketone	419045	0.50	ug/g	STD 0.5	<0.50
Methyl Isobutyl Ketone	419045	0.50	ug/g	STD 0.5	<0.50
Methyl tert-Butyl Ether (MTBE)	419045	0.05	ug/g	STD 0.05	<0.05
Methylene Chloride	419045	0.05	ug/g	STD 0.05	<0.05
Styrene	419045	0.05	ug/g	STD 0.05	<0.05
Tetrachloroethane, 1,1,1,2-	419045	0.05	ug/g	STD 0.05	<0.05
Tetrachloroethane, 1,1,2,2-	419045	0.05	ug/g	STD 0.05	<0.05
Tetrachloroethylene	419045	0.05	ug/g	STD 0.05	<0.05
Toluene	419045	0.08	ug/g	STD 0.2	<0.08

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Client: Geo Pro Consulting
 40 Vogell Rd, Unit 57
 Richmond Hill, Ontario
 L4B 3K6
 Attention: Dylan X
 PO#:
 Invoice to: Geo Pro Consulting

Report Number: 1973534
 Date Submitted: 2022-03-17
 Date Reported: 2022-03-25
 Project: 18-2325GHE-2249
 COC #: 887487

Guideline = O.Reg 153-T1-All Other Soils - Res/Par/Ins/Ind/Com/Prop

Volatiles

Lab I.D. 1615027
 Sample Matrix Soil153
 Sample Type
 Sample Date 2022-03-15
 Sampling Time
 Sample I.D. BH122
 AS1C

Analyte	Batch No	MRL	Units	Guideline	
Trichloroethane, 1,1,1,-	419045	0.05	ug/g	STD 0.05	<0.05
Trichloroethane, 1,1,2,-	419045	0.05	ug/g	STD 0.05	<0.05
Trichloroethylene	419045	0.01	ug/g	STD 0.05	<0.01
Trichlorofluoromethane	419045	0.05	ug/g	STD 0.25	<0.05
Vinyl Chloride	419045	0.02	ug/g	STD 0.02	<0.02
Xylene Mixture	419046	0.05	ug/g	STD 0.05	<0.05
Xylene, m/p-	419045	0.05	ug/g		<0.05
Xylene, o-	419045	0.05	ug/g		<0.05

Inorganics

Lab I.D. 1615027
 Sample Matrix Soil153
 Sample Type
 Sample Date 2022-03-15
 Sampling Time 2022-03-15
 Sample I.D. BH122
 AS1C BH224
 AS2B

Analyte	Batch No	MRL	Units	Guideline		
Cyanide (CN-)	418948	0.005	ug/g	STD 0.051	<0.005	<0.005
Electrical Conductivity	418941	0.05	mS/cm	STD 0.57	1.68*	2.76*
pH - CaCl2	418946	2.00			7.66	7.85
Sodium Adsorption Ratio	418953	0.01		STD 2.4	47.8*	76.1*

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Client: Geo Pro Consulting
 40 Vogell Rd, Unit 57
 Richmond Hill, Ontario
 L4B 3K6
 Attention: Dylan X
 PO#:
 Invoice to: Geo Pro Consulting

Report Number: 1973534
 Date Submitted: 2022-03-17
 Date Reported: 2022-03-25
 Project: 18-2325GHE-2249
 COC #: 887487

Guideline = O.Reg 153-T1-All Other Soils - Res/Par/Ins/Ind/Com/Prop

Moisture

Lab I.D. 1615027
 Sample Matrix Soil153
 Sample Type
 Sample Date 2022-03-15
 Sampling Time
 Sample I.D. BH122
 AS1C

Analyte	Batch No	MRL	Units	Guideline
Moisture-Humidite	418990	0.1	%	11.9

PHC Surrogate

Lab I.D. 1615027
 Sample Matrix Soil153
 Sample Type
 Sample Date 2022-03-15
 Sampling Time
 Sample I.D. BH122
 AS1C

Analyte	Batch No	MRL	Units	Guideline
Alpha-androstrane	418990	0	%	104

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Guideline = O.Reg 153-T1-All Other Soils - Res/Par/Ins/Ind/Com/Prop

VOCs Surrogates

Lab I.D.	1615027
Sample Matrix	Soil153
Sample Type	
Sample Date	2022-03-15
Sampling Time	
Sample I.D.	BH122
Guideline	AS1C

Analyte	Batch No	MRL	Units	Guideline	
1,2-dichloroethane-d4	419045	0	%		109
4-bromofluorobenzene	419045	0	%		79
Toluene-d8	419045	0	%		95

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Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
418867	Silver	<0.2 ug/g	108	70-130	83	70-130	0	0-20
418867	Arsenic	<1 ug/g	93	70-130	93	70-130	0	0-20
418867	Boron (total)	<5 ug/g	102	70-130	77	70-130	0	0-20
418867	Barium	<1 ug/g	93	70-130	82	70-130	6	0-20
418867	Beryllium	<1 ug/g	97	70-130	96	70-130	0	0-20
418867	Cadmium	<0.4 ug/g	101	70-130	101	70-130	0	0-20
418867	Cobalt	<1 ug/g	94	70-130	89	70-130	5	0-20
418867	Chromium Total	<1 ug/g	99	70-130	85	70-130	13	0-20
418867	Copper	<1 ug/g	101	70-130	81	70-130	7	0-20
418867	Mercury	<0.1 ug/g	90	70-130	79	70-130	0	0-20
418867	Molybdenum	<1 ug/g	92	70-130	94	70-130	0	0-20
418867	Nickel	<1 ug/g	99	70-130	79	70-130	6	0-20
418867	Lead	<1 ug/g	91	70-130	76	70-130	5	0-20
418867	Antimony	<1 ug/g	85	70-130	88	70-130	0	0-20
418867	Selenium	<0.5 ug/g	106	70-130	84	70-130	0	0-20
418867	Thallium	<1 ug/g	91	70-130	79	70-130	0	0-20
418867	Uranium	<0.5 ug/g	84	70-130	78	70-130	0	0-20
418867	Vanadium	<2 ug/g	96	70-130	102	70-130	7	0-20
418867	Zinc	<2 ug/g	103	70-130	74	70-130	6	0-20
418905	Chromium VI	<0.20 ug/g	97	80-120	82	70-130	0	0-35
418941	Electrical Conductivity	<0.05	99	90-110			0	0-10
418946	pH - CaCl2	6.45	101	90-110			0	
418948	Cyanide (CN-)	<0.005 ug/g	82	75-125	104	70-130	0	0-20
418953	Sodium Adsorption Ratio	<0.01					2	
418990	PHC's F2	<2 ug/g	83	80-120	101	60-140	0	0-30
418990	PHC's F3	<20 ug/g	84	80-120	101	60-140	0	0-30
418990	PHC's F4	<20 ug/g	84	80-120	101	60-140	0	0-30
418990	Moisture-Humidite	<0.1 %	100	80-120			4	
419011	Boron (Hot Water Soluble)	<0.5 ug/g	101	70-130	105	75-125	0	0-30
419042	PHC's F1	<10 ug/g	95	80-120	105	60-140	0	0-30
419045	Tetrachloroethane, 1,1,1,2-	<0.05 ug/g	99	60-130	96	50-140	0	0-50
419045	Trichloroethane, 1,1,1-	<0.05 ug/g	87	60-130	100	50-140	0	0-50

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 Project: 18-2325GHE-2249
 COC #: 887487

Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
419045	Tetrachloroethane, 1,1,2,2-	<0.05 ug/g	88	60-130	92	50-140	0	0-30
419045	Trichloroethane, 1,1,2-	<0.05 ug/g	107	60-130	103	50-140	0	0-50
419045	Dichloroethane, 1,1-	<0.05 ug/g	94	60-130	107	50-140	0	0-50
419045	Dichloroethylene, 1,1-	<0.05 ug/g	83	60-130	110	50-140	0	0-50
419045	Dichlorobenzene, 1,2-	<0.05 ug/g	98	60-130	94	50-140	0	0-50
419045	Dichloroethane, 1,2-	<0.05 ug/g	88	60-130	113	50-140	0	0-50
419045	Dichloropropane, 1,2-	<0.05 ug/g	100	60-130	101	50-140	0	0-50
419045	Dichlorobenzene, 1,3-	<0.05 ug/g	81	60-130	76	50-140	0	0-50
419045	Dichloropropene, 1,3-	<0.05 ug/g						
419045	Dichlorobenzene, 1,4-	<0.05 ug/g	98	60-130	92	50-140	0	0-50
419045	Acetone	<0.50 ug/g	94	60-130	119	50-140	0	0-50
419045	Benzene	<0.0068	85	60-130	106	50-140	0	0-50
419045	Bromodichloromethane	<0.05 ug/g	106	60-130	100	50-140	0	0-50
419045	Bromoform	<0.05 ug/g	100	60-130	102	50-140	0	0-50
419045	Bromomethane	<0.05 ug/g	80	60-130	100	50-140	0	0-50
419045	Dichloroethylene, 1,2-cis-	<0.05 ug/g	89	60-130	106	50-140	0	0-50
419045	Dichloropropene, 1,3-cis-	<0.05 ug/g	108	60-130	91	50-140	0	0-50
419045	Carbon Tetrachloride	<0.05 ug/g	94	60-130	102	50-140	0	0-50
419045	Chloroform	<0.05 ug/g	84	60-130	104	50-140	0	0-50
419045	Dibromochloromethane	<0.05 ug/g	106	60-130	100	50-140	0	0-50
419045	Dichlorodifluoromethane	<0.05 ug/g	90	60-130	75	50-140	0	0-50
419045	Methylene Chloride	<0.05 ug/g	83	60-130	109	50-140	0	0-50
419045	Ethylbenzene	<0.018 ug/g	85	60-130	95	50-140	0	0-50
419045	Ethylene dibromide	<0.05 ug/g	101	60-130		50-140		0-50
419045	Hexane (n)	<0.05 ug/g	82	60-130	84	50-140	0	0-50
419045	Xylene, m/p-	<0.05 ug/g	90	60-130	86	50-140	0	0-50
419045	Methyl Ethyl Ketone	<0.50 ug/g	90	60-130	118	50-140	0	0-50
419045	Methyl Isobutyl Ketone	<0.50 ug/g	85	60-130	85	50-140	0	0-50
419045	Methyl tert-Butyl Ether (MTBE)	<0.05 ug/g	128	60-130	104	50-140	0	0-50
419045	Chlorobenzene	<0.05 ug/g	83	60-130	98	50-140	0	0-50
419045	Xylene, o-	<0.05 ug/g	90	60-130	103	50-140	0	0-50
419045	Styrene	<0.05 ug/g	103	60-130	96	50-140	0	0-50
419045	Dichloroethylene, 1,2-trans-	<0.05 ug/g	88	60-130	105	50-140	0	0-50

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 Date Reported: 2022-03-25
 Project: 18-2325GHE-2249
 COC #: 887487

Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
419045	Dichloropropene, 1,3-trans-	<0.05 ug/g	103	60-130	98	50-140	0	0-50
419045	Tetrachloroethylene	<0.05 ug/g	107	60-130	93	50-140	0	0-50
419045	Toluene	<0.08 ug/g	92	60-130	107	50-140	0	0-50
419045	Trichloroethylene	<0.01 ug/g	101	60-130	99	50-140	0	0-50
419045	Trichlorofluoromethane	<0.05 ug/g	83	60-130	80	50-140	0	0-50
419045	Vinyl Chloride	<0.02 ug/g	80	60-130	117	50-140	0	0-50
419046	Xylene Mixture							
419047	PHC's F1-BTEX							

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Test Summary

Batch No	Analyte	Instrument	Preparation Date	Analysis Date	Analyst	Method
418867	Silver	ICAPQ-MS	2022-03-22	2022-03-22	SD	EPA 200.8/6020
418867	Arsenic	ICAPQ-MS	2022-03-22	2022-03-22	SD	EPA 200.8/6020
418867	Boron (total)	ICAPQ-MS	2022-03-22	2022-03-22	SD	EPA 200.8/6020
418867	Barium	ICAPQ-MS	2022-03-22	2022-03-22	SD	EPA 200.8/6020
418867	Beryllium	ICAPQ-MS	2022-03-22	2022-03-22	SD	EPA 200.8/6020
418867	Cadmium	ICAPQ-MS	2022-03-22	2022-03-22	SD	EPA 200.8/6020
418867	Cobalt	ICAPQ-MS	2022-03-22	2022-03-22	SD	EPA 200.8/6020
418867	Chromium Total	ICAPQ-MS	2022-03-22	2022-03-22	SD	EPA 200.8/6020
418867	Copper	ICAPQ-MS	2022-03-22	2022-03-22	SD	EPA 200.8/6020
418867	Mercury	ICAPQ-MS	2022-03-22	2022-03-22	SD	EPA 200.8/6020
418867	Molybdenum	ICAPQ-MS	2022-03-22	2022-03-22	SD	EPA 200.8/6020
418867	Nickel	ICAPQ-MS	2022-03-22	2022-03-22	SD	EPA 200.8/6020
418867	Lead	ICAPQ-MS	2022-03-22	2022-03-22	SD	EPA 200.8/6020
418867	Antimony	ICAPQ-MS	2022-03-22	2022-03-22	SD	EPA 200.8/6020
418867	Selenium	ICAPQ-MS	2022-03-22	2022-03-22	SD	EPA 200.8/6020
418867	Thallium	ICAPQ-MS	2022-03-22	2022-03-22	SD	EPA 200.8/6020
418867	Uranium	ICAPQ-MS	2022-03-22	2022-03-22	SD	EPA 200.8/6020
418867	Vanadium	ICAPQ-MS	2022-03-22	2022-03-22	SD	EPA 200.8/6020
418867	Zinc	ICAPQ-MS	2022-03-22	2022-03-22	SD	EPA 200.8/6020
418905	Chromium VI	FAA	2022-03-22	2022-03-23	MW	M US EPA 3060A
418941	Electrical Conductivity	Electrical Conductivity Mete	2022-03-23	2022-03-23	Z_S	Cond-Soil
418946	pH - CaCl2	pH Meter	2022-03-23	2022-03-23	MW	Ag Soil
418948	Cyanide (CN-)	Skalar CN Analyzer	2022-03-23	2022-03-23	Z_S	MOECC E3015
418953	Sodium Adsorption Ratio	iCAP OES	2022-03-23	2022-03-23	Z_S	Ag Soil
418990	PHC's F2	GC/FID	2022-03-24	2022-03-24	R_G	CCME
418990	PHC's F3	GC/FID	2022-03-24	2022-03-24	R_G	CCME
418990	PHC's F4	GC/FID	2022-03-24	2022-03-24	R_G	CCME
418990	Moisture-Humidite	Oven	2022-03-24	2022-03-24	R_G	ASTM 2216
419011	Boron (Hot Water Soluble)	iCAP OES	2022-03-24	2022-03-24	Z_S	MOECC E3470
419042	PHC's F1	GC/FID	2022-03-24	2022-03-24	YH	CCME
419045	Tetrachloroethane, 1,1,1,2-	GC-MS	2022-03-22	2022-03-24	YH	V 8260B
419045	Trichloroethane, 1,1,1-	GC-MS	2022-03-22	2022-03-24	YH	V 8260B

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Test Summary

Batch No	Analyte	Instrument	Preparation Date	Analysis Date	Analyst	Method
419045	Tetrachloroethane, 1,1,2,2-	GC-MS	2022-03-22	2022-03-24	YH	V 8260B
419045	Trichloroethane, 1,1,2-	GC-MS	2022-03-22	2022-03-24	YH	V 8260B
419045	Dichloroethane, 1,1-	GC-MS	2022-03-22	2022-03-24	YH	V 8260B
419045	Dichloroethylene, 1,1-	GC-MS	2022-03-22	2022-03-24	YH	V 8260B
419045	Dichlorobenzene, 1,2-	GC-MS	2022-03-22	2022-03-24	YH	V 8260B
419045	Dichloroethane, 1,2-	GC-MS	2022-03-22	2022-03-24	YH	V 8260B
419045	Dichloropropane, 1,2-	GC-MS	2022-03-22	2022-03-24	YH	V 8260B
419045	Dichlorobenzene, 1,3-	GC-MS	2022-03-22	2022-03-24	YH	V 8260B
419045	Dichloropropene, 1,3-	GC-MS	2022-03-24	2022-03-24	YH	V 8260B
419045	Dichlorobenzene, 1,4-	GC-MS	2022-03-22	2022-03-24	YH	V 8260B
419045	Acetone	GC-MS	2022-03-22	2022-03-24	YH	V 8260B
419045	Benzene	GC-MS	2022-03-22	2022-03-24	YH	V 8260B
419045	Bromodichloromethane	GC-MS	2022-03-22	2022-03-24	YH	V 8260B
419045	Bromoform	GC-MS	2022-03-22	2022-03-24	YH	V 8260B
419045	Bromomethane	GC-MS	2022-03-22	2022-03-24	YH	V 8260B
419045	Dichloroethylene, 1,2-cis-	GC-MS	2022-03-22	2022-03-24	YH	V 8260B
419045	Dichloropropene, 1,3-cis-	GC-MS	2022-03-22	2022-03-24	YH	V 8260B
419045	Carbon Tetrachloride	GC-MS	2022-03-22	2022-03-24	YH	V 8260B
419045	Chloroform	GC-MS	2022-03-22	2022-03-24	YH	V 8260B
419045	Dibromochloromethane	GC-MS	2022-03-22	2022-03-24	YH	V 8260B
419045	Dichlorodifluoromethane	GC-MS	2022-03-22	2022-03-24	YH	V 8260B
419045	Methylene Chloride	GC-MS	2022-03-22	2022-03-24	YH	V 8260B
419045	Ethylbenzene	GC-MS	2022-03-22	2022-03-24	YH	V 8260B
419045	Ethylene dibromide	GC-MS	2022-03-22	2022-03-24	YH	V 8260B
419045	Hexane (n)	GC-MS	2022-03-22	2022-03-24	YH	V 8260B
419045	Xylene, m/p-	GC-MS	2022-03-22	2022-03-24	YH	V 8260B
419045	Methyl Ethyl Ketone	GC-MS	2022-03-22	2022-03-24	YH	V 8260B
419045	Methyl Isobutyl Ketone	GC-MS	2022-03-22	2022-03-24	YH	V 8260B
419045	Methyl tert-Butyl Ether (MTBE)	GC-MS	2022-03-22	2022-03-24	YH	V 8260B
419045	Chlorobenzene	GC-MS	2022-03-22	2022-03-24	YH	V 8260B
419045	Xylene, o-	GC-MS	2022-03-22	2022-03-24	YH	V 8260B
419045	Styrene	GC-MS	2022-03-22	2022-03-24	YH	V 8260B
419045	Dichloroethylene, 1,2-trans-	GC-MS	2022-03-22	2022-03-24	YH	V 8260B

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 COC #: 887487

Test Summary

Batch No	Analyte	Instrument	Preparation Date	Analysis Date	Analyst	Method
419045	Dichloropropene,1,3-trans-	GC-MS	2022-03-22	2022-03-24	YH	V 8260B
419045	Tetrachloroethylene	GC-MS	2022-03-22	2022-03-24	YH	V 8260B
419045	Toluene	GC-MS	2022-03-22	2022-03-24	YH	V 8260B
419045	Trichloroethylene	GC-MS	2022-03-22	2022-03-24	YH	V 8260B
419045	Trichlorofluoromethane	GC-MS	2022-03-22	2022-03-24	YH	V 8260B
419045	Vinyl Chloride	GC-MS	2022-03-22	2022-03-24	YH	V 8260B
419046	Xylene Mixture	GC-MS	2022-03-24	2022-03-24	YH	V 8260B
419047	PHC's F1-BTEX	GC/FID	2022-03-24	2022-03-24	YH	CCME

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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.

Client: Geo Pro Consulting
40 Vogell Rd, Unit 57
Richmond Hill, Ontario
L4B 3K6
Attention: Dylan X
Invoice to: Geo Pro Consulting
PO#:

Report Number: 1978800
Date Submitted: 2022-06-08
Date Reported: 2022-06-15
Project: 18-2325GHE-2235
COC #: 891584
Temperature (C): 12
Custody Seal:

Page 1 of 15

Dear Dylan X:

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).

Sample Comment Summary

Sample ID: 1629871 BH127 AS2B The result for F4 (C34-C50) gravimetric must be substituted if it is greater than the result for F4 (C34-C50). Sample was cleaned with silica gel.
--

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 <http://www.cala.ca/scopes/2602.pdf>

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.

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 COC #: 891584

O.Reg 153-T1-All Other Soils

Exceedence Summary

Sample I.D.	Analyte	Result	Units	Criteria
Inorganics				
BH127 AS2B	Electrical Conductivity	4.53	mS/cm	STD 0.57
BH127 AS2B	Sodium Adsorption Ratio	44.0		STD 2.4

Results relate only to the parameters tested on the samples submitted.
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Guideline = O.Reg 153-T1-All Other Soils - Res/Par/Ins/Ind/Com/Prop

Hydrocarbons

Lab I.D. 1629871
 Sample Matrix Soil153
 Sample Type
 Sample Date 2022-06-02
 Sampling Time
 Sample I.D. BH127
 AS2B

Analyte	Batch No	MRL	Units	Guideline	
PHC's F1	423807	10	ug/g	STD 25	<10
PHC's F1-BTEX	423812	10	ug/g		<10
PHC's F2	423664	2	ug/g	STD 10	<2
PHC's F3	423664	20	ug/g	STD 240	30
PHC's F4	423664	20	ug/g	STD 120	110
PHC's F4g	423685	100	ug/g	STD 120	<100

Metals

Lab I.D. 1629871
 Sample Matrix Soil153
 Sample Type
 Sample Date 2022-06-02
 Sampling Time
 Sample I.D. BH127
 AS2B

Analyte	Batch No	MRL	Units	Guideline	
Antimony	423656	1	ug/g	STD 1.3	<1
Arsenic	423656	1	ug/g	STD 18	5
Barium	423656	1	ug/g	STD 220	73
Beryllium	423656	1	ug/g	STD 2.5	<1
Boron (Hot Water Soluble)	423653	0.5	ug/g		<0.5
Boron (total)	423656	5	ug/g	STD 36	8
Cadmium	423656	0.4	ug/g	STD 1.2	<0.4
Chromium Total	423656	1	ug/g	STD 70	28
Chromium VI	423649	0.20	ug/g	STD 0.66	<0.20
Cobalt	423656	1	ug/g	STD 21	9
Copper	423656	1	ug/g	STD 92	30
Lead	423656	1	ug/g	STD 120	8
Mercury	423656	0.1	ug/g	STD 0.27	<0.1

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Metals

Lab I.D. 1629871
 Sample Matrix Soil153
 Sample Type
 Sample Date 2022-06-02
 Sampling Time
 Sample I.D. BH127
 AS2B

Analyte	Batch No	MRL	Units	Guideline	
Molybdenum	423656	1	ug/g	STD 2	<1
Nickel	423656	1	ug/g	STD 82	22
Selenium	423656	0.5	ug/g	STD 1.5	0.8
Silver	423656	0.2	ug/g	STD 0.5	<0.2
Thallium	423656	1	ug/g	STD 1	<1
Uranium	423656	0.5	ug/g	STD 2.5	<0.5
Vanadium	423656	2	ug/g	STD 86	30
Zinc	423656	2	ug/g	STD 290	52

Volatiles

Lab I.D. 1629871
 Sample Matrix Soil153
 Sample Type
 Sample Date 2022-06-02
 Sampling Time
 Sample I.D. BH127
 AS2B

Analyte	Batch No	MRL	Units	Guideline	
Acetone	423806	0.50	ug/g	STD 0.5	<0.50
Benzene	423806	0.0068	ug/g	STD 0.02	<0.0068
Bromodichloromethane	423806	0.05	ug/g	STD 0.05	<0.05
Bromoform	423806	0.05	ug/g	STD 0.05	<0.05
Bromomethane	423806	0.05	ug/g	STD 0.05	<0.05
Carbon Tetrachloride	423806	0.05	ug/g	STD 0.05	<0.05
Chlorobenzene	423806	0.05	ug/g	STD 0.05	<0.05
Chloroform	423806	0.05	ug/g	STD 0.05	<0.05
Dibromochloromethane	423806	0.05	ug/g	STD 0.05	<0.05
Dichlorobenzene, 1,2-	423806	0.05	ug/g	STD 0.05	<0.05
Dichlorobenzene, 1,3-	423806	0.05	ug/g	STD 0.05	<0.05

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Volatiles

Lab I.D. 1629871
 Sample Matrix Soil153
 Sample Type
 Sample Date 2022-06-02
 Sampling Time
 Sample I.D. BH127
 AS2B

Analyte	Batch No	MRL	Units	Guideline	
Dichlorobenzene, 1,4-	423806	0.05	ug/g	STD 0.05	<0.05
Dichlorodifluoromethane	423806	0.05	ug/g	STD 0.05	<0.05
Dichloroethane, 1,1-	423806	0.05	ug/g	STD 0.05	<0.05
Dichloroethane, 1,2-	423806	0.05	ug/g	STD 0.05	<0.05
Dichloroethylene, 1,1-	423806	0.05	ug/g	STD 0.05	<0.05
Dichloroethylene, 1,2-cis-	423806	0.05	ug/g	STD 0.05	<0.05
Dichloroethylene, 1,2-trans-	423806	0.05	ug/g	STD 0.05	<0.05
Dichloropropane, 1,2-	423806	0.05	ug/g	STD 0.05	<0.05
Dichloropropene,1,3-	423806	0.05	ug/g	STD 0.05	<0.05
Dichloropropene,1,3-cis-	423806	0.05	ug/g		<0.05
Dichloropropene,1,3-trans-	423806	0.05	ug/g		<0.05
Ethylbenzene	423806	0.018	ug/g	STD 0.05	<0.018
Ethylene dibromide	423806	0.05	ug/g	STD 0.05	<0.05
Hexane (n)	423806	0.05	ug/g	STD 0.05	<0.05
Methyl Ethyl Ketone	423806	0.50	ug/g	STD 0.5	<0.50
Methyl Isobutyl Ketone	423806	0.50	ug/g	STD 0.5	<0.50
Methyl tert-Butyl Ether (MTBE)	423806	0.05	ug/g	STD 0.05	<0.05
Methylene Chloride	423806	0.05	ug/g	STD 0.05	<0.05
Styrene	423806	0.05	ug/g	STD 0.05	<0.05
Tetrachloroethane, 1,1,1,2-	423806	0.05	ug/g	STD 0.05	<0.05
Tetrachloroethane, 1,1,2,2-	423806	0.05	ug/g	STD 0.05	<0.05
Tetrachloroethylene	423806	0.05	ug/g	STD 0.05	<0.05
Toluene	423806	0.08	ug/g	STD 0.2	<0.08

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 COC #: 891584

Guideline = O.Reg 153-T1-All Other Soils - Res/Par/Ins/Ind/Com/Prop

Volatiles

Lab I.D. 1629871
 Sample Matrix Soil153
 Sample Type
 Sample Date 2022-06-02
 Sampling Time
 Sample I.D. BH127
 AS2B

Analyte	Batch No	MRL	Units	Guideline	
Trichloroethane, 1,1,1,-	423806	0.05	ug/g	STD 0.05	<0.05
Trichloroethane, 1,1,2,-	423806	0.05	ug/g	STD 0.05	<0.05
Trichloroethylene	423806	0.01	ug/g	STD 0.05	<0.01
Trichlorofluoromethane	423806	0.05	ug/g	STD 0.25	<0.05
Vinyl Chloride	423806	0.02	ug/g	STD 0.02	<0.02
Xylene Mixture	423810	0.05	ug/g	STD 0.05	<0.05
Xylene, m/p-	423806	0.05	ug/g		<0.05
Xylene, o-	423806	0.05	ug/g		<0.05

Inorganics

Lab I.D. 1629871
 Sample Matrix Soil153
 Sample Type
 Sample Date 2022-06-02
 Sampling Time
 Sample I.D. BH127
 AS2B

Analyte	Batch No	MRL	Units	Guideline	
Cyanide (CN-)	423659	0.005	ug/g	STD 0.051	<0.005
Electrical Conductivity	423660	0.05	mS/cm	STD 0.57	4.53*
pH - CaCl2	423647	2.00			7.90
Sodium Adsorption Ratio	423663	0.01		STD 2.4	44.0*

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Moisture

Lab I.D. 1629871
 Sample Matrix Soil153
 Sample Type
 Sample Date 2022-06-02
 Sampling Time
 Sample I.D. BH127
 AS2B

Analyte	Batch No	MRL	Units	Guideline
Moisture-Humidite	423664	0.1	%	12.6

PHC Surrogate

Lab I.D. 1629871
 Sample Matrix Soil153
 Sample Type
 Sample Date 2022-06-02
 Sampling Time
 Sample I.D. BH127
 AS2B

Analyte	Batch No	MRL	Units	Guideline
Alpha-androstrane	423664	0	%	94

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VOCs Surrogates

Lab I.D. 1629871
 Sample Matrix Soil153
 Sample Type
 Sample Date 2022-06-02
 Sampling Time
 Sample I.D. BH127
 AS2B

Analyte	Batch No	MRL	Units	Guideline
1,2-dichloroethane-d4	423806	0	%	105
4-bromofluorobenzene	423806	0	%	117
Toluene-d8	423806	0	%	103

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Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
423647	pH - CaCl2	5.85	100	90-110			0	
423649	Chromium VI	<0.20 ug/g	88	80-120	82	70-130	0	0-35
423653	Boron (Hot Water Soluble)	<0.5 ug/g	99	70-130	113	75-125	0	0-30
423656	Silver	<0.2 ug/g	129	70-130	100	70-130	0	0-20
423656	Arsenic	<1 ug/g	95	70-130	88	70-130	0	0-20
423656	Boron (total)	<5 ug/g	106	70-130	116	70-130	0	0-20
423656	Barium	<1 ug/g	98	70-130		70-130	10	0-20
423656	Beryllium	<1 ug/g	106	70-130	98	70-130	0	0-20
423656	Cadmium	<0.4 ug/g	103	70-130	98	70-130	0	0-20
423656	Cobalt	<1 ug/g	104	70-130	80	70-130	9	0-20
423656	Chromium Total	<1 ug/g	107	70-130	54	70-130	10	0-20
423656	Copper	<1 ug/g	110	70-130	75	70-130	9	0-20
423656	Mercury	<0.1 ug/g	90	70-130	86	70-130	0	0-20
423656	Molybdenum	<1 ug/g	93	70-130	88	70-130	0	0-20
423656	Nickel	<1 ug/g	108	70-130	67	70-130	10	0-20
423656	Lead	<1 ug/g	98	70-130	76	70-130	14	0-20
423656	Antimony	<1 ug/g	99	70-130	90	70-130	0	0-20
423656	Selenium	<0.5 ug/g	104	70-130	95	70-130	0	0-20
423656	Thallium	<1 ug/g	96	70-130	84	70-130	0	0-20
423656	Uranium	<0.5 ug/g	104	70-130	97	70-130	0	0-20
423656	Vanadium	<2 ug/g	103	70-130	49	70-130	11	0-20
423656	Zinc	<2 ug/g	113	70-130		70-130	10	0-20
423659	Cyanide (CN-)	<0.005 ug/g	94	75-125	98	70-130	0	0-20
423660	Electrical Conductivity	<0.05	100	90-110			0	0-10
423663	Sodium Adsorption Ratio	<0.01					5	
423664	PHC's F2	<2 ug/g	89	80-120	81	60-140	0	0-30
423664	PHC's F3	<20 ug/g	88	80-120	81	60-140	1	0-30
423664	PHC's F4	<20 ug/g	88	80-120	81	60-140	0	0-30
423664	Moisture-Humidite	<0.1 %	100	80-120			31	
423685	PHC's F4g	<100 ug/g	115	80-120		60-140		0-30
423806	Tetrachloroethane, 1,1,1,2-	<0.05 ug/g	91	60-130		50-140	0	0-50
423806	Trichloroethane, 1,1,1-	<0.05 ug/g	112	60-130		50-140	0	0-50

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Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
423806	Tetrachloroethane, 1,1,2,2-	<0.05 ug/g	98	60-130		50-140	0	0-30
423806	Trichloroethane, 1,1,2-	<0.05 ug/g	87	60-130		50-140	0	0-50
423806	Dichloroethane, 1,1-	<0.05 ug/g	119	60-130		50-140	0	0-50
423806	Dichloroethylene, 1,1-	<0.05 ug/g	122	60-130		50-140	0	0-50
423806	Dichlorobenzene, 1,2-	<0.05 ug/g	89	60-130		50-140	0	0-50
423806	Dichloroethane, 1,2-	<0.05 ug/g	101	60-130		50-140	0	0-50
423806	Dichloropropane, 1,2-	<0.05 ug/g	93	60-130		50-140	0	0-50
423806	Dichlorobenzene, 1,3-	<0.05 ug/g	99	60-130		50-140	0	0-50
423806	Dichloropropene, 1,3-	<0.05 ug/g						
423806	Dichlorobenzene, 1,4-	<0.05 ug/g	111	60-130		50-140	0	0-50
423806	Acetone	<0.50 ug/g	113	60-130		50-140	0	0-50
423806	Benzene	<0.0068	108	60-130		50-140	0	0-50
423806	Bromodichloromethane	<0.05 ug/g	82	60-130		50-140	0	0-50
423806	Bromoform	<0.05 ug/g	83	60-130		50-140	0	0-50
423806	Bromomethane	<0.05 ug/g	96	60-130		50-140	0	0-50
423806	Dichloroethylene, 1,2-cis-	<0.05 ug/g	107	60-130		50-140	0	0-50
423806	Dichloropropene, 1,3-cis-	<0.05 ug/g	89	60-130		50-140	0	0-50
423806	Carbon Tetrachloride	<0.05 ug/g	97	60-130		50-140	0	0-50
423806	Chloroform	<0.05 ug/g	93	60-130		50-140	0	0-50
423806	Dibromochloromethane	<0.05 ug/g	78	60-130		50-140	0	0-50
423806	Dichlorodifluoromethane	<0.05 ug/g	122	60-130		50-140	0	0-50
423806	Methylene Chloride	<0.05 ug/g	96	60-130		50-140	0	0-50
423806	Ethylbenzene	<0.018 ug/g	95	60-130		50-140	0	0-50
423806	Ethylene dibromide	<0.05 ug/g	87	60-130		50-140		0-50
423806	Hexane (n)	0.12 ug/g	113	60-130		50-140	0	0-50
423806	Xylene, m/p-	<0.05 ug/g	98	60-130		50-140	0	0-50
423806	Methyl Ethyl Ketone	<0.50 ug/g	99	60-130		50-140	0	0-50
423806	Methyl Isobutyl Ketone	<0.50 ug/g	90	60-130		50-140	0	0-50
423806	Methyl tert-Butyl Ether (MTBE)	<0.05 ug/g	105	60-130		50-140	0	0-50
423806	Chlorobenzene	<0.05 ug/g	94	60-130		50-140	0	0-50
423806	Xylene, o-	<0.05 ug/g	84	60-130		50-140	0	0-50
423806	Styrene	<0.05 ug/g	77	60-130		50-140	0	0-50
423806	Dichloroethylene, 1,2-trans-	<0.05 ug/g	92	60-130		50-140	0	0-50

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 COC #: 891584

Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
423806	Dichloropropene, 1,3-trans-	<0.05 ug/g	83	60-130		50-140	0	0-50
423806	Tetrachloroethylene	<0.05 ug/g	89	60-130		50-140	0	0-50
423806	Toluene	<0.08 ug/g	106	60-130		50-140	0	0-50
423806	Trichloroethylene	<0.01 ug/g	110	60-130		50-140	0	0-50
423806	Trichlorofluoromethane	<0.05 ug/g	94	60-130		50-140	0	0-50
423806	Vinyl Chloride	<0.02 ug/g	112	60-130		50-140	0	0-50
423807	PHC's F1	<10 ug/g	99	80-120	95	60-140	0	0-30
423810	Xylene Mixture							
423812	PHC's F1-BTEX							

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Client: Geo Pro Consulting
 40 Vogell Rd, Unit 57
 Richmond Hill, Ontario
 L4B 3K6
 Attention: Dylan X
 PO#:
 Invoice to: Geo Pro Consulting

Report Number: 1978800
 Date Submitted: 2022-06-08
 Date Reported: 2022-06-15
 Project: 18-2325GHE-2235
 COC #: 891584

Test Summary

Batch No	Analyte	Instrument	Preparation Date	Analysis Date	Analyst	Method
423647	pH - CaCl2	pH Meter	2022-06-13	2022-06-13	AsA	Ag Soil
423649	Chromium VI	FAA	2022-06-13	2022-06-13	MW	M US EPA 3060A
423653	Boron (Hot Water Soluble)	iCAP OES	2022-06-13	2022-06-13	Z_S	MOECC E3470
423656	Silver	ICAPQ-MS	2022-06-13	2022-06-13	SD	EPA 200.8/6020
423656	Arsenic	ICAPQ-MS	2022-06-13	2022-06-13	SD	EPA 200.8/6020
423656	Boron (total)	ICAPQ-MS	2022-06-13	2022-06-13	SD	EPA 200.8/6020
423656	Barium	ICAPQ-MS	2022-06-13	2022-06-13	SD	EPA 200.8/6020
423656	Beryllium	ICAPQ-MS	2022-06-13	2022-06-13	SD	EPA 200.8/6020
423656	Cadmium	ICAPQ-MS	2022-06-13	2022-06-13	SD	EPA 200.8/6020
423656	Cobalt	ICAPQ-MS	2022-06-13	2022-06-13	SD	EPA 200.8/6020
423656	Chromium Total	ICAPQ-MS	2022-06-13	2022-06-13	SD	EPA 200.8/6020
423656	Copper	ICAPQ-MS	2022-06-13	2022-06-13	SD	EPA 200.8/6020
423656	Mercury	ICAPQ-MS	2022-06-13	2022-06-13	SD	EPA 200.8/6020
423656	Molybdenum	ICAPQ-MS	2022-06-13	2022-06-13	SD	EPA 200.8/6020
423656	Nickel	ICAPQ-MS	2022-06-13	2022-06-13	SD	EPA 200.8/6020
423656	Lead	ICAPQ-MS	2022-06-13	2022-06-13	SD	EPA 200.8/6020
423656	Antimony	ICAPQ-MS	2022-06-13	2022-06-13	SD	EPA 200.8/6020
423656	Selenium	ICAPQ-MS	2022-06-13	2022-06-13	SD	EPA 200.8/6020
423656	Thallium	ICAPQ-MS	2022-06-13	2022-06-13	SD	EPA 200.8/6020
423656	Uranium	ICAPQ-MS	2022-06-13	2022-06-13	SD	EPA 200.8/6020
423656	Vanadium	ICAPQ-MS	2022-06-13	2022-06-13	SD	EPA 200.8/6020
423656	Zinc	ICAPQ-MS	2022-06-13	2022-06-13	SD	EPA 200.8/6020
423659	Cyanide (CN-)	Skalar CN Analyzer	2022-06-13	2022-06-13	Z_S	MOECC E3015
423660	Electrical Conductivity	Electrical Conductivity Mete	2022-06-13	2022-06-13	Z_S	Cond-Soil
423663	Sodium Adsorption Ratio	iCAP OES	2022-06-13	2022-06-13	Z_S	Ag Soil
423664	PHC's F2	GC/FID	2022-06-13	2022-06-13	R_G	CCME
423664	PHC's F3	GC/FID	2022-06-13	2022-06-13	R_G	CCME
423664	PHC's F4	GC/FID	2022-06-13	2022-06-13	R_G	CCME
423664	Moisture-Humidite	Oven	2022-06-13	2022-06-13	R_G	ASTM 2216
423685	PHC's F4g	Gravimetric	2022-06-13	2022-06-13	R_G	CCME
423806	Tetrachloroethane, 1,1,1,2-	GC-MS	2022-06-10	2022-06-11	NF	V 8260B
423806	Trichloroethane, 1,1,1-	GC-MS	2022-06-10	2022-06-11	NF	V 8260B

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Client: Geo Pro Consulting
 40 Vogell Rd, Unit 57
 Richmond Hill, Ontario
 L4B 3K6
 Attention: Dylan X
 PO#:
 Invoice to: Geo Pro Consulting

Report Number: 1978800
 Date Submitted: 2022-06-08
 Date Reported: 2022-06-15
 Project: 18-2325GHE-2235
 COC #: 891584

Test Summary

Batch No	Analyte	Instrument	Preparation Date	Analysis Date	Analyst	Method
423806	Tetrachloroethane, 1,1,2,2-	GC-MS	2022-06-10	2022-06-11	NF	V 8260B
423806	Trichloroethane, 1,1,2-	GC-MS	2022-06-10	2022-06-11	NF	V 8260B
423806	Dichloroethane, 1,1-	GC-MS	2022-06-10	2022-06-11	NF	V 8260B
423806	Dichloroethylene, 1,1-	GC-MS	2022-06-10	2022-06-11	NF	V 8260B
423806	Dichlorobenzene, 1,2-	GC-MS	2022-06-10	2022-06-11	NF	V 8260B
423806	Dichloroethane, 1,2-	GC-MS	2022-06-10	2022-06-11	NF	V 8260B
423806	Dichloropropane, 1,2-	GC-MS	2022-06-10	2022-06-11	NF	V 8260B
423806	Dichlorobenzene, 1,3-	GC-MS	2022-06-10	2022-06-11	NF	V 8260B
423806	Dichloropropene, 1,3-	GC-MS	2022-06-15	2022-06-15	NF	V 8260B
423806	Dichlorobenzene, 1,4-	GC-MS	2022-06-10	2022-06-11	NF	V 8260B
423806	Acetone	GC-MS	2022-06-10	2022-06-11	NF	V 8260B
423806	Benzene	GC-MS	2022-06-10	2022-06-11	NF	V 8260B
423806	Bromodichloromethane	GC-MS	2022-06-10	2022-06-11	NF	V 8260B
423806	Bromoform	GC-MS	2022-06-10	2022-06-11	NF	V 8260B
423806	Bromomethane	GC-MS	2022-06-10	2022-06-11	NF	V 8260B
423806	Dichloroethylene, 1,2-cis-	GC-MS	2022-06-10	2022-06-11	NF	V 8260B
423806	Dichloropropene, 1,3-cis-	GC-MS	2022-06-10	2022-06-11	NF	V 8260B
423806	Carbon Tetrachloride	GC-MS	2022-06-10	2022-06-11	NF	V 8260B
423806	Chloroform	GC-MS	2022-06-10	2022-06-11	NF	V 8260B
423806	Dibromochloromethane	GC-MS	2022-06-10	2022-06-11	NF	V 8260B
423806	Dichlorodifluoromethane	GC-MS	2022-06-10	2022-06-11	NF	V 8260B
423806	Methylene Chloride	GC-MS	2022-06-10	2022-06-11	NF	V 8260B
423806	Ethylbenzene	GC-MS	2022-06-10	2022-06-11	NF	V 8260B
423806	Ethylene dibromide	GC-MS	2022-06-10	2022-06-11	NF	V 8260B
423806	Hexane (n)	GC-MS	2022-06-10	2022-06-11	NF	V 8260B
423806	Xylene, m/p-	GC-MS	2022-06-10	2022-06-11	NF	V 8260B
423806	Methyl Ethyl Ketone	GC-MS	2022-06-10	2022-06-11	NF	V 8260B
423806	Methyl Isobutyl Ketone	GC-MS	2022-06-10	2022-06-11	NF	V 8260B
423806	Methyl tert-Butyl Ether (MTBE)	GC-MS	2022-06-10	2022-06-11	NF	V 8260B
423806	Chlorobenzene	GC-MS	2022-06-10	2022-06-11	NF	V 8260B
423806	Xylene, o-	GC-MS	2022-06-10	2022-06-11	NF	V 8260B
423806	Styrene	GC-MS	2022-06-10	2022-06-11	NF	V 8260B
423806	Dichloroethylene, 1,2-trans-	GC-MS	2022-06-10	2022-06-11	NF	V 8260B

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 L4B 3K6
 Attention: Dylan X
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Report Number: 1978800
 Date Submitted: 2022-06-08
 Date Reported: 2022-06-15
 Project: 18-2325GHE-2235
 COC #: 891584

Test Summary

Batch No	Analyte	Instrument	Preparation Date	Analysis Date	Analyst	Method
423806	Dichloropropene,1,3-trans-	GC-MS	2022-06-10	2022-06-11	NF	V 8260B
423806	Tetrachloroethylene	GC-MS	2022-06-10	2022-06-11	NF	V 8260B
423806	Toluene	GC-MS	2022-06-10	2022-06-11	NF	V 8260B
423806	Trichloroethylene	GC-MS	2022-06-10	2022-06-11	NF	V 8260B
423806	Trichlorofluoromethane	GC-MS	2022-06-10	2022-06-11	NF	V 8260B
423806	Vinyl Chloride	GC-MS	2022-06-10	2022-06-11	NF	V 8260B
423807	PHC's F1	GC/FID	2022-06-14	2022-06-14	NF	CCME
423810	Xylene Mixture	GC-MS	2022-06-15	2022-06-15	NF	V 8260B
423812	PHC's F1-BTEX	GC/FID	2022-06-15	2022-06-15	NF	CCME

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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.

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L4B 3K6
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PO#:

Report Number: 1973585
Date Submitted: 2022-03-18
Date Reported: 2022-03-25
Project: 18-2325GHE-2251
COC #: 883780
Temperature (C): 23
Custody Seal:

Page 1 of 15

Dear Dylan X:

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).

Sample Comment Summary

Sample ID: 1615150 BH134 AS2C The result for F4 (C34-C50) gravimetric must be substituted if it is greater than the result for F4 (C34-C50). Sample was cleaned with silica gel.
--

Report Comments:

Addrine Thomas, Inorganics Supervisor

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 <http://www.cala.ca/scopes/2602.pdf>

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: Geo Pro Consulting
 40 Vogell Rd, Unit 57
 Richmond Hill, Ontario
 L4B 3K6
 Attention: Dylan X
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Report Number: 1973585
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 Project: 18-2325GHE-2251
 COC #: 883780

O.Reg 153-T1-All Other Soils

Exceedence Summary

Sample I.D.	Analyte	Result	Units	Criteria
Hydrocarbons				
BH134 AS2C	Petroleum Hydrocarbons F4	180	ug/g	STD 120
BH134 AS2C	Petroleum Hydrocarbons F4g	600	ug/g	STD 120
Inorganics				
BH134 AS2C	Electrical Conductivity	2.10	mS/cm	STD 0.57
BH134 AS2C	Sodium Adsorption Ratio	8.44		STD 2.4

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 COC #: 883780

Guideline = O.Reg 153-T1-All Other Soils - Res/Par/Ins/Ind/Com/Prop

Hydrocarbons

Lab I.D. 1615150
 Sample Matrix Soil153
 Sample Type
 Sample Date 2022-03-17
 Sampling Time
 Sample I.D. BH134
 AS2C

Analyte	Batch No	MRL	Units	Guideline	
PHC's F1	419099	10	ug/g	STD 25	<10
PHC's F1-BTEX	419101	10	ug/g		<10
PHC's F2	418990	2	ug/g	STD 10	4
PHC's F3	418990	20	ug/g	STD 240	100
PHC's F4	418990	20	ug/g	STD 120	180*
PHC's F4g	419028	100	ug/g	STD 120	600*

Metals

Lab I.D. 1615150
 Sample Matrix Soil153
 Sample Type
 Sample Date 2022-03-17
 Sampling Time
 Sample I.D. BH134
 AS2C

Analyte	Batch No	MRL	Units	Guideline	
Antimony	418867	1	ug/g	STD 1.3	<1
Arsenic	418867	1	ug/g	STD 18	4
Barium	418867	1	ug/g	STD 220	53
Beryllium	418867	1	ug/g	STD 2.5	<1
Boron (Hot Water Soluble)	419011	0.5	ug/g		<0.5
Boron (total)	418867	5	ug/g	STD 36	7
Cadmium	418867	0.4	ug/g	STD 1.2	<0.4
Chromium Total	418867	1	ug/g	STD 70	22
Chromium VI	419094	0.20	ug/g	STD 0.66	<0.20
Cobalt	418867	1	ug/g	STD 21	7
Copper	418867	1	ug/g	STD 92	20
Lead	418867	1	ug/g	STD 120	8
Mercury	418867	0.1	ug/g	STD 0.27	<0.1

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 COC #: 883780

Guideline = O.Reg 153-T1-All Other Soils - Res/Par/Ins/Ind/Com/Prop

Metals

Lab I.D. 1615150
 Sample Matrix Soil153
 Sample Type
 Sample Date 2022-03-17
 Sampling Time
 Sample I.D. BH134
 AS2C

Analyte	Batch No	MRL	Units	Guideline	
Molybdenum	418867	1	ug/g	STD 2	<1
Nickel	418867	1	ug/g	STD 82	18
Selenium	418867	0.5	ug/g	STD 1.5	<0.5
Silver	418867	0.2	ug/g	STD 0.5	<0.2
Thallium	418867	1	ug/g	STD 1	<1
Uranium	418867	0.5	ug/g	STD 2.5	<0.5
Vanadium	418867	2	ug/g	STD 86	23
Zinc	418867	2	ug/g	STD 290	52

Volatiles

Lab I.D. 1615150
 Sample Matrix Soil153
 Sample Type
 Sample Date 2022-03-17
 Sampling Time
 Sample I.D. BH134
 AS2C

Analyte	Batch No	MRL	Units	Guideline	
Acetone	419096	0.50	ug/g	STD 0.5	<0.50
Benzene	419096	0.0068	ug/g	STD 0.02	<0.0068
Bromodichloromethane	419096	0.05	ug/g	STD 0.05	<0.05
Bromoform	419096	0.05	ug/g	STD 0.05	<0.05
Bromomethane	419096	0.05	ug/g	STD 0.05	<0.05
Carbon Tetrachloride	419096	0.05	ug/g	STD 0.05	<0.05
Chlorobenzene	419096	0.05	ug/g	STD 0.05	<0.05
Chloroform	419096	0.05	ug/g	STD 0.05	<0.05
Dibromochloromethane	419096	0.05	ug/g	STD 0.05	<0.05
Dichlorobenzene, 1,2-	419096	0.05	ug/g	STD 0.05	<0.05
Dichlorobenzene, 1,3-	419096	0.05	ug/g	STD 0.05	<0.05

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 COC #: 883780

Guideline = O.Reg 153-T1-All Other Soils - Res/Par/Ins/Ind/Com/Prop

Volatiles

Lab I.D. 1615150
 Sample Matrix Soil153
 Sample Type
 Sample Date 2022-03-17
 Sampling Time
 Sample I.D. BH134
 AS2C

Analyte	Batch No	MRL	Units	Guideline	
Dichlorobenzene, 1,4-	419096	0.05	ug/g	STD 0.05	<0.05
Dichlorodifluoromethane	419096	0.05	ug/g	STD 0.05	<0.05
Dichloroethane, 1,1-	419096	0.05	ug/g	STD 0.05	<0.05
Dichloroethane, 1,2-	419096	0.05	ug/g	STD 0.05	<0.05
Dichloroethylene, 1,1-	419096	0.05	ug/g	STD 0.05	<0.05
Dichloroethylene, 1,2-cis-	419096	0.05	ug/g	STD 0.05	<0.05
Dichloroethylene, 1,2-trans-	419096	0.05	ug/g	STD 0.05	<0.05
Dichloropropane, 1,2-	419096	0.05	ug/g	STD 0.05	<0.05
Dichloropropene,1,3-	419096	0.05	ug/g	STD 0.05	<0.05
Dichloropropene,1,3-cis-	419096	0.05	ug/g		<0.05
Dichloropropene,1,3-trans-	419096	0.05	ug/g		<0.05
Ethylbenzene	419096	0.018	ug/g	STD 0.05	<0.018
Ethylene dibromide	419096	0.05	ug/g	STD 0.05	<0.05
Hexane (n)	419096	0.05	ug/g	STD 0.05	<0.05
Methyl Ethyl Ketone	419096	0.50	ug/g	STD 0.5	<0.50
Methyl Isobutyl Ketone	419096	0.50	ug/g	STD 0.5	<0.50
Methyl tert-Butyl Ether (MTBE)	419096	0.05	ug/g	STD 0.05	<0.05
Methylene Chloride	419096	0.05	ug/g	STD 0.05	<0.05
Styrene	419096	0.05	ug/g	STD 0.05	<0.05
Tetrachloroethane, 1,1,1,2,-	419096	0.05	ug/g	STD 0.05	<0.05
Tetrachloroethane, 1,1,2,2,-	419096	0.05	ug/g	STD 0.05	<0.05
Tetrachloroethylene	419096	0.05	ug/g	STD 0.05	<0.05
Toluene	419096	0.08	ug/g	STD 0.2	<0.08

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 Project: 18-2325GHE-2251
 COC #: 883780

Guideline = O.Reg 153-T1-All Other Soils - Res/Par/Ins/Ind/Com/Prop

Volatiles

Lab I.D. 1615150
 Sample Matrix Soil153
 Sample Type
 Sample Date 2022-03-17
 Sampling Time
 Sample I.D. BH134
 AS2C

Analyte	Batch No	MRL	Units	Guideline	
Trichloroethane, 1,1,1-	419096	0.05	ug/g	STD 0.05	<0.05
Trichloroethane, 1,1,2-	419096	0.05	ug/g	STD 0.05	<0.05
Trichloroethylene	419096	0.01	ug/g	STD 0.05	<0.01
Trichlorofluoromethane	419096	0.05	ug/g	STD 0.25	<0.05
Vinyl Chloride	419096	0.02	ug/g	STD 0.02	<0.02
Xylene Mixture	419100	0.05	ug/g	STD 0.05	<0.05
Xylene, m/p-	419096	0.05	ug/g		<0.05
Xylene, o-	419096	0.05	ug/g		<0.05

Inorganics

Lab I.D. 1615150
 Sample Matrix Soil153
 Sample Type
 Sample Date 2022-03-17
 Sampling Time
 Sample I.D. BH134
 AS2C

Analyte	Batch No	MRL	Units	Guideline	
Cyanide (CN-)	419095	0.005	ug/g	STD 0.051	<0.005
Electrical Conductivity	418941	0.05	mS/cm	STD 0.57	2.10*
pH - CaCl2	418946	2.00			7.74
Sodium Adsorption Ratio	418953	0.01		STD 2.4	8.44*

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Client: Geo Pro Consulting
 40 Vogell Rd, Unit 57
 Richmond Hill, Ontario
 L4B 3K6
 Attention: Dylan X
 PO#:
 Invoice to: Geo Pro Consulting

Report Number: 1973585
 Date Submitted: 2022-03-18
 Date Reported: 2022-03-25
 Project: 18-2325GHE-2251
 COC #: 883780

Guideline = O.Reg 153-T1-All Other Soils - Res/Par/Ins/Ind/Com/Prop

Moisture

Lab I.D. 1615150
 Sample Matrix Soil153
 Sample Type
 Sample Date 2022-03-17
 Sampling Time
 Sample I.D. BH134
 AS2C

Analyte	Batch No	MRL	Units	Guideline
Moisture-Humidite	418990	0.1	%	11.2

PHC Surrogate

Lab I.D. 1615150
 Sample Matrix Soil153
 Sample Type
 Sample Date 2022-03-17
 Sampling Time
 Sample I.D. BH134
 AS2C

Analyte	Batch No	MRL	Units	Guideline
Alpha-androstrane	418990	0	%	96

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Guideline = O.Reg 153-T1-All Other Soils - Res/Par/Ins/Ind/Com/Prop

VOCs Surrogates

Lab I.D. 1615150
 Sample Matrix Soil153
 Sample Type
 Sample Date 2022-03-17
 Sampling Time
 Sample I.D. BH134
 AS2C

Analyte	Batch No	MRL	Units	Guideline
1,2-dichloroethane-d4	419096	0	%	106
4-bromofluorobenzene	419096	0	%	90
Toluene-d8	419096	0	%	96

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 Project: 18-2325GHE-2251
 COC #: 883780

Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
418867	Silver	<0.2 ug/g	108	70-130	83	70-130	0	0-20
418867	Arsenic	<1 ug/g	93	70-130	93	70-130	0	0-20
418867	Boron (total)	<5 ug/g	102	70-130	77	70-130	0	0-20
418867	Barium	<1 ug/g	93	70-130	82	70-130	6	0-20
418867	Beryllium	<1 ug/g	97	70-130	96	70-130	0	0-20
418867	Cadmium	<0.4 ug/g	101	70-130	101	70-130	0	0-20
418867	Cobalt	<1 ug/g	94	70-130	89	70-130	5	0-20
418867	Chromium Total	<1 ug/g	99	70-130	85	70-130	13	0-20
418867	Copper	<1 ug/g	101	70-130	81	70-130	7	0-20
418867	Mercury	<0.1 ug/g	90	70-130	79	70-130	0	0-20
418867	Molybdenum	<1 ug/g	92	70-130	94	70-130	0	0-20
418867	Nickel	<1 ug/g	99	70-130	79	70-130	6	0-20
418867	Lead	<1 ug/g	91	70-130	76	70-130	5	0-20
418867	Antimony	<1 ug/g	85	70-130	88	70-130	0	0-20
418867	Selenium	<0.5 ug/g	106	70-130	84	70-130	0	0-20
418867	Thallium	<1 ug/g	91	70-130	79	70-130	0	0-20
418867	Uranium	<0.5 ug/g	84	70-130	78	70-130	0	0-20
418867	Vanadium	<2 ug/g	96	70-130	102	70-130	7	0-20
418867	Zinc	<2 ug/g	103	70-130	74	70-130	6	0-20
418941	Electrical Conductivity	<0.05	99	90-110			0	0-10
418946	pH - CaCl2	6.45	101	90-110			0	
418953	Sodium Adsorption Ratio	<0.01					2	
418990	PHC's F2	<2 ug/g	83	80-120	101	60-140	0	0-30
418990	PHC's F3	<20 ug/g	84	80-120	101	60-140	0	0-30
418990	PHC's F4	<20 ug/g	84	80-120	101	60-140	0	0-30
418990	Moisture-Humidite	<0.1 %	100	80-120			4	
419011	Boron (Hot Water Soluble)	<0.5 ug/g	101	70-130	105	75-125	0	0-30
419028	PHC's F4g	<100 ug/g	117	80-120		60-140		0-30
419094	Chromium VI	<0.20 ug/g	95	80-120	89	70-130	0	0-35
419095	Cyanide (CN-)	<0.005 ug/g	86	75-125	93	70-130	0	0-20
419096	Tetrachloroethane, 1,1,1,2-	<0.05 ug/g	99	60-130	96	50-140	0	0-50
419096	Trichloroethane, 1,1,1-	<0.05 ug/g	87	60-130	100	50-140	0	0-50

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 L4B 3K6
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 PO#:
 Invoice to: Geo Pro Consulting

Report Number: 1973585
 Date Submitted: 2022-03-18
 Date Reported: 2022-03-25
 Project: 18-2325GHE-2251
 COC #: 883780

Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
419096	Tetrachloroethane, 1,1,2,2-	<0.05 ug/g	88	60-130	92	50-140	0	0-30
419096	Trichloroethane, 1,1,2-	<0.05 ug/g	107	60-130	103	50-140	0	0-50
419096	Dichloroethane, 1,1-	<0.05 ug/g	94	60-130	107	50-140	0	0-50
419096	Dichloroethylene, 1,1-	<0.05 ug/g	83	60-130	110	50-140	0	0-50
419096	Dichlorobenzene, 1,2-	<0.05 ug/g	98	60-130	94	50-140	0	0-50
419096	Dichloroethane, 1,2-	<0.05 ug/g	88	60-130	113	50-140	0	0-50
419096	Dichloropropane, 1,2-	<0.05 ug/g	100	60-130	101	50-140	0	0-50
419096	Dichlorobenzene, 1,3-	<0.05 ug/g	81	60-130	76	50-140	0	0-50
419096	Dichloropropene, 1,3-	<0.05 ug/g						
419096	Dichlorobenzene, 1,4-	<0.05 ug/g	98	60-130	92	50-140	0	0-50
419096	Acetone	<0.50 ug/g	94	60-130	119	50-140	0	0-50
419096	Benzene	<0.0068	85	60-130	106	50-140	0	0-50
419096	Bromodichloromethane	<0.05 ug/g	106	60-130	100	50-140	0	0-50
419096	Bromoform	<0.05 ug/g	100	60-130	102	50-140	0	0-50
419096	Bromomethane	<0.05 ug/g	80	60-130	100	50-140	0	0-50
419096	Dichloroethylene, 1,2-cis-	<0.05 ug/g	89	60-130	106	50-140	0	0-50
419096	Dichloropropene, 1,3-cis-	<0.05 ug/g	108	60-130	91	50-140	0	0-50
419096	Carbon Tetrachloride	<0.05 ug/g	94	60-130	102	50-140	0	0-50
419096	Chloroform	<0.05 ug/g	84	60-130	104	50-140	0	0-50
419096	Dibromochloromethane	<0.05 ug/g	106	60-130	100	50-140	0	0-50
419096	Dichlorodifluoromethane	<0.05 ug/g	90	60-130	75	50-140	0	0-50
419096	Methylene Chloride	<0.05 ug/g	83	60-130	109	50-140	0	0-50
419096	Ethylbenzene	<0.018 ug/g	85	60-130	95	50-140	0	0-50
419096	Ethylene dibromide	<0.05 ug/g	101	60-130		50-140		0-50
419096	Hexane (n)	<0.05 ug/g	82	60-130	84	50-140	0	0-50
419096	Xylene, m/p-	<0.05 ug/g	90	60-130	86	50-140	0	0-50
419096	Methyl Ethyl Ketone	<0.50 ug/g	90	60-130	118	50-140	0	0-50
419096	Methyl Isobutyl Ketone	<0.50 ug/g	85	60-130	85	50-140	0	0-50
419096	Methyl tert-Butyl Ether (MTBE)	<0.05 ug/g	128	60-130	104	50-140	0	0-50
419096	Chlorobenzene	<0.05 ug/g	83	60-130	98	50-140	0	0-50
419096	Xylene, o-	<0.05 ug/g	90	60-130	103	50-140	0	0-50
419096	Styrene	<0.05 ug/g	103	60-130	96	50-140	0	0-50
419096	Dichloroethylene, 1,2-trans-	<0.05 ug/g	88	60-130	105	50-140	0	0-50

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 L4B 3K6
 Attention: Dylan X
 PO#:
 Invoice to: Geo Pro Consulting

Report Number: 1973585
 Date Submitted: 2022-03-18
 Date Reported: 2022-03-25
 Project: 18-2325GHE-2251
 COC #: 883780

Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
419096	Dichloropropene, 1,3-trans-	<0.05 ug/g	103	60-130	98	50-140	0	0-50
419096	Tetrachloroethylene	<0.05 ug/g	107	60-130	93	50-140	0	0-50
419096	Toluene	<0.08 ug/g	92	60-130	107	50-140	0	0-50
419096	Trichloroethylene	<0.01 ug/g	101	60-130	99	50-140	0	0-50
419096	Trichlorofluoromethane	<0.05 ug/g	83	60-130	80	50-140	0	0-50
419096	Vinyl Chloride	<0.02 ug/g	80	60-130	117	50-140	0	0-50
419099	PHC's F1	<10 ug/g	100	80-120	95	60-140	0	0-30
419100	Xylene Mixture							
419101	PHC's F1-BTEX							

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Test Summary

Batch No	Analyte	Instrument	Preparation Date	Analysis Date	Analyst	Method
418867	Silver	ICAPQ-MS	2022-03-22	2022-03-22	SD	EPA 200.8/6020
418867	Arsenic	ICAPQ-MS	2022-03-22	2022-03-22	SD	EPA 200.8/6020
418867	Boron (total)	ICAPQ-MS	2022-03-22	2022-03-22	SD	EPA 200.8/6020
418867	Barium	ICAPQ-MS	2022-03-22	2022-03-22	SD	EPA 200.8/6020
418867	Beryllium	ICAPQ-MS	2022-03-22	2022-03-22	SD	EPA 200.8/6020
418867	Cadmium	ICAPQ-MS	2022-03-22	2022-03-22	SD	EPA 200.8/6020
418867	Cobalt	ICAPQ-MS	2022-03-22	2022-03-22	SD	EPA 200.8/6020
418867	Chromium Total	ICAPQ-MS	2022-03-22	2022-03-22	SD	EPA 200.8/6020
418867	Copper	ICAPQ-MS	2022-03-22	2022-03-22	SD	EPA 200.8/6020
418867	Mercury	ICAPQ-MS	2022-03-22	2022-03-22	SD	EPA 200.8/6020
418867	Molybdenum	ICAPQ-MS	2022-03-22	2022-03-22	SD	EPA 200.8/6020
418867	Nickel	ICAPQ-MS	2022-03-22	2022-03-22	SD	EPA 200.8/6020
418867	Lead	ICAPQ-MS	2022-03-22	2022-03-22	SD	EPA 200.8/6020
418867	Antimony	ICAPQ-MS	2022-03-22	2022-03-22	SD	EPA 200.8/6020
418867	Selenium	ICAPQ-MS	2022-03-22	2022-03-22	SD	EPA 200.8/6020
418867	Thallium	ICAPQ-MS	2022-03-22	2022-03-22	SD	EPA 200.8/6020
418867	Uranium	ICAPQ-MS	2022-03-22	2022-03-22	SD	EPA 200.8/6020
418867	Vanadium	ICAPQ-MS	2022-03-22	2022-03-22	SD	EPA 200.8/6020
418867	Zinc	ICAPQ-MS	2022-03-22	2022-03-22	SD	EPA 200.8/6020
418941	Electrical Conductivity	Electrical Conductivity Mete	2022-03-23	2022-03-23	Z_S	Cond-Soil
418946	pH - CaCl2	pH Meter	2022-03-23	2022-03-23	MW	Ag Soil
418953	Sodium Adsorption Ratio	iCAP OES	2022-03-23	2022-03-23	Z_S	Ag Soil
418990	PHC's F2	GC/FID	2022-03-24	2022-03-24	R_G	CCME
418990	PHC's F3	GC/FID	2022-03-24	2022-03-24	R_G	CCME
418990	PHC's F4	GC/FID	2022-03-24	2022-03-24	R_G	CCME
418990	Moisture-Humidity	Oven	2022-03-24	2022-03-24	R_G	ASTM 2216
419011	Boron (Hot Water Soluble)	iCAP OES	2022-03-24	2022-03-24	Z_S	MOECC E3470
419028	PHC's F4g	Gravimetric	2022-03-24	2022-03-24	R_G	CCME
419094	Chromium VI	FAA	2022-03-25	2022-03-25	MW	M US EPA 3060A
419095	Cyanide (CN-)	Skalar CN Analyzer	2022-03-25	2022-03-25	IP	MOECC E3015
419096	Tetrachloroethane, 1,1,1,2-	GC-MS	2022-03-24	2022-03-24	YH	V 8260B
419096	Trichloroethane, 1,1,1-	GC-MS	2022-03-24	2022-03-24	YH	V 8260B

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 COC #: 883780

Test Summary

Batch No	Analyte	Instrument	Preparation Date	Analysis Date	Analyst	Method
419096	Tetrachloroethane, 1,1,2,2-	GC-MS	2022-03-24	2022-03-24	YH	V 8260B
419096	Trichloroethane, 1,1,2-	GC-MS	2022-03-24	2022-03-24	YH	V 8260B
419096	Dichloroethane, 1,1-	GC-MS	2022-03-24	2022-03-24	YH	V 8260B
419096	Dichloroethylene, 1,1-	GC-MS	2022-03-24	2022-03-24	YH	V 8260B
419096	Dichlorobenzene, 1,2-	GC-MS	2022-03-24	2022-03-24	YH	V 8260B
419096	Dichloroethane, 1,2-	GC-MS	2022-03-24	2022-03-24	YH	V 8260B
419096	Dichloropropane, 1,2-	GC-MS	2022-03-24	2022-03-24	YH	V 8260B
419096	Dichlorobenzene, 1,3-	GC-MS	2022-03-24	2022-03-24	YH	V 8260B
419096	Dichloropropene, 1,3-	GC-MS	2022-03-25	2022-03-25	YH	V 8260B
419096	Dichlorobenzene, 1,4-	GC-MS	2022-03-24	2022-03-24	YH	V 8260B
419096	Acetone	GC-MS	2022-03-24	2022-03-24	YH	V 8260B
419096	Benzene	GC-MS	2022-03-24	2022-03-24	YH	V 8260B
419096	Bromodichloromethane	GC-MS	2022-03-24	2022-03-24	YH	V 8260B
419096	Bromoform	GC-MS	2022-03-24	2022-03-24	YH	V 8260B
419096	Bromomethane	GC-MS	2022-03-24	2022-03-24	YH	V 8260B
419096	Dichloroethylene, 1,2-cis-	GC-MS	2022-03-24	2022-03-24	YH	V 8260B
419096	Dichloropropene, 1,3-cis-	GC-MS	2022-03-24	2022-03-24	YH	V 8260B
419096	Carbon Tetrachloride	GC-MS	2022-03-24	2022-03-24	YH	V 8260B
419096	Chloroform	GC-MS	2022-03-24	2022-03-24	YH	V 8260B
419096	Dibromochloromethane	GC-MS	2022-03-24	2022-03-24	YH	V 8260B
419096	Dichlorodifluoromethane	GC-MS	2022-03-24	2022-03-24	YH	V 8260B
419096	Methylene Chloride	GC-MS	2022-03-24	2022-03-24	YH	V 8260B
419096	Ethylbenzene	GC-MS	2022-03-24	2022-03-24	YH	V 8260B
419096	Ethylene dibromide	GC-MS	2022-03-24	2022-03-24	YH	V 8260B
419096	Hexane (n)	GC-MS	2022-03-24	2022-03-24	YH	V 8260B
419096	Xylene, m/p-	GC-MS	2022-03-24	2022-03-24	YH	V 8260B
419096	Methyl Ethyl Ketone	GC-MS	2022-03-24	2022-03-24	YH	V 8260B
419096	Methyl Isobutyl Ketone	GC-MS	2022-03-24	2022-03-24	YH	V 8260B
419096	Methyl tert-Butyl Ether (MTBE)	GC-MS	2022-03-24	2022-03-24	YH	V 8260B
419096	Chlorobenzene	GC-MS	2022-03-24	2022-03-24	YH	V 8260B
419096	Xylene, o-	GC-MS	2022-03-24	2022-03-24	YH	V 8260B
419096	Styrene	GC-MS	2022-03-24	2022-03-24	YH	V 8260B
419096	Dichloroethylene, 1,2-trans-	GC-MS	2022-03-24	2022-03-24	YH	V 8260B

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 COC #: 883780

Test Summary

Batch No	Analyte	Instrument	Preparation Date	Analysis Date	Analyst	Method
419096	Dichloropropene,1,3-trans-	GC-MS	2022-03-24	2022-03-24	YH	V 8260B
419096	Tetrachloroethylene	GC-MS	2022-03-24	2022-03-24	YH	V 8260B
419096	Toluene	GC-MS	2022-03-24	2022-03-24	YH	V 8260B
419096	Trichloroethylene	GC-MS	2022-03-24	2022-03-24	YH	V 8260B
419096	Trichlorofluoromethane	GC-MS	2022-03-24	2022-03-24	YH	V 8260B
419096	Vinyl Chloride	GC-MS	2022-03-24	2022-03-24	YH	V 8260B
419099	PHC's F1	GC/FID	2022-03-25	2022-03-25	YH	CCME
419100	Xylene Mixture	GC-MS	2022-03-25	2022-03-25	YH	V 8260B
419101	PHC's F1-BTEX	GC/FID	2022-03-25	2022-03-25	YH	CCME

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: Geo Pro Consulting
40 Vogell Rd, Unit 57
Richmond Hill, Ontario
L4B 3K6
Attention: Dylan X
PO#:
Invoice to: Geo Pro Consulting

Report Number: 1973585
Date Submitted: 2022-03-18
Date Reported: 2022-03-25
Project: 18-2325GHE-2251
COC #: 883780

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.

Client: Geo Pro Consulting
40 Vogell Rd, Unit 57
Richmond Hill, Ontario
L4B 3K6
Attention: Dylan X
Invoice to: Geo Pro Consulting
PO#:

Report Number: 1973904
Date Submitted: 2022-03-23
Date Reported: 2022-03-31
Project: 18-2325GHE-2259
COC #: 887716
Temperature (C): 20
Custody Seal:

Page 1 of 7

Dear Dylan X:

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:

Addrine Thomas, Inorganics Supervisor

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 <http://www.cala.ca/scopes/2602.pdf>

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: Geo Pro Consulting
 40 Vogell Rd, Unit 57
 Richmond Hill, Ontario
 L4B 3K6
 Attention: Dylan X
 PO#:
 Invoice to: Geo Pro Consulting

Report Number: 1973904
 Date Submitted: 2022-03-23
 Date Reported: 2022-03-31
 Project: 18-2325GHE-2259
 COC #: 887716

O.Reg 153-T1-All Other Soils

Exceedence Summary

Sample I.D.	Analyte	Result	Units	Criteria
Inorganics				
BH139 AS2B	Electrical Conductivity	3.06	mS/cm	STD 0.57
BH139 AS2B	Sodium Adsorption Ratio	56.5		STD 2.4

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: Geo Pro Consulting
 40 Vogell Rd, Unit 57
 Richmond Hill, Ontario
 L4B 3K6
 Attention: Dylan X
 PO#:
 Invoice to: Geo Pro Consulting

Report Number: 1973904
 Date Submitted: 2022-03-23
 Date Reported: 2022-03-31
 Project: 18-2325GHE-2259
 COC #: 887716

Guideline = O.Reg 153-T1-All Other Soils - Res/Par/Ins/Ind/Com/Prop

Metals

Lab I.D. 1615952
 Sample Matrix Soil153
 Sample Type
 Sample Date 2022-03-21
 Sampling Time
 Sample I.D. BH139
 AS2B

Analyte	Batch No	MRL	Units	Guideline	
Antimony	419181	1	ug/g	STD 1.3	<1
Arsenic	419181	1	ug/g	STD 18	5
Barium	419181	1	ug/g	STD 220	56
Beryllium	419181	1	ug/g	STD 2.5	<1
Boron (Hot Water Soluble)	419159	0.5	ug/g		<0.5
Boron (total)	419181	5	ug/g	STD 36	10
Cadmium	419181	0.4	ug/g	STD 1.2	<0.4
Chromium Total	419181	1	ug/g	STD 70	22
Chromium VI	419225	0.20	ug/g	STD 0.66	<0.20
Cobalt	419181	1	ug/g	STD 21	10
Copper	419181	1	ug/g	STD 92	30
Lead	419181	1	ug/g	STD 120	24
Mercury	419181	0.1	ug/g	STD 0.27	<0.1
Molybdenum	419181	1	ug/g	STD 2	<1
Nickel	419181	1	ug/g	STD 82	23
Selenium	419181	0.5	ug/g	STD 1.5	<0.5
Silver	419181	0.2	ug/g	STD 0.5	<0.2
Thallium	419181	1	ug/g	STD 1	<1
Uranium	419181	0.5	ug/g	STD 2.5	0.8
Vanadium	419181	2	ug/g	STD 86	28
Zinc	419181	2	ug/g	STD 290	176

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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Client: Geo Pro Consulting
 40 Vogell Rd, Unit 57
 Richmond Hill, Ontario
 L4B 3K6
 Attention: Dylan X
 PO#:
 Invoice to: Geo Pro Consulting

Report Number: 1973904
 Date Submitted: 2022-03-23
 Date Reported: 2022-03-31
 Project: 18-2325GHE-2259
 COC #: 887716

Guideline = O.Reg 153-T1-All Other Soils - Res/Par/Ins/Ind/Com/Prop

Inorganics

Lab I.D. 1615952
 Sample Matrix Soil153
 Sample Type
 Sample Date 2022-03-21
 Sampling Time
 Sample I.D. BH139
 AS2B

Analyte	Batch No	MRL	Units	Guideline	
Cyanide (CN-)	419226	0.005	ug/g	STD 0.051	<0.005
Electrical Conductivity	419293	0.05	mS/cm	STD 0.57	3.06*
pH - CaCl2	419237	2.00			7.38
Sodium Adsorption Ratio	419333	0.01		STD 2.4	56.5*

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: Geo Pro Consulting
 40 Vogell Rd, Unit 57
 Richmond Hill, Ontario
 L4B 3K6
 Attention: Dylan X
 PO#:
 Invoice to: Geo Pro Consulting

Report Number: 1973904
 Date Submitted: 2022-03-23
 Date Reported: 2022-03-31
 Project: 18-2325GHE-2259
 COC #: 887716

Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
419159	Boron (Hot Water Soluble)	<0.5 ug/g	99	70-130	120	75-125	0	0-30
419181	Silver	<0.2 ug/g	104	70-130	82	70-130	0	0-20
419181	Arsenic	<1 ug/g	95	70-130	101	70-130	0	0-20
419181	Boron (total)	<5 ug/g	93	70-130	104	70-130	0	0-20
419181	Barium	<1 ug/g	96	70-130	121	70-130	2	0-20
419181	Beryllium	<1 ug/g	94	70-130	93	70-130	0	0-20
419181	Cadmium	<0.4 ug/g	101	70-130	101	70-130	0	0-20
419181	Cobalt	<1 ug/g	95	70-130	100	70-130	0	0-20
419181	Chromium Total	<1 ug/g	100	70-130	96	70-130	3	0-20
419181	Copper	<1 ug/g	103	70-130	102	70-130	17	0-20
419181	Mercury	<0.1 ug/g	90	70-130	90	70-130	0	0-20
419181	Molybdenum	<1 ug/g	93	70-130	90	70-130	0	0-20
419181	Nickel	<1 ug/g	99	70-130	100	70-130	11	0-20
419181	Lead	<1 ug/g	95	70-130	81	70-130	0	0-20
419181	Antimony	<1 ug/g	104	70-130	108	70-130	0	0-20
419181	Selenium	<0.5 ug/g	113	70-130	105	70-130	0	0-20
419181	Thallium	<1 ug/g	95	70-130	91	70-130	0	0-20
419181	Uranium	<0.5 ug/g	103	70-130	102	70-130	0	0-20
419181	Vanadium	<2 ug/g	97	70-130	124	70-130	5	0-20
419181	Zinc	<2 ug/g	104	70-130	100	70-130	14	0-20
419225	Chromium VI	<0.20 ug/g	99	80-120	82	70-130	0	0-35
419226	Cyanide (CN-)	<0.005 ug/g	94	75-125	100	70-130	0	0-20
419237	pH - CaCl2	5.02	100	90-110			0	
419293	Electrical Conductivity	<0.05	102	90-110			0	0-10
419333	Sodium Adsorption Ratio	<0.01					5	

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: Geo Pro Consulting
 40 Vogell Rd, Unit 57
 Richmond Hill, Ontario
 L4B 3K6
 Attention: Dylan X
 PO#:
 Invoice to: Geo Pro Consulting

Report Number: 1973904
 Date Submitted: 2022-03-23
 Date Reported: 2022-03-31
 Project: 18-2325GHE-2259
 COC #: 887716

Test Summary

Batch No	Analyte	Instrument	Preparation Date	Analysis Date	Analyst	Method
419159	Boron (Hot Water Soluble)	iCAP OES	2022-03-28	2022-03-28	Z_S	MOECC E3470
419181	Silver	ICAPQ-MS	2022-03-28	2022-03-28	SD	EPA 200.8/6020
419181	Arsenic	ICAPQ-MS	2022-03-28	2022-03-28	SD	EPA 200.8/6020
419181	Boron (total)	ICAPQ-MS	2022-03-28	2022-03-28	SD	EPA 200.8/6020
419181	Barium	ICAPQ-MS	2022-03-28	2022-03-28	SD	EPA 200.8/6020
419181	Beryllium	ICAPQ-MS	2022-03-28	2022-03-28	SD	EPA 200.8/6020
419181	Cadmium	ICAPQ-MS	2022-03-28	2022-03-28	SD	EPA 200.8/6020
419181	Cobalt	ICAPQ-MS	2022-03-28	2022-03-28	SD	EPA 200.8/6020
419181	Chromium Total	ICAPQ-MS	2022-03-28	2022-03-28	SD	EPA 200.8/6020
419181	Copper	ICAPQ-MS	2022-03-28	2022-03-28	SD	EPA 200.8/6020
419181	Mercury	ICAPQ-MS	2022-03-28	2022-03-28	SD	EPA 200.8/6020
419181	Molybdenum	ICAPQ-MS	2022-03-28	2022-03-28	SD	EPA 200.8/6020
419181	Nickel	ICAPQ-MS	2022-03-28	2022-03-28	SD	EPA 200.8/6020
419181	Lead	ICAPQ-MS	2022-03-28	2022-03-28	SD	EPA 200.8/6020
419181	Antimony	ICAPQ-MS	2022-03-28	2022-03-28	SD	EPA 200.8/6020
419181	Selenium	ICAPQ-MS	2022-03-28	2022-03-28	SD	EPA 200.8/6020
419181	Thallium	ICAPQ-MS	2022-03-28	2022-03-28	SD	EPA 200.8/6020
419181	Uranium	ICAPQ-MS	2022-03-28	2022-03-28	SD	EPA 200.8/6020
419181	Vanadium	ICAPQ-MS	2022-03-28	2022-03-28	SD	EPA 200.8/6020
419181	Zinc	ICAPQ-MS	2022-03-28	2022-03-28	SD	EPA 200.8/6020
419225	Chromium VI	FAA	2022-03-28	2022-03-29	MW	M US EPA 3060A
419226	Cyanide (CN-)	Skalar CN Analyzer	2022-03-29	2022-03-29	IP	MOECC E3015
419237	pH - CaCl2	pH Meter	2022-03-29	2022-03-29	IP	Ag Soil
419293	Electrical Conductivity	Electrical Conductivity Mete	2022-03-30	2022-03-30	Z_S	Cond-Soil
419333	Sodium Adsorption Ratio	iCAP OES	2022-03-31	2022-03-31	Z_S	Ag Soil

Results relate only to the parameters tested on the samples submitted.
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Client: Geo Pro Consulting
40 Vogell Rd, Unit 57
Richmond Hill, Ontario
L4B 3K6
Attention: Dylan X
PO#:
Invoice to: Geo Pro Consulting

Report Number: 1973904
Date Submitted: 2022-03-23
Date Reported: 2022-03-31
Project: 18-2325GHE-2259
COC #: 887716

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.

Client: Geo Pro Consulting
40 Vogell Rd, Unit 57
Richmond Hill, Ontario
L4B 3K6
Attention: Dylan X
Invoice to: Geo Pro Consulting
PO#:

Report Number: 1982558
Date Submitted: 2022-07-26
Date Reported: 2022-08-03
Project: 18-2325GHE-2361
COC #: 894061
Temperature (C): 15
Custody Seal:

Page 1 of 7

Dear Dylan X:

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: Geo Pro Consulting
 40 Vogell Rd, Unit 57
 Richmond Hill, Ontario
 L4B 3K6
 Attention: Dylan X
 PO#:
 Invoice to: Geo Pro Consulting

Report Number: 1982558
 Date Submitted: 2022-07-26
 Date Reported: 2022-08-03
 Project: 18-2325GHE-2361
 COC #: 894061

O.Reg 153-T1-All Other Soils

Exceedence Summary

Sample I.D.	Analyte	Result	Units	Criteria
Inorganics				
BH142 AS2	Electrical Conductivity	2.10	mS/cm	STD 0.57
BH142 AS2	Sodium Adsorption Ratio	19.6		STD 2.4

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: Geo Pro Consulting
 40 Vogell Rd, Unit 57
 Richmond Hill, Ontario
 L4B 3K6
 Attention: Dylan X
 PO#:
 Invoice to: Geo Pro Consulting

Report Number: 1982558
 Date Submitted: 2022-07-26
 Date Reported: 2022-08-03
 Project: 18-2325GHE-2361
 COC #: 894061

Guideline = O.Reg 153-T1-All Other Soils - Res/Par/Ins/Ind/Com/Prop

Metals

Lab I.D. 1640505
 Sample Matrix Soil153
 Sample Type
 Sample Date 2022-07-22
 Sampling Time
 Sample I.D. BH142
 AS2

Analyte	Batch No	MRL	Units	Guideline	
Antimony	426525	1	ug/g	STD 1.3	<1
Arsenic	426525	1	ug/g	STD 18	5
Barium	426525	1	ug/g	STD 220	58
Beryllium	426525	1	ug/g	STD 2.5	<1
Boron (Hot Water Soluble)	426735	0.5	ug/g		<0.5
Boron (total)	426525	5	ug/g	STD 36	8
Cadmium	426525	0.4	ug/g	STD 1.2	<0.4
Chromium Total	426525	1	ug/g	STD 70	22
Chromium VI	426642	0.20	ug/g	STD 0.66	<0.20
Cobalt	426525	1	ug/g	STD 21	9
Copper	426525	1	ug/g	STD 92	25
Lead	426525	1	ug/g	STD 120	10
Mercury	426525	0.1	ug/g	STD 0.27	<0.1
Molybdenum	426525	1	ug/g	STD 2	<1
Nickel	426525	1	ug/g	STD 82	21
Selenium	426525	0.5	ug/g	STD 1.5	<0.5
Silver	426525	0.2	ug/g	STD 0.5	<0.2
Thallium	426525	1	ug/g	STD 1	<1
Uranium	426525	0.5	ug/g	STD 2.5	<0.5
Vanadium	426525	2	ug/g	STD 86	26
Zinc	426525	2	ug/g	STD 290	91

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: Geo Pro Consulting
 40 Vogell Rd, Unit 57
 Richmond Hill, Ontario
 L4B 3K6
 Attention: Dylan X
 PO#:
 Invoice to: Geo Pro Consulting

Report Number: 1982558
 Date Submitted: 2022-07-26
 Date Reported: 2022-08-03
 Project: 18-2325GHE-2361
 COC #: 894061

Guideline = O.Reg 153-T1-All Other Soils - Res/Par/Ins/Ind/Com/Prop

Inorganics

Lab I.D. 1640505
 Sample Matrix Soil153
 Sample Type
 Sample Date 2022-07-22
 Sampling Time
 Sample I.D. BH142
 AS2

Analyte	Batch No	MRL	Units	Guideline	
Cyanide (CN-)	426549	0.005	ug/g	STD 0.051	<0.005
Electrical Conductivity	426723	0.05	mS/cm	STD 0.57	2.10*
pH - CaCl2	426539	2.00			7.74
Sodium Adsorption Ratio	426725	0.01		STD 2.4	19.6*

Results relate only to the parameters tested on the samples submitted.
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Client: Geo Pro Consulting
 40 Vogell Rd, Unit 57
 Richmond Hill, Ontario
 L4B 3K6
 Attention: Dylan X
 PO#:
 Invoice to: Geo Pro Consulting

Report Number: 1982558
 Date Submitted: 2022-07-26
 Date Reported: 2022-08-03
 Project: 18-2325GHE-2361
 COC #: 894061

Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
426525	Silver	<0.2 ug/g	103	70-130	116	70-130	0	0-20
426525	Arsenic	<1 ug/g	95	70-130	121	70-130	16	0-20
426525	Boron (total)	<5 ug/g	100	70-130	157	70-130	0	0-20
426525	Barium	<1 ug/g	99	70-130	212	70-130	18	0-20
426525	Beryllium	<1 ug/g	101	70-130	113	70-130	0	0-20
426525	Cadmium	<0.4 ug/g	104	70-130	123	70-130	0	0-20
426525	Cobalt	<1 ug/g	105	70-130	115	70-130	13	0-20
426525	Chromium Total	<1 ug/g	107	70-130	127	70-130	4	0-20
426525	Copper	<1 ug/g	110	70-130	123	70-130	10	0-20
426525	Mercury	<0.1 ug/g	100	70-130	97	70-130	0	0-20
426525	Molybdenum	<1 ug/g	96	70-130	124	70-130	0	0-20
426525	Nickel	<1 ug/g	110	70-130	111	70-130	10	0-20
426525	Lead	<1 ug/g	97	70-130	105	70-130	17	0-20
426525	Antimony	<1 ug/g	100	70-130	110	70-130	0	0-20
426525	Selenium	<0.5 ug/g	104	70-130	129	70-130	0	0-20
426525	Thallium	<1 ug/g	98	70-130	101	70-130	0	0-20
426525	Uranium	<0.5 ug/g	88	70-130	100	70-130	0	0-20
426525	Vanadium	<2 ug/g	105	70-130	193	70-130	14	0-20
426525	Zinc	<2 ug/g	105	70-130	43	70-130	3	0-20
426539	pH - CaCl2	5.91	101	90-110			0	
426549	Cyanide (CN-)	<0.005 ug/g	90	75-125	101	70-130	0	0-20
426642	Chromium VI	<0.20 ug/g	97	80-120	101	70-130	0	0-35
426723	Electrical Conductivity	<0.05	101	90-110			0	0-10
426725	Sodium Adsorption Ratio	<0.01					0	
426735	Boron (Hot Water Soluble)	<0.5 ug/g	104	70-130	96	75-125	0	0-30

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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Client: Geo Pro Consulting
 40 Vogell Rd, Unit 57
 Richmond Hill, Ontario
 L4B 3K6
 Attention: Dylan X
 PO#:
 Invoice to: Geo Pro Consulting

Report Number: 1982558
 Date Submitted: 2022-07-26
 Date Reported: 2022-08-03
 Project: 18-2325GHE-2361
 COC #: 894061

Test Summary

Batch No	Analyte	Instrument	Preparation Date	Analysis Date	Analyst	Method
426525	Silver	ICAPQ-MS	2022-07-29	2022-07-29	SD	EPA 200.8/6020
426525	Arsenic	ICAPQ-MS	2022-07-29	2022-07-29	SD	EPA 200.8/6020
426525	Boron (total)	ICAPQ-MS	2022-07-29	2022-07-29	SD	EPA 200.8/6020
426525	Barium	ICAPQ-MS	2022-07-29	2022-07-29	SD	EPA 200.8/6020
426525	Beryllium	ICAPQ-MS	2022-07-29	2022-07-29	SD	EPA 200.8/6020
426525	Cadmium	ICAPQ-MS	2022-07-29	2022-07-29	SD	EPA 200.8/6020
426525	Cobalt	ICAPQ-MS	2022-07-29	2022-07-29	SD	EPA 200.8/6020
426525	Chromium Total	ICAPQ-MS	2022-07-29	2022-07-29	SD	EPA 200.8/6020
426525	Copper	ICAPQ-MS	2022-07-29	2022-07-29	SD	EPA 200.8/6020
426525	Mercury	ICAPQ-MS	2022-07-29	2022-07-29	SD	EPA 200.8/6020
426525	Molybdenum	ICAPQ-MS	2022-07-29	2022-07-29	SD	EPA 200.8/6020
426525	Nickel	ICAPQ-MS	2022-07-29	2022-07-29	SD	EPA 200.8/6020
426525	Lead	ICAPQ-MS	2022-07-29	2022-07-29	SD	EPA 200.8/6020
426525	Antimony	ICAPQ-MS	2022-07-29	2022-07-29	SD	EPA 200.8/6020
426525	Selenium	ICAPQ-MS	2022-07-29	2022-07-29	SD	EPA 200.8/6020
426525	Thallium	ICAPQ-MS	2022-07-29	2022-07-29	SD	EPA 200.8/6020
426525	Uranium	ICAPQ-MS	2022-07-29	2022-07-29	SD	EPA 200.8/6020
426525	Vanadium	ICAPQ-MS	2022-07-29	2022-07-29	SD	EPA 200.8/6020
426525	Zinc	ICAPQ-MS	2022-07-29	2022-07-29	SD	EPA 200.8/6020
426539	pH - CaCl2	pH Meter	2022-07-29	2022-07-29	IP	Ag Soil
426549	Cyanide (CN-)	Skalar CN Analyzer	2022-07-29	2022-07-29	ZS	MOECC E3015
426642	Chromium VI	FAA	2022-08-02	2022-08-02	MW	M US EPA 3060A
426723	Electrical Conductivity	Electrical Conductivity Mete	2022-08-03	2022-08-03	Z_S	Cond-Soil
426725	Sodium Adsorption Ratio	iCAP OES	2022-08-03	2022-08-03	Z_S	Ag Soil
426735	Boron (Hot Water Soluble)	iCAP OES	2022-08-03	2022-08-03	Z_S	MOECC E3470

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COC #: 894061

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.

CLIENT INFORMATION				INVOICE INFORMATION (SAME AS CLIENT INFORMATION: YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>)																
Company: GeoPro Consulting Limited				Company:				Fax:												
Contact: ELab elab@geoproconsulting.ca				Contact:				Email: #1:												
Address: 40 Vogell Road, unit 23, Richmond Hill, ON L4B 3N6				Address:				Email: #2:												
Telephone: 905-237-8336		Cell:		Telephone:				PO #:												
Email: #1: dylanx@geoproconsulting.ca; kriska@geoproconsulting.ca				REGULATION/GUIDELINE REQUIRED <input type="checkbox"/> Sanitary Sewer, City: _____ <input type="checkbox"/> Storm Sewer, City: _____ <input type="checkbox"/> ODWSOG <input type="checkbox"/> PWQO <input type="checkbox"/> O. Reg 347/558 <input type="checkbox"/> Other: _____ <input type="checkbox"/> None <input checked="" type="checkbox"/> O. Reg 153 Table # _____ Course / Fine, Surface / subsurface. Type: Com-Ind / Res-Park / Agri / GW / All Other / Sediment <input type="checkbox"/> Excess Soil, Table: _____ Type: _____ The sample results from this submission will form part of a formal Record of Site Condition (RSC) under O.Reg. 153/04 <input type="checkbox"/> Yes <input type="checkbox"/> No																
Email: #2: elab@geoproconsulting.ca; irisg@geoproconsulting.ca																				
Project: 18-2325GHE-2361		Quote #: 191248																		
TURN-AROUND TIME (Business Days)																				
<input type="checkbox"/> 1 Day* (100%)	<input type="checkbox"/> 2 Day** (50%)	<input type="checkbox"/> 3-5 Days (25%)	<input checked="" type="checkbox"/> 5-7 Days (Standard)																	
Please contact Lab in advance to determine rush availability. *For results reported after rush due date, surcharges will apply: before 12:00 - 100%, after 12:00 - 50%. **For results reported after rush due date, surcharges will apply: before 12:00 - 50%, after 12:00 - 25%.																				
The optimal temperature conditions during transport should be less than 10°C. Sample(s) cannot be frozen, unless otherwise indicated or agreed upon with the Laboratory. Note that this COC is not to be used for drinking water samples. The COC must be complete upon submission of the samples, there will be a \$25 surcharge if required information is missing (required fields are shaded in grey).				Sample Details				Sample Analysis Required								RN# (Lab Use Only)				
				Field Filtered →				O.Reg.153 parameters												
Sample ID	Date/Time Collected	Sample Matrix	# of Containers	PHC F1 - F4	BTEX	VOCs	PAHs	PCBs	Metals + Inorganics	Metals only										
BH142 AS2	July 22, 2022	Soil	1						✓											1640505
PRINT		SIGN				DATE/TIME				TEMP (°C)		COMMENTS: CUSTODY SEAL: <input type="checkbox"/> YES <input type="checkbox"/> NO Ice packs submitted: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No								
Sampled By:																				
Relinquished By: KJ		<i>Victor Gallant</i>				<i>V.G.</i>				July 25, 2022										
Received By:		<i>Victor Gallant</i>				<i>V.G.</i>				07/25/22 3:07pm 14.5°C										

Client: Geo Pro Consulting
40 Vogell Rd, Unit 57
Richmond Hill, Ontario
L4B 3K6
Attention: Dylan X
Invoice to: Geo Pro Consulting
PO#:

Report Number: 1976136
Date Submitted: 2022-04-27
Date Reported: 2022-05-04
Project: 18-2325GHE-2296
COC #: 889967
Temperature (C): 14
Custody Seal:

Page 1 of 15

Dear Dylan X:

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 <http://www.cala.ca/scopes/2602.pdf>

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.

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 Project: 18-2325GHE-2296
 COC #: 889967

O.Reg 153-T1-All Other Soils

Exceedence Summary

Sample I.D.	Analyte	Result	Units	Criteria
Inorganics				
BH147 AS2B	Electrical Conductivity	2.71	mS/cm	STD 0.57
BH147 AS2B	Sodium Adsorption Ratio	36.1		STD 2.4
BH237 AS2	Electrical Conductivity	2.07	mS/cm	STD 0.57
BH237 AS2	Sodium Adsorption Ratio	10.2		STD 2.4
Metals				
BH147 AS2B	Silver	2.2	ug/g	STD 0.5
BH147 AS2B	Barium	404	ug/g	STD 220
BH147 AS2B	Copper	351	ug/g	STD 92
BH147 AS2B	Mercury	0.4	ug/g	STD 0.27
BH147 AS2B	Molybdenum	6	ug/g	STD 2
BH147 AS2B	Antimony	2	ug/g	STD 1.3
BH147 AS2B	Selenium	3.9	ug/g	STD 1.5
BH147 AS2B	Zinc	578	ug/g	STD 290
BH237 AS2	Barium	316	ug/g	STD 220
BH237 AS2	Uranium	2.8	ug/g	STD 2.5

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 Project: 18-2325GHE-2296
 COC #: 889967

Guideline = O.Reg 153-T1-All Other Soils - Res/Par/Ins/Ind/Com/Prop

Hydrocarbons

Lab I.D. 1622523
 Sample Matrix Soil153
 Sample Type
 Sample Date 2022-04-18
 Sampling Time
 Sample I.D. BH237
 AS2

Analyte	Batch No	MRL	Units	Guideline	
PHC's F1	421384	10	ug/g	STD 25	<10
PHC's F1-BTEX	421386	10	ug/g		<10
PHC's F2	421312	2	ug/g	STD 10	<2
PHC's F3	421312	20	ug/g	STD 240	<20
PHC's F4	421312	20	ug/g	STD 120	<20

Metals

Lab I.D. 1622523
 Sample Matrix Soil153
 Sample Type
 Sample Date 2022-04-18
 Sampling Time
 Sample I.D. BH237
 AS2

1622524
 Soil153
 2022-04-26
 BH147
 AS2B

Analyte	Batch No	MRL	Units	Guideline		
Antimony	421236	1	ug/g	STD 1.3	<1	2*
Arsenic	421236	1	ug/g	STD 18	3	4
Barium	421236	1	ug/g	STD 220	316*	404*
Beryllium	421236	1	ug/g	STD 2.5	<1	<1
Boron (Hot Water Soluble)	421351	0.5	ug/g		<0.5	<0.5
Boron (total)	421236	5	ug/g	STD 36	6	10
Cadmium	421236	0.4	ug/g	STD 1.2	0.6	1.0
Chromium Total	421236	1	ug/g	STD 70	49	38
Chromium VI	421336	0.20	ug/g	STD 0.66	<0.20	<0.20
Cobalt	421236	1	ug/g	STD 21	12	4
Copper	421236	1	ug/g	STD 92	36	351*
Lead	421236	1	ug/g	STD 120	11	18
Mercury	421236	0.1	ug/g	STD 0.27	<0.1	0.4*

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 COC #: 889967

Guideline = O.Reg 153-T1-All Other Soils - Res/Par/Ins/Ind/Com/Prop

Metals

Lab I.D.	1622523	1622524
Sample Matrix	Soil153	Soil153
Sample Type		
Sample Date	2022-04-18	2022-04-26
Sampling Time		
Sample I.D.	BH237 AS2	BH147 AS2B

Analyte	Batch No	MRL	Units	Guideline		
Molybdenum	421236	1	ug/g	STD 2	1	6*
Nickel	421236	1	ug/g	STD 82	26	18
Selenium	421236	0.5	ug/g	STD 1.5	0.9	3.9*
Silver	421236	0.2	ug/g	STD 0.5	<0.2	2.2*
Thallium	421236	1	ug/g	STD 1	<1	<1
Uranium	421236	0.5	ug/g	STD 2.5	2.8*	1.9
Vanadium	421236	2	ug/g	STD 86	57	18
Zinc	421236	2	ug/g	STD 290	133	578*

Volatiles

Lab I.D.	1622523
Sample Matrix	Soil153
Sample Type	
Sample Date	2022-04-18
Sampling Time	
Sample I.D.	BH237 AS2

Analyte	Batch No	MRL	Units	Guideline	
Acetone	421379	0.50	ug/g	STD 0.5	<0.50
Benzene	421379	0.0068	ug/g	STD 0.02	<0.0068
Bromodichloromethane	421379	0.05	ug/g	STD 0.05	<0.05
Bromoform	421379	0.05	ug/g	STD 0.05	<0.05
Bromomethane	421379	0.05	ug/g	STD 0.05	<0.05
Carbon Tetrachloride	421379	0.05	ug/g	STD 0.05	<0.05
Chlorobenzene	421379	0.05	ug/g	STD 0.05	<0.05
Chloroform	421379	0.05	ug/g	STD 0.05	<0.05
Dibromochloromethane	421379	0.05	ug/g	STD 0.05	<0.05
Dichlorobenzene, 1,2-	421379	0.05	ug/g	STD 0.05	<0.05
Dichlorobenzene, 1,3-	421379	0.05	ug/g	STD 0.05	<0.05

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 COC #: 889967

Guideline = O.Reg 153-T1-All Other Soils - Res/Par/Ins/Ind/Com/Prop

Volatiles

Lab I.D. 1622523
 Sample Matrix Soil153
 Sample Type
 Sample Date 2022-04-18
 Sampling Time
 Sample I.D. BH237
 AS2

Analyte	Batch No	MRL	Units	Guideline	
Dichlorobenzene, 1,4-	421379	0.05	ug/g	STD 0.05	<0.05
Dichlorodifluoromethane	421379	0.05	ug/g	STD 0.05	<0.05
Dichloroethane, 1,1-	421379	0.05	ug/g	STD 0.05	<0.05
Dichloroethane, 1,2-	421379	0.05	ug/g	STD 0.05	<0.05
Dichloroethylene, 1,1-	421379	0.05	ug/g	STD 0.05	<0.05
Dichloroethylene, 1,2-cis-	421379	0.05	ug/g	STD 0.05	<0.05
Dichloroethylene, 1,2-trans-	421379	0.05	ug/g	STD 0.05	<0.05
Dichloropropane, 1,2-	421379	0.05	ug/g	STD 0.05	<0.05
Dichloropropene, 1,3-	421379	0.05	ug/g	STD 0.05	<0.05
Dichloropropene, 1,3-cis-	421379	0.05	ug/g		<0.05
Dichloropropene, 1,3-trans-	421379	0.05	ug/g		<0.05
Ethylbenzene	421379	0.018	ug/g	STD 0.05	<0.018
Ethylene dibromide	421379	0.05	ug/g	STD 0.05	<0.05
Hexane (n)	421379	0.05	ug/g	STD 0.05	<0.05
Methyl Ethyl Ketone	421379	0.50	ug/g	STD 0.5	<0.50
Methyl Isobutyl Ketone	421379	0.50	ug/g	STD 0.5	<0.50
Methyl tert-Butyl Ether (MTBE)	421379	0.05	ug/g	STD 0.05	<0.05
Methylene Chloride	421379	0.05	ug/g	STD 0.05	<0.05
Styrene	421379	0.05	ug/g	STD 0.05	<0.05
Tetrachloroethane, 1,1,1,2-	421379	0.05	ug/g	STD 0.05	<0.05
Tetrachloroethane, 1,1,2,2-	421379	0.05	ug/g	STD 0.05	<0.05
Tetrachloroethylene	421379	0.05	ug/g	STD 0.05	<0.05
Toluene	421379	0.08	ug/g	STD 0.2	<0.08

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 COC #: 889967

Guideline = O.Reg 153-T1-All Other Soils - Res/Par/Ins/Ind/Com/Prop

Volatiles

Lab I.D. 1622523
 Sample Matrix Soil153
 Sample Type
 Sample Date 2022-04-18
 Sampling Time
 Sample I.D. BH237
 AS2

Analyte	Batch No	MRL	Units	Guideline	
Trichloroethane, 1,1,1,-	421379	0.05	ug/g	STD 0.05	<0.05
Trichloroethane, 1,1,2,-	421379	0.05	ug/g	STD 0.05	<0.05
Trichloroethylene	421379	0.01	ug/g	STD 0.05	<0.01
Trichlorofluoromethane	421379	0.05	ug/g	STD 0.25	<0.05
Vinyl Chloride	421379	0.02	ug/g	STD 0.02	<0.02
Xylene Mixture	421385	0.05	ug/g	STD 0.05	<0.05
Xylene, m/p-	421379	0.05	ug/g		<0.05
Xylene, o-	421379	0.05	ug/g		<0.05

Inorganics

Lab I.D. 1622523
 Sample Matrix Soil153
 Sample Type
 Sample Date 2022-04-18
 Sampling Time 2022-04-26
 Sample I.D. BH237
 AS2 BH147
 AS2B

Analyte	Batch No	MRL	Units	Guideline		
Cyanide (CN-)	421259	0.005	ug/g	STD 0.051	<0.005	<0.005
Electrical Conductivity	421250	0.05	mS/cm	STD 0.57	2.07*	2.71*
pH - CaCl2	421153	2.00				7.80
	421328	2.00			7.87	
Sodium Adsorption Ratio	421255	0.01		STD 2.4	10.2*	36.1*

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Guideline = O.Reg 153-T1-All Other Soils - Res/Par/Ins/Ind/Com/Prop

Moisture

Lab I.D. 1622523
 Sample Matrix Soil153
 Sample Type
 Sample Date 2022-04-18
 Sampling Time
 Sample I.D. BH237
 AS2

Analyte	Batch No	MRL	Units	Guideline
Moisture-Humidite	421312	0.1	%	8.5

PHC Surrogate

Lab I.D. 1622523
 Sample Matrix Soil153
 Sample Type
 Sample Date 2022-04-18
 Sampling Time
 Sample I.D. BH237
 AS2

Analyte	Batch No	MRL	Units	Guideline
Alpha-androstrane	421312	0	%	72

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VOCs Surrogates

Lab I.D.	1622523
Sample Matrix	Soil153
Sample Type	
Sample Date	2022-04-18
Sampling Time	
Sample I.D.	BH237
	AS2

Analyte	Batch No	MRL	Units	Guideline
1,2-dichloroethane-d4	421379	0	%	130
4-bromofluorobenzene	421379	0	%	87
Toluene-d8	421379	0	%	92

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 L4B 3K6
 Attention: Dylan X
 PO#:
 Invoice to: Geo Pro Consulting

Report Number: 1976136
 Date Submitted: 2022-04-27
 Date Reported: 2022-05-04
 Project: 18-2325GHE-2296
 COC #: 889967

Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
421153	pH - CaCl2	5.93	100	90-110			0	
421236	Silver	<0.2 ug/g	108	70-130		70-130	0	0-20
421236	Arsenic	<1 ug/g	94	70-130		70-130	0	0-20
421236	Boron (total)	<5 ug/g	94	70-130	6	70-130	0	0-20
421236	Barium	<1 ug/g	96	70-130	16	70-130	2	0-20
421236	Beryllium	<1 ug/g	100	70-130		70-130	0	0-20
421236	Cadmium	<0.4 ug/g	105	70-130		70-130	0	0-20
421236	Cobalt	<1 ug/g	105	70-130	2	70-130	0	0-20
421236	Chromium Total	<1 ug/g	107	70-130	2	70-130	1	0-20
421236	Copper	<1 ug/g	109	70-130	3	70-130	7	0-20
421236	Mercury	<0.1 ug/g	70	70-130		70-130	0	0-20
421236	Molybdenum	<1 ug/g	99	70-130		70-130	0	0-20
421236	Nickel	<1 ug/g	106	70-130	13	70-130	1	0-20
421236	Lead	<1 ug/g	97	70-130		70-130	2	0-20
421236	Antimony	<1 ug/g	94	70-130		70-130	0	0-20
421236	Selenium	<0.5 ug/g	97	70-130		70-130	0	0-20
421236	Thallium	<1 ug/g	99	70-130		70-130	0	0-20
421236	Uranium	<0.5 ug/g	97	70-130		70-130	0	0-20
421236	Vanadium	<2 ug/g	106	70-130	28	70-130	13	0-20
421236	Zinc	<2 ug/g	101	70-130	86	70-130	0	0-20
421250	Electrical Conductivity	<0.05	100	90-110			0	0-10
421255	Sodium Adsorption Ratio	<0.01					6	
421259	Cyanide (CN-)	<0.005 ug/g	109	75-125	104	70-130	0	0-20
421312	PHC's F2	<2 ug/g	102	80-120	85	60-140	0	0-30
421312	PHC's F3	<20 ug/g	100	80-120	85	60-140	0	0-30
421312	PHC's F4	<20 ug/g	100	80-120	85	60-140	0	0-30
421312	Moisture-Humidite	<0.1 %	100	80-120			0	
421328	pH - CaCl2	5.79	100	90-110			0	
421336	Chromium VI	<0.20 ug/g	95	80-120	89	70-130	0	0-35
421351	Boron (Hot Water Soluble)	<0.5 ug/g	98	70-130	104	75-125	0	0-30
421379	Tetrachloroethane, 1,1,1,2-	<0.05 ug/g	109	60-130	90	50-140	0	0-50
421379	Trichloroethane, 1,1,1-	<0.05 ug/g	107	60-130	98	50-140	0	0-50

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Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
421379	Tetrachloroethane, 1,1,2,2-	<0.05 ug/g	108	60-130	91	50-140	0	0-30
421379	Trichloroethane, 1,1,2-	<0.05 ug/g	111	60-130	90	50-140	0	0-50
421379	Dichloroethane, 1,1-	<0.05 ug/g	118	60-130	101	50-140	0	0-50
421379	Dichloroethylene, 1,1-	<0.05 ug/g	94	60-130	101	50-140	0	0-50
421379	Dichlorobenzene, 1,2-	<0.05 ug/g	93	60-130	93	50-140	0	0-50
421379	Dichloroethane, 1,2-	<0.05 ug/g	99	60-130	95	50-140	0	0-50
421379	Dichloropropane, 1,2-	<0.05 ug/g	107	60-130	95	50-140	0	0-50
421379	Dichlorobenzene, 1,3-	<0.05 ug/g	117	60-130	94	50-140	0	0-50
421379	Dichloropropene, 1,3-	<0.05 ug/g						
421379	Dichlorobenzene, 1,4-	<0.05 ug/g	117	60-130	95	50-140	0	0-50
421379	Acetone	<0.50 ug/g	99	60-130	108	50-140	0	0-50
421379	Benzene	<0.0068	103	60-130	100	50-140	0	0-50
421379	Bromodichloromethane	<0.05 ug/g	110	60-130	92	50-140	0	0-50
421379	Bromoform	<0.05 ug/g	112	60-130	80	50-140	0	0-50
421379	Bromomethane	<0.05 ug/g	117	60-130	99	50-140	0	0-50
421379	Dichloroethylene, 1,2-cis-	<0.05 ug/g	107	60-130	98	50-140	0	0-50
421379	Dichloropropene, 1,3-cis-	<0.05 ug/g	108	60-130	89	50-140	0	0-50
421379	Carbon Tetrachloride	<0.05 ug/g	101	60-130	94	50-140	0	0-50
421379	Chloroform	<0.05 ug/g	115	60-130	97	50-140	0	0-50
421379	Dibromochloromethane	<0.05 ug/g	95	60-130	86	50-140	0	0-50
421379	Dichlorodifluoromethane	<0.05 ug/g	99	60-130	113	50-140	0	0-50
421379	Methylene Chloride	<0.05 ug/g	102	60-130	117	50-140	0	0-50
421379	Ethylbenzene	<0.018 ug/g	117	60-130	101	50-140	0	0-50
421379	Ethylene dibromide	<0.05 ug/g	100	60-130	86	50-140	0	0-50
421379	Hexane (n)	<0.05 ug/g	102	60-130	103	50-140	0	0-50
421379	Xylene, m/p-	<0.05 ug/g	105	60-130	105	50-140	0	0-50
421379	Methyl Ethyl Ketone	<0.50 ug/g	103	60-130	118	50-140	0	0-50
421379	Methyl Isobutyl Ketone	<0.50 ug/g	113	60-130	90	50-140	0	0-50
421379	Methyl tert-Butyl Ether (MTBE)	<0.05 ug/g	107	60-130	95	50-140	0	0-50
421379	Chlorobenzene	<0.05 ug/g	108	60-130	95	50-140	0	0-50
421379	Xylene, o-	<0.05 ug/g	114	60-130	98	50-140	0	0-50
421379	Styrene	<0.05 ug/g	96	60-130	93	50-140	0	0-50
421379	Dichloroethylene, 1,2-trans-	<0.05 ug/g	116	60-130	102	50-140	0	0-50

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 COC #: 889967

Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
421379	Dichloropropene, 1,3-trans-	<0.05 ug/g	114	60-130	84	50-140	0	0-50
421379	Tetrachloroethylene	<0.05 ug/g	109	60-130	90	50-140	0	0-50
421379	Toluene	<0.08 ug/g	119	60-130	100	50-140	0	0-50
421379	Trichloroethylene	<0.01 ug/g	109	60-130	96	50-140	0	0-50
421379	Trichlorofluoromethane	<0.05 ug/g	114	60-130	90	50-140	0	0-50
421379	Vinyl Chloride	<0.02 ug/g	112	60-130	110	50-140	0	0-50
421384	PHC's F1	<10 ug/g		80-120	122	60-140	0	0-30
421385	Xylene Mixture							
421386	PHC's F1-BTEX							

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Test Summary

Batch No	Analyte	Instrument	Preparation Date	Analysis Date	Analyst	Method
421153	pH - CaCl2	pH Meter	2022-05-02	2022-05-02	MW	Ag Soil
421236	Silver	ICAPQ-MS	2022-05-03	2022-05-03	SD	EPA 200.8/6020
421236	Arsenic	ICAPQ-MS	2022-05-03	2022-05-03	SD	EPA 200.8/6020
421236	Boron (total)	ICAPQ-MS	2022-05-03	2022-05-03	SD	EPA 200.8/6020
421236	Barium	ICAPQ-MS	2022-05-03	2022-05-03	SD	EPA 200.8/6020
421236	Beryllium	ICAPQ-MS	2022-05-03	2022-05-03	SD	EPA 200.8/6020
421236	Cadmium	ICAPQ-MS	2022-05-03	2022-05-03	SD	EPA 200.8/6020
421236	Cobalt	ICAPQ-MS	2022-05-03	2022-05-03	SD	EPA 200.8/6020
421236	Chromium Total	ICAPQ-MS	2022-05-03	2022-05-03	SD	EPA 200.8/6020
421236	Copper	ICAPQ-MS	2022-05-03	2022-05-03	SD	EPA 200.8/6020
421236	Mercury	ICAPQ-MS	2022-05-03	2022-05-03	SD	EPA 200.8/6020
421236	Molybdenum	ICAPQ-MS	2022-05-03	2022-05-03	SD	EPA 200.8/6020
421236	Nickel	ICAPQ-MS	2022-05-03	2022-05-03	SD	EPA 200.8/6020
421236	Lead	ICAPQ-MS	2022-05-03	2022-05-03	SD	EPA 200.8/6020
421236	Antimony	ICAPQ-MS	2022-05-03	2022-05-03	SD	EPA 200.8/6020
421236	Selenium	ICAPQ-MS	2022-05-03	2022-05-03	SD	EPA 200.8/6020
421236	Thallium	ICAPQ-MS	2022-05-03	2022-05-03	SD	EPA 200.8/6020
421236	Uranium	ICAPQ-MS	2022-05-03	2022-05-03	SD	EPA 200.8/6020
421236	Vanadium	ICAPQ-MS	2022-05-03	2022-05-03	SD	EPA 200.8/6020
421236	Zinc	ICAPQ-MS	2022-05-03	2022-05-03	SD	EPA 200.8/6020
421250	Electrical Conductivity	Electrical Conductivity Mete	2022-05-03	2022-05-03	Z_S	Cond-Soil
421255	Sodium Adsorption Ratio	iCAP OES	2022-05-03	2022-05-03	Z_S	Ag Soil
421259	Cyanide (CN-)	Skalar CN Analyzer	2022-05-03	2022-05-03	Z_S	MOECC E3015
421312	PHC's F2	GC/FID	2022-05-04	2022-05-04	R_G	CCME
421312	PHC's F3	GC/FID	2022-05-04	2022-05-04	R_G	CCME
421312	PHC's F4	GC/FID	2022-05-04	2022-05-04	R_G	CCME
421312	Moisture-Humidite	Oven	2022-05-04	2022-05-04	R_G	ASTM 2216
421328	pH - CaCl2	pH Meter	2022-05-04	2022-05-04	MW	Ag Soil
421336	Chromium VI	FAA	2022-05-04	2022-05-04	MW	M US EPA 3060A
421351	Boron (Hot Water Soluble)	iCAP OES	2022-05-04	2022-05-04	Z_S	MOECC E3470
421379	Tetrachloroethane, 1,1,1,2-	GC-MS	2022-04-29	2022-05-03	YH	V 8260B
421379	Trichloroethane, 1,1,1-	GC-MS	2022-04-29	2022-05-03	YH	V 8260B

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Test Summary

Batch No	Analyte	Instrument	Preparation Date	Analysis Date	Analyst	Method
421379	Tetrachloroethane, 1,1,2,2-	GC-MS	2022-04-29	2022-05-03	YH	V 8260B
421379	Trichloroethane, 1,1,2-	GC-MS	2022-04-29	2022-05-03	YH	V 8260B
421379	Dichloroethane, 1,1-	GC-MS	2022-04-29	2022-05-03	YH	V 8260B
421379	Dichloroethylene, 1,1-	GC-MS	2022-04-29	2022-05-03	YH	V 8260B
421379	Dichlorobenzene, 1,2-	GC-MS	2022-04-29	2022-05-03	YH	V 8260B
421379	Dichloroethane, 1,2-	GC-MS	2022-04-29	2022-05-03	YH	V 8260B
421379	Dichloropropane, 1,2-	GC-MS	2022-04-29	2022-05-03	YH	V 8260B
421379	Dichlorobenzene, 1,3-	GC-MS	2022-04-29	2022-05-03	YH	V 8260B
421379	Dichloropropene, 1,3-	GC-MS	2022-05-04	2022-05-04	YH	V 8260B
421379	Dichlorobenzene, 1,4-	GC-MS	2022-04-29	2022-05-03	YH	V 8260B
421379	Acetone	GC-MS	2022-04-29	2022-05-03	YH	V 8260B
421379	Benzene	GC-MS	2022-04-29	2022-05-03	YH	V 8260B
421379	Bromodichloromethane	GC-MS	2022-04-29	2022-05-03	YH	V 8260B
421379	Bromoform	GC-MS	2022-04-29	2022-05-03	YH	V 8260B
421379	Bromomethane	GC-MS	2022-04-29	2022-05-03	YH	V 8260B
421379	Dichloroethylene, 1,2-cis-	GC-MS	2022-04-29	2022-05-03	YH	V 8260B
421379	Dichloropropene, 1,3-cis-	GC-MS	2022-04-29	2022-05-03	YH	V 8260B
421379	Carbon Tetrachloride	GC-MS	2022-04-29	2022-05-03	YH	V 8260B
421379	Chloroform	GC-MS	2022-04-29	2022-05-03	YH	V 8260B
421379	Dibromochloromethane	GC-MS	2022-04-29	2022-05-03	YH	V 8260B
421379	Dichlorodifluoromethane	GC-MS	2022-04-29	2022-05-03	YH	V 8260B
421379	Methylene Chloride	GC-MS	2022-04-29	2022-05-03	YH	V 8260B
421379	Ethylbenzene	GC-MS	2022-04-29	2022-05-03	YH	V 8260B
421379	Ethylene dibromide	GC-MS	2022-04-29	2022-05-03	YH	V 8260B
421379	Hexane (n)	GC-MS	2022-04-29	2022-05-03	YH	V 8260B
421379	Xylene, m/p-	GC-MS	2022-04-29	2022-05-03	YH	V 8260B
421379	Methyl Ethyl Ketone	GC-MS	2022-04-29	2022-05-03	YH	V 8260B
421379	Methyl Isobutyl Ketone	GC-MS	2022-04-29	2022-05-03	YH	V 8260B
421379	Methyl tert-Butyl Ether (MTBE)	GC-MS	2022-04-29	2022-05-03	YH	V 8260B
421379	Chlorobenzene	GC-MS	2022-04-29	2022-05-03	YH	V 8260B
421379	Xylene, o-	GC-MS	2022-04-29	2022-05-03	YH	V 8260B
421379	Styrene	GC-MS	2022-04-29	2022-05-03	YH	V 8260B
421379	Dichloroethylene, 1,2-trans-	GC-MS	2022-04-29	2022-05-03	YH	V 8260B

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Test Summary

Batch No	Analyte	Instrument	Preparation Date	Analysis Date	Analyst	Method
421379	Dichloropropene,1,3-trans-	GC-MS	2022-04-29	2022-05-03	YH	V 8260B
421379	Tetrachloroethylene	GC-MS	2022-04-29	2022-05-03	YH	V 8260B
421379	Toluene	GC-MS	2022-04-29	2022-05-03	YH	V 8260B
421379	Trichloroethylene	GC-MS	2022-04-29	2022-05-03	YH	V 8260B
421379	Trichlorofluoromethane	GC-MS	2022-04-29	2022-05-03	YH	V 8260B
421379	Vinyl Chloride	GC-MS	2022-04-29	2022-05-03	YH	V 8260B
421384	PHC's F1	GC/FID	2022-05-04	2022-05-04	YH	CCME
421385	Xylene Mixture	GC-MS	2022-05-04	2022-05-04	YH	V 8260B
421386	PHC's F1-BTEX	GC/FID	2022-05-04	2022-05-04	YH	CCME

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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.

CLIENT INFORMATION		INVOICE INFORMATION (SAME AS CLIENT INFORMATION: YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>)	
Company:	GeoPro Consulting Limited	Company:	
Contact:	ELab elab@geoproconsulting.ca	Contact:	
Address:	40 Vogell Road, unit 23, Richmond Hill, ON L4B 3N6	Address:	
Telephone:	905-237-8336	Telephone:	
	Cell:		PO #:

Email: #1: dylanx@geoproconsulting.ca; irisg@geoproconsulting.ca Email: #2: elab@geoproconsulting.ca; kriska@geoproconsulting.ca Project: 18-2325GHE-2296 Quote #: 191248	REGULATION/GUIDELINE REQUIRED <input type="checkbox"/> Sanitary Sewer, City: _____ <input type="checkbox"/> Storm Sewer, City: _____ <input type="checkbox"/> ODWSOG <input type="checkbox"/> PWQO <input type="checkbox"/> O. Reg 347/558 <input type="checkbox"/> Other: _____ <input type="checkbox"/> None
TURN-AROUND TIME (Business Days) <input type="checkbox"/> 1 Day* (100%) <input type="checkbox"/> 2 Day** (50%) <input type="checkbox"/> 3-5 Days (25%) <input checked="" type="checkbox"/> 5-7 Days (Standard)	
Please contact Lab in advance to determine rush availability. *For results reported after rush due date, surcharges will apply: before 12:00 - 100%, after 12:00 - 50%. **For results reported after rush due date, surcharges will apply: before 12:00 - 50%, after 12:00 - 25%.	

The optimal temperature conditions during transport should be less than 10°C. Sample(s) cannot be frozen, unless otherwise indicated or agreed upon with the Laboratory. Note that this COC is not to be used for drinking water samples. The COC must be complete upon submission of the samples, there will be a \$25 surcharge if required information is missing (required fields are shaded in grey).	Sample Details		Sample Analysis Required												RN# (Lab Use Only)					
	Field Filtered -->		O.Reg.153 parameters																	
	Sample Matrix	# of Containers	PHC F1 - F4	BTEX	VOCs	PAHs	PCBs	Metals + Inorganics	Metals only											
Sample ID	Date/Time Collected																			
BH237 AS2	04/18/2022	SOIL	4	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>										
BH147 AS2B	04/26/2022	SOIL	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>										

PRINT	SIGN	DATE/TIME	TEMP (°C)	COMMENTS:
Sampled By:				
Relinquished By: Kriska Javier		April 27, 2022		
Received By: Victor Gallant		04/27/22 2:39pm	13.5°	
CUSTODY SEAL: <input type="checkbox"/> YES <input type="checkbox"/> NO				Ice packs submitted: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Client: Geo Pro Consulting
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Richmond Hill, Ontario
L4B 3K6
Attention: Dylan X
Invoice to: Geo Pro Consulting
PO#:

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Project: 18-2325GHE-2239
COC #: 887323
Temperature (C): 10
Custody Seal:

Page 1 of 15

Dear Dylan X:

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).

Sample Comment Summary

Sample ID: 1614239 BH303 AS2B CN (Free) MRL elevated due to matrix interference (dilution was done).
--

Report Comments:

Long Qu, Organics Supervisor

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 <http://www.cala.ca/scopes/2602.pdf>

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.

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O.Reg 153-T1-All Other Soils

Exceedence Summary

Sample I.D.	Analyte	Result	Units	Criteria
Inorganics				
BH206 AS2	Electrical Conductivity	2.45	mS/cm	STD 0.57
BH206 AS2	Sodium Adsorption Ratio	48.8		STD 2.4
BH302 AS2B	Electrical Conductivity	1.19	mS/cm	STD 0.57
BH302 AS2B	Sodium Adsorption Ratio	16.4		STD 2.4
BH303 AS2B	Electrical Conductivity	4.66	mS/cm	STD 0.57
BH303 AS2B	Sodium Adsorption Ratio	60.7		STD 2.4
BH308 AS2B	Electrical Conductivity	1.36	mS/cm	STD 0.57
BH308 AS2B	Sodium Adsorption Ratio	8.68		STD 2.4

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Guideline = O.Reg 153-T1-All Other Soils - Res/Par/Ins/Ind/Com/Prop

Hydrocarbons

Analyte	Batch No	MRL	Units	Guideline	Lab I.D.	1614236	1614237	1614238
					Sample Matrix	Soil153	Soil153	Soil153
					Sample Type			
					Sample Date	2022-03-08	2022-03-10	2022-03-09
					Sampling Time			
					Sample I.D.	BH206	BH302	BH308
					AS2	AS2B	AS2B	
PHC's F1	418617	10	ug/g	STD 25		<10	<10	<10
PHC's F1-BTEX	418623	10	ug/g			<10	<10	<10
PHC's F2	418673	2	ug/g	STD 10		<2	<2	<2
PHC's F3	418673	20	ug/g	STD 240		<20	50	40
PHC's F4	418673	20	ug/g	STD 120		<20	100	70

Metals

Analyte	Batch No	MRL	Units	Guideline	Lab I.D.	1614236	1614237	1614238	1614239
					Sample Matrix	Soil153	Soil153	Soil153	Soil153
					Sample Type				
					Sample Date	2022-03-08	2022-03-10	2022-03-09	2022-03-10
					Sampling Time				
					Sample I.D.	BH206	BH302	BH308	BH303
					AS2	AS2B	AS2B	AS2B	AS2B
Antimony	418705	1	ug/g	STD 1.3		<1	<1	<1	<1
Arsenic	418705	1	ug/g	STD 18		3	3	4	3
Barium	418705	1	ug/g	STD 220		38	52	54	47
Beryllium	418705	1	ug/g	STD 2.5		<1	<1	<1	<1
Boron (Hot Water Soluble)	418642	0.5	ug/g			<0.5	<0.5	<0.5	<0.5
Boron (total)	418705	5	ug/g	STD 36		5	6	7	<5
Cadmium	418705	0.4	ug/g	STD 1.2		<0.4	<0.4	<0.4	<0.4
Chromium Total	418705	1	ug/g	STD 70		15	24	36	20
Chromium VI	418682	0.20	ug/g	STD 0.66		<0.20	<0.20	<0.20	<0.20
Cobalt	418705	1	ug/g	STD 21		5	6	7	5
Copper	418705	1	ug/g	STD 92		18	23	24	13
Lead	418705	1	ug/g	STD 120		14	8	5	6
Mercury	418705	0.1	ug/g	STD 0.27		<0.1	<0.1	<0.1	<0.1

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Guideline = O.Reg 153-T1-All Other Soils - Res/Par/Ins/Ind/Com/Prop

Metals

Analyte	Batch No	MRL	Units	Guideline	Lab I.D.	1614237	1614238	1614239
					Sample Matrix	Soil153	Soil153	Soil153
					Sample Type	2022-03-10	2022-03-09	2022-03-10
					Sample Date	2022-03-08	2022-03-10	2022-03-09
					Sampling Time			
					Sample I.D.	BH206	BH302	BH308
						AS2	AS2B	AS2B
								BH303
								AS2B
Molybdenum	418705	1	ug/g	STD 2	<1	<1	1	<1
Nickel	418705	1	ug/g	STD 82	12	15	20	10
Selenium	418705	0.5	ug/g	STD 1.5	<0.5	<0.5	<0.5	<0.5
Silver	418705	0.2	ug/g	STD 0.5	<0.2	<0.2	<0.2	<0.2
Thallium	418705	1	ug/g	STD 1	<1	<1	<1	<1
Uranium	418705	0.5	ug/g	STD 2.5	<0.5	<0.5	<0.5	<0.5
Vanadium	418705	2	ug/g	STD 86	22	25	27	23
Zinc	418705	2	ug/g	STD 290	35	31	32	32

Volatiles

Analyte	Batch No	MRL	Units	Guideline	Lab I.D.	1614237	1614238
					Sample Matrix	Soil153	Soil153
					Sample Type	2022-03-10	2022-03-09
					Sample Date	2022-03-08	2022-03-10
					Sampling Time		
					Sample I.D.	BH206	BH302
						AS2	AS2B
							BH308
							AS2B
Acetone	418615	0.50	ug/g	STD 0.5	<0.50	<0.50	<0.50
Benzene	418615	0.0068	ug/g	STD 0.02	<0.0068	<0.0068	<0.0068
Bromodichloromethane	418615	0.05	ug/g	STD 0.05	<0.05	<0.05	<0.05
Bromoform	418615	0.05	ug/g	STD 0.05	<0.05	<0.05	<0.05
Bromomethane	418615	0.05	ug/g	STD 0.05	<0.05	<0.05	<0.05
Carbon Tetrachloride	418615	0.05	ug/g	STD 0.05	<0.05	<0.05	<0.05
Chlorobenzene	418615	0.05	ug/g	STD 0.05	<0.05	<0.05	<0.05
Chloroform	418615	0.05	ug/g	STD 0.05	<0.05	<0.05	<0.05
Dibromochloromethane	418615	0.05	ug/g	STD 0.05	<0.05	<0.05	<0.05
Dichlorobenzene, 1,2-	418615	0.05	ug/g	STD 0.05	<0.05	<0.05	<0.05
Dichlorobenzene, 1,3-	418615	0.05	ug/g	STD 0.05	<0.05	<0.05	<0.05

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Volatiles

Lab I.D.	1614236	1614237	1614238
Sample Matrix	Soil153	Soil153	Soil153
Sample Type			
Sample Date	2022-03-08	2022-03-10	2022-03-09
Sampling Time			
Sample I.D.	BH206	BH302	BH308
	AS2	AS2B	AS2B

Analyte	Batch No	MRL	Units	Guideline	1614236 Soil153	1614237 Soil153	1614238 Soil153
Dichlorobenzene, 1,4-	418615	0.05	ug/g	STD 0.05	<0.05	<0.05	<0.05
Dichlorodifluoromethane	418615	0.05	ug/g	STD 0.05	<0.05	<0.05	<0.05
Dichloroethane, 1,1-	418615	0.05	ug/g	STD 0.05	<0.05	<0.05	<0.05
Dichloroethane, 1,2-	418615	0.05	ug/g	STD 0.05	<0.05	<0.05	<0.05
Dichloroethylene, 1,1-	418615	0.05	ug/g	STD 0.05	<0.05	<0.05	<0.05
Dichloroethylene, 1,2-cis-	418615	0.05	ug/g	STD 0.05	<0.05	<0.05	<0.05
Dichloroethylene, 1,2-trans-	418615	0.05	ug/g	STD 0.05	<0.05	<0.05	<0.05
Dichloropropane, 1,2-	418615	0.05	ug/g	STD 0.05	<0.05	<0.05	<0.05
Dichloropropene, 1,3-	418615	0.05	ug/g	STD 0.05	<0.05	<0.05	<0.05
Dichloropropene, 1,3-cis-	418615	0.05	ug/g		<0.05	<0.05	<0.05
Dichloropropene, 1,3-trans-	418615	0.05	ug/g		<0.05	<0.05	<0.05
Ethylbenzene	418615	0.018	ug/g	STD 0.05	<0.018	<0.018	<0.018
Ethylene dibromide	418615	0.05	ug/g	STD 0.05	<0.05	<0.05	<0.05
Hexane (n)	418615	0.05	ug/g	STD 0.05	<0.05	<0.05	<0.05
Methyl Ethyl Ketone	418615	0.50	ug/g	STD 0.5	<0.50	<0.50	<0.50
Methyl Isobutyl Ketone	418615	0.50	ug/g	STD 0.5	<0.50	<0.50	<0.50
Methyl tert-Butyl Ether (MTBE)	418615	0.05	ug/g	STD 0.05	<0.05	<0.05	<0.05
Methylene Chloride	418615	0.05	ug/g	STD 0.05	<0.05	<0.05	<0.05
Styrene	418615	0.05	ug/g	STD 0.05	<0.05	<0.05	<0.05
Tetrachloroethane, 1,1,1,2-	418615	0.05	ug/g	STD 0.05	<0.05	<0.05	<0.05
Tetrachloroethane, 1,1,2,2-	418615	0.05	ug/g	STD 0.05	<0.05	<0.05	<0.05
Tetrachloroethylene	418615	0.05	ug/g	STD 0.05	<0.05	<0.05	<0.05
Toluene	418615	0.08	ug/g	STD 0.2	<0.08	<0.08	<0.08

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Guideline = O.Reg 153-T1-All Other Soils - Res/Par/Ins/Ind/Com/Prop

Volatiles

Analyte	Batch No	MRL	Units	Guideline	Lab I.D.	Sample Matrix	Sample Type	Sample Date	Sampling Time	Sample I.D.
					1614236 Soil153	1614237 Soil153	1614238 Soil153	2022-03-08	2022-03-10	2022-03-09
Trichloroethane, 1,1,1-	418615	0.05	ug/g	STD 0.05	<0.05	<0.05	<0.05			
Trichloroethane, 1,1,2-	418615	0.05	ug/g	STD 0.05	<0.05	<0.05	<0.05			
Trichloroethylene	418615	0.01	ug/g	STD 0.05	<0.01	<0.01	<0.01			
Trichlorofluoromethane	418615	0.05	ug/g	STD 0.25	<0.05	<0.05	<0.05			
Vinyl Chloride	418615	0.02	ug/g	STD 0.02	<0.02	<0.02	<0.02			
Xylene Mixture	418630	0.05	ug/g	STD 0.05	<0.05	<0.05	<0.05			
Xylene, m/p-	418615	0.05	ug/g		<0.05	<0.05	<0.05			
Xylene, o-	418615	0.05	ug/g		<0.05	<0.05	<0.05			

Inorganics

Analyte	Batch No	MRL	Units	Guideline	Lab I.D.	Sample Matrix	Sample Type	Sample Date	Sampling Time	Sample I.D.	
					1614236 Soil153	1614237 Soil153	1614238 Soil153	1614239 Soil153	2022-03-08	2022-03-10	2022-03-09
Cyanide (CN-)	418637	0.005	ug/g	STD 0.051	<0.005	<0.005	<0.005				
		0.02	ug/g	STD 0.051						<0.02	
Electrical Conductivity	418619	0.05	mS/cm	STD 0.57	2.45*	1.19*	1.36*			4.66*	
pH - CaCl2	418531	2.00			7.63	7.63	7.49			7.52	
Sodium Adsorption Ratio	418614	0.01		STD 2.4	48.8*	16.4*	8.68*			60.7*	

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Moisture

Lab I.D.	1614236	1614237	1614238
Sample Matrix	Soil153	Soil153	Soil153
Sample Type			
Sample Date	2022-03-08	2022-03-10	2022-03-09
Sampling Time			
Sample I.D.	BH206	BH302	BH308
Guideline	AS2	AS2B	AS2B

Analyte	Batch No	MRL	Units	Guideline	1614236	1614237	1614238
Moisture-Humidite	418673	0.1	%		11.7	14.5	18.8

PHC Surrogate

Lab I.D.	1614236	1614237	1614238
Sample Matrix	Soil153	Soil153	Soil153
Sample Type			
Sample Date	2022-03-08	2022-03-10	2022-03-09
Sampling Time			
Sample I.D.	BH206	BH302	BH308
Guideline	AS2	AS2B	AS2B

Analyte	Batch No	MRL	Units	Guideline	1614236	1614237	1614238
Alpha-androstrane	418673	0	%		76	70	63

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VOCs Surrogates

Lab I.D.	1614236	1614237	1614238
Sample Matrix	Soil153	Soil153	Soil153
Sample Type			
Sample Date	2022-03-08	2022-03-10	2022-03-09
Sampling Time			
Sample I.D.	BH206	BH302	BH308
Guideline	AS2	AS2B	AS2B

Analyte	Batch No	MRL	Units	Guideline	1614236	1614237	1614238
1,2-dichloroethane-d4	418615	0	%		98	97	130
4-bromofluorobenzene	418615	0	%		102	75	80
Toluene-d8	418615	0	%		98	88	84

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Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
418531	pH - CaCl2	6.00	101	90-110			0	
418614	Sodium Adsorption Ratio	<0.01						
418615	Tetrachloroethane, 1,1,1,2-	<0.05 ug/g	99	60-130	96	50-140	0	0-50
418615	Trichloroethane, 1,1,1-	<0.05 ug/g	87	60-130	100	50-140	0	0-50
418615	Tetrachloroethane, 1,1,2,2-	<0.05 ug/g	88	60-130	92	50-140	0	0-30
418615	Trichloroethane, 1,1,2-	<0.05 ug/g	107	60-130	103	50-140	0	0-50
418615	Dichloroethane, 1,1-	<0.05 ug/g	94	60-130	107	50-140	0	0-50
418615	Dichloroethylene, 1,1-	<0.05 ug/g	83	60-130	110	50-140	0	0-50
418615	Dichlorobenzene, 1,2-	<0.05 ug/g	98	60-130	94	50-140	0	0-50
418615	Dichloroethane, 1,2-	<0.05 ug/g	88	60-130	113	50-140	0	0-50
418615	Dichloropropane, 1,2-	<0.05 ug/g	100	60-130	101	50-140	0	0-50
418615	Dichlorobenzene, 1,3-	<0.05 ug/g	81	60-130	76	50-140	0	0-50
418615	Dichloropropene,1,3-	<0.05 ug/g						
418615	Dichlorobenzene, 1,4-	<0.05 ug/g	98	60-130	92	50-140	0	0-50
418615	Acetone	<0.50 ug/g	94	60-130	119	50-140	0	0-50
418615	Benzene	<0.0068	85	60-130	106	50-140	0	0-50
418615	Bromodichloromethane	<0.05 ug/g	106	60-130	100	50-140	0	0-50
418615	Bromoform	<0.05 ug/g	100	60-130	102	50-140	0	0-50
418615	Bromomethane	<0.05 ug/g	80	60-130	100	50-140	0	0-50
418615	Dichloroethylene, 1,2-cis-	<0.05 ug/g	89	60-130	106	50-140	0	0-50
418615	Dichloropropene,1,3-cis-	<0.05 ug/g	108	60-130	91	50-140	0	0-50
418615	Carbon Tetrachloride	<0.05 ug/g	94	60-130	102	50-140	0	0-50
418615	Chloroform	<0.05 ug/g	84	60-130	104	50-140	0	0-50
418615	Dibromochloromethane	<0.05 ug/g	106	60-130	100	50-140	0	0-50
418615	Dichlorodifluoromethane	<0.05 ug/g	90	60-130	75	50-140	0	0-50
418615	Methylene Chloride	<0.05 ug/g	83	60-130	109	50-140	0	0-50
418615	Ethylbenzene	<0.018 ug/g	85	60-130	95	50-140	0	0-50
418615	Ethylene dibromide	<0.05 ug/g	101	60-130		50-140		0-50
418615	Hexane (n)	<0.05 ug/g	82	60-130	84	50-140	0	0-50
418615	Xylene, m/p-	<0.05 ug/g	90	60-130	86	50-140	0	0-50
418615	Methyl Ethyl Ketone	<0.50 ug/g	90	60-130	118	50-140	0	0-50
418615	Methyl Isobutyl Ketone	<0.50 ug/g	85	60-130	85	50-140	0	0-50

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Client: Geo Pro Consulting
 40 Vogell Rd, Unit 57
 Richmond Hill, Ontario
 L4B 3K6
 Attention: Dylan X
 PO#:
 Invoice to: Geo Pro Consulting

Report Number: 1973239
 Date Submitted: 2022-03-11
 Date Reported: 2022-03-18
 Project: 18-2325GHE-2239
 COC #: 887323

Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
418615	Methyl tert-Butyl Ether (MTBE)	<0.05 ug/g	128	60-130	104	50-140	0	0-50
418615	Chlorobenzene	<0.05 ug/g	83	60-130	98	50-140	0	0-50
418615	Xylene, o-	<0.05 ug/g	90	60-130	103	50-140	0	0-50
418615	Styrene	<0.05 ug/g	103	60-130	96	50-140	0	0-50
418615	Dichloroethylene, 1,2-trans-	<0.05 ug/g	88	60-130	105	50-140	0	0-50
418615	Dichloropropene, 1,3-trans-	<0.05 ug/g	103	60-130	98	50-140	0	0-50
418615	Tetrachloroethylene	<0.05 ug/g	107	60-130	93	50-140	0	0-50
418615	Toluene	<0.08 ug/g	92	60-130	107	50-140	0	0-50
418615	Trichloroethylene	<0.01 ug/g	101	60-130	99	50-140	0	0-50
418615	Trichlorofluoromethane	<0.05 ug/g	83	60-130	80	50-140	0	0-50
418615	Vinyl Chloride	<0.02 ug/g	80	60-130	117	50-140	0	0-50
418617	PHC's F1	<10 ug/g	95	80-120	92	60-140	0	0-30
418619	Electrical Conductivity	<0.05	101	90-110			0	0-10
418623	PHC's F1-BTEX							
418630	Xylene Mixture							
418637	Cyanide (CN-)	<0.005 ug/g	92	75-125	99	70-130	0	0-20
418642	Boron (Hot Water Soluble)	<0.5 ug/g	83	70-130	85	75-125	0	0-30
418673	PHC's F2	<2 ug/g	85	80-120	103	60-140	0	0-30
418673	PHC's F3	<20 ug/g	84	80-120	103	60-140	0	0-30
418673	PHC's F4	<20 ug/g	84	80-120	103	60-140	0	0-30
418673	Moisture-Humidite	<0.1 %	100	80-120			2	
418682	Chromium VI	<0.20 ug/g	93	80-120	89	70-130	0	0-35
418705	Silver	<0.2 ug/g	122	70-130	104	70-130	0	0-20
418705	Arsenic	<1 ug/g	91	70-130	114	70-130	0	0-20
418705	Boron (total)	<5 ug/g	97	70-130	108	70-130	0	0-20
418705	Barium	<1 ug/g	96	70-130	399	70-130	0	0-20
418705	Beryllium	<1 ug/g	97	70-130	101	70-130	0	0-20
418705	Cadmium	<0.4 ug/g	94	70-130	99	70-130	0	0-20
418705	Cobalt	<1 ug/g	97	70-130	121	70-130	0	0-20
418705	Chromium Total	<1 ug/g	103	70-130	201	70-130	0	0-20
418705	Copper	<1 ug/g	91	70-130	176	70-130	0	0-20
418705	Mercury	<0.1 ug/g	80	70-130	69	70-130	0	0-20
418705	Molybdenum	<1 ug/g	94	70-130	103	70-130	0	0-20

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 Date Reported: 2022-03-18
 Project: 18-2325GHE-2239
 COC #: 887323

Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
418705	Nickel	<1 ug/g	98	70-130	139	70-130	0	0-20
418705	Lead	<1 ug/g	93	70-130	95	70-130	0	0-20
418705	Antimony	<1 ug/g	89	70-130	104	70-130	0	0-20
418705	Selenium	<0.5 ug/g	107	70-130	97	70-130	0	0-20
418705	Thallium	<1 ug/g	93	70-130	76	70-130	0	0-20
418705	Uranium	<0.5 ug/g	99	70-130	90	70-130	0	0-20
418705	Vanadium	<2 ug/g	98	70-130	316	70-130	0	0-20
418705	Zinc	<2 ug/g	95	70-130	223	70-130	0	0-20

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Test Summary

Batch No	Analyte	Instrument	Preparation Date	Analysis Date	Analyst	Method
418531	pH - CaCl2	pH Meter	2022-03-15	2022-03-15	IP	Ag Soil
418614	Sodium Adsorption Ratio	iCAP OES	2022-03-16	2022-03-16	Z_S	Ag Soil
418615	Tetrachloroethane, 1,1,1,2-	GC-MS	2022-03-15	2022-03-16	YH	V 8260B
418615	Trichloroethane, 1,1,1-	GC-MS	2022-03-15	2022-03-16	YH	V 8260B
418615	Tetrachloroethane, 1,1,2,2-	GC-MS	2022-03-15	2022-03-16	YH	V 8260B
418615	Trichloroethane, 1,1,2-	GC-MS	2022-03-15	2022-03-16	YH	V 8260B
418615	Dichloroethane, 1,1-	GC-MS	2022-03-15	2022-03-16	YH	V 8260B
418615	Dichloroethylene, 1,1-	GC-MS	2022-03-15	2022-03-16	YH	V 8260B
418615	Dichlorobenzene, 1,2-	GC-MS	2022-03-15	2022-03-16	YH	V 8260B
418615	Dichloroethane, 1,2-	GC-MS	2022-03-15	2022-03-16	YH	V 8260B
418615	Dichloropropane, 1,2-	GC-MS	2022-03-15	2022-03-16	YH	V 8260B
418615	Dichlorobenzene, 1,3-	GC-MS	2022-03-15	2022-03-16	YH	V 8260B
418615	Dichloropropene, 1,3-	GC-MS	2022-03-16	2022-03-16	YH	V 8260B
418615	Dichlorobenzene, 1,4-	GC-MS	2022-03-15	2022-03-16	YH	V 8260B
418615	Acetone	GC-MS	2022-03-15	2022-03-16	YH	V 8260B
418615	Benzene	GC-MS	2022-03-15	2022-03-16	YH	V 8260B
418615	Bromodichloromethane	GC-MS	2022-03-15	2022-03-16	YH	V 8260B
418615	Bromoform	GC-MS	2022-03-15	2022-03-16	YH	V 8260B
418615	Bromomethane	GC-MS	2022-03-15	2022-03-16	YH	V 8260B
418615	Dichloroethylene, 1,2-cis-	GC-MS	2022-03-15	2022-03-16	YH	V 8260B
418615	Dichloropropene, 1,3-cis-	GC-MS	2022-03-15	2022-03-16	YH	V 8260B
418615	Carbon Tetrachloride	GC-MS	2022-03-15	2022-03-16	YH	V 8260B
418615	Chloroform	GC-MS	2022-03-15	2022-03-16	YH	V 8260B
418615	Dibromochloromethane	GC-MS	2022-03-15	2022-03-16	YH	V 8260B
418615	Dichlorodifluoromethane	GC-MS	2022-03-15	2022-03-16	YH	V 8260B
418615	Methylene Chloride	GC-MS	2022-03-15	2022-03-16	YH	V 8260B
418615	Ethylbenzene	GC-MS	2022-03-15	2022-03-16	YH	V 8260B
418615	Ethylene dibromide	GC-MS	2022-03-15	2022-03-16	YH	V 8260B
418615	Hexane (n)	GC-MS	2022-03-15	2022-03-16	YH	V 8260B
418615	Xylene, m/p-	GC-MS	2022-03-15	2022-03-16	YH	V 8260B
418615	Methyl Ethyl Ketone	GC-MS	2022-03-15	2022-03-16	YH	V 8260B
418615	Methyl Isobutyl Ketone	GC-MS	2022-03-15	2022-03-16	YH	V 8260B

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 L4B 3K6
 Attention: Dylan X
 PO#:
 Invoice to: Geo Pro Consulting

Report Number: 1973239
 Date Submitted: 2022-03-11
 Date Reported: 2022-03-18
 Project: 18-2325GHE-2239
 COC #: 887323

Test Summary

Batch No	Analyte	Instrument	Preparation Date	Analysis Date	Analyst	Method
418615	Methyl tert-Butyl Ether (MTBE)	GC-MS	2022-03-15	2022-03-16	YH	V 8260B
418615	Chlorobenzene	GC-MS	2022-03-15	2022-03-16	YH	V 8260B
418615	Xylene, o-	GC-MS	2022-03-15	2022-03-16	YH	V 8260B
418615	Styrene	GC-MS	2022-03-15	2022-03-16	YH	V 8260B
418615	Dichloroethylene, 1,2-trans-	GC-MS	2022-03-15	2022-03-16	YH	V 8260B
418615	Dichloropropene, 1,3-trans-	GC-MS	2022-03-15	2022-03-16	YH	V 8260B
418615	Tetrachloroethylene	GC-MS	2022-03-15	2022-03-16	YH	V 8260B
418615	Toluene	GC-MS	2022-03-15	2022-03-16	YH	V 8260B
418615	Trichloroethylene	GC-MS	2022-03-15	2022-03-16	YH	V 8260B
418615	Trichlorofluoromethane	GC-MS	2022-03-15	2022-03-16	YH	V 8260B
418615	Vinyl Chloride	GC-MS	2022-03-15	2022-03-16	YH	V 8260B
418617	PHC's F1	GC/FID	2022-03-16	2022-03-16	YH	CCME
418619	Electrical Conductivity	Electrical Conductivity Meter	2022-03-16	2022-03-16	Z_S	Cond-Soil
418623	PHC's F1-BTEX	GC/FID	2022-03-16	2022-03-16	YH	CCME
418630	Xylene Mixture	GC-MS	2022-03-16	2022-03-16	YH	V 8260B
418637	Cyanide (CN-)	Skalar CN Analyzer	2022-03-16	2022-03-16	Z_S	MOECC E3015
418642	Boron (Hot Water Soluble)	ICAP OES	2022-03-16	2022-03-16	AaN	MOECC E3470
418673	PHC's F2	GC/FID	2022-03-17	2022-03-17	R_G	CCME
418673	PHC's F3	GC/FID	2022-03-17	2022-03-17	R_G	CCME
418673	PHC's F4	GC/FID	2022-03-17	2022-03-17	R_G	CCME
418673	Moisture-Humidite	Oven	2022-03-17	2022-03-17	R_G	ASTM 2216
418682	Chromium VI	FAA	2022-03-16	2022-03-17	MW	M US EPA 3060A
418705	Silver	ICAPQ-MS	2022-03-17	2022-03-17	SD	EPA 200.8/6020
418705	Arsenic	ICAPQ-MS	2022-03-17	2022-03-17	SD	EPA 200.8/6020
418705	Boron (total)	ICAPQ-MS	2022-03-17	2022-03-17	SD	EPA 200.8/6020
418705	Barium	ICAPQ-MS	2022-03-17	2022-03-17	SD	EPA 200.8/6020
418705	Beryllium	ICAPQ-MS	2022-03-17	2022-03-17	SD	EPA 200.8/6020
418705	Cadmium	ICAPQ-MS	2022-03-17	2022-03-17	SD	EPA 200.8/6020
418705	Cobalt	ICAPQ-MS	2022-03-17	2022-03-17	SD	EPA 200.8/6020
418705	Chromium Total	ICAPQ-MS	2022-03-17	2022-03-17	SD	EPA 200.8/6020
418705	Copper	ICAPQ-MS	2022-03-17	2022-03-17	SD	EPA 200.8/6020
418705	Mercury	ICAPQ-MS	2022-03-17	2022-03-17	SD	EPA 200.8/6020
418705	Molybdenum	ICAPQ-MS	2022-03-17	2022-03-17	SD	EPA 200.8/6020

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 Project: 18-2325GHE-2239
 COC #: 887323

Test Summary

Batch No	Analyte	Instrument	Preparation Date	Analysis Date	Analyst	Method
418705	Nickel	ICAPQ-MS	2022-03-17	2022-03-17	SD	EPA 200.8/6020
418705	Lead	ICAPQ-MS	2022-03-17	2022-03-17	SD	EPA 200.8/6020
418705	Antimony	ICAPQ-MS	2022-03-17	2022-03-17	SD	EPA 200.8/6020
418705	Selenium	ICAPQ-MS	2022-03-17	2022-03-17	SD	EPA 200.8/6020
418705	Thallium	ICAPQ-MS	2022-03-17	2022-03-17	SD	EPA 200.8/6020
418705	Uranium	ICAPQ-MS	2022-03-17	2022-03-17	SD	EPA 200.8/6020
418705	Vanadium	ICAPQ-MS	2022-03-17	2022-03-17	SD	EPA 200.8/6020
418705	Zinc	ICAPQ-MS	2022-03-17	2022-03-17	SD	EPA 200.8/6020

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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.

Client: Geo Pro Consulting
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Report Number: 1979152
Date Submitted: 2022-06-13
Date Reported: 2022-06-20
Project: 18-2325GHE-2327
COC #: 891805
Temperature (C): 11
Custody Seal:

Page 1 of 7

Dear Dylan X:

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 <http://www.cala.ca/scopes/2602.pdf>

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.

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 Project: 18-2325GHE-2327
 COC #: 891805

O.Reg 153-T1-All Other Soils

Exceedence Summary

Sample I.D.	Analyte	Result	Units	Criteria
Inorganics				
BH230 AS2	Sodium Adsorption Ratio	2.80		MAC 2.4
BH305 AS2-C	Electrical Conductivity	1.23	mS/cm	STD 0.57
BH305 AS2-C	Sodium Adsorption Ratio	18.5		MAC 2.4

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 COC #: 891805

Guideline = O.Reg 153-T1-All Other Soils - Res/Par/Ins/Ind/Com/Prop

Metals

Lab I.D.	1630816	1630817
Sample Matrix	Soil153	Soil153
Sample Type		
Sample Date	2022-06-08	2022-06-08
Sampling Time		
Sample I.D.	BH230	BH305
	AS2	AS2-C

Analyte	Batch No	MRL	Units	Guideline		
Antimony	424015	1	ug/g	STD 1.3	<1	<1
Arsenic	424015	1	ug/g	STD 18	5	4
Barium	424015	1	ug/g	STD 220	119	95
Beryllium	424015	1	ug/g	STD 2.5	<1	<1
Boron (Hot Water Soluble)	423852	0.5	ug/g		<0.5	<0.5
Boron (total)	424015	5	ug/g	STD 36	11	8
Cadmium	424015	0.4	ug/g	STD 1.2	<0.4	<0.4
Chromium Total	424015	1	ug/g	STD 70	39	32
Chromium VI	424154	0.20	ug/g	STD 0.66	<0.20	<0.20
Cobalt	424015	1	ug/g	STD 21	12	8
Copper	424015	1	ug/g	STD 92	25	27
Lead	424015	1	ug/g	STD 120	14	14
Mercury	424015	0.1	ug/g	STD 0.27	<0.1	<0.1
Molybdenum	424015	1	ug/g	STD 2	<1	1
Nickel	424015	1	ug/g	STD 82	29	20
Selenium	424015	0.5	ug/g	STD 1.5	0.6	<0.5
Silver	424015	0.2	ug/g	STD 0.5	<0.2	<0.2
Thallium	424015	1	ug/g	STD 1	<1	<1
Uranium	424015	0.5	ug/g	STD 2.5	0.8	0.6
Vanadium	424015	2	ug/g	STD 86	41	31
Zinc	424015	2	ug/g	STD 290	94	49

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 Project: 18-2325GHE-2327
 COC #: 891805

Guideline = O.Reg 153-T1-All Other Soils - Res/Par/Ins/Ind/Com/Prop

Inorganics

Lab I.D.	1630816	1630817
Sample Matrix	Soil153	Soil153
Sample Type		
Sample Date	2022-06-08	2022-06-08
Sampling Time		
Sample I.D.	BH230	BH305
Guideline	AS2	AS2-C

Analyte	Batch No	MRL	Units	Guideline		
Cyanide (CN-)	424047	0.005	ug/g	STD 0.051	<0.005	<0.005
Electrical Conductivity	424017	0.05	mS/cm	STD 0.57	0.35	1.23*
pH - CaCl2	424028	2.00			7.64	7.77
Sodium Adsorption Ratio	424051	0.01		MAC 2.4	2.80*	18.5*

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Client: Geo Pro Consulting
 40 Vogell Rd, Unit 57
 Richmond Hill, Ontario
 L4B 3K6
 Attention: Dylan X
 PO#:
 Invoice to: Geo Pro Consulting

Report Number: 1979152
 Date Submitted: 2022-06-13
 Date Reported: 2022-06-20
 Project: 18-2325GHE-2327
 COC #: 891805

Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
423852	Boron (Hot Water Soluble)	<0.5 ug/g	101	70-130	95	75-125	0	0-30
424015	Silver	<0.2 ug/g	118	70-130	103	70-130	0	0-20
424015	Arsenic	<1 ug/g	93	70-130	98	70-130	0	0-20
424015	Boron (total)	<5 ug/g	98	70-130	127	70-130	0	0-20
424015	Barium	<1 ug/g	100	70-130	90	70-130	1	0-20
424015	Beryllium	<1 ug/g	99	70-130	101	70-130	0	0-20
424015	Cadmium	<0.4 ug/g	102	70-130	107	70-130	0	0-20
424015	Cobalt	<1 ug/g	98	70-130	98	70-130	0	0-20
424015	Chromium Total	<1 ug/g	101	70-130	167	70-130	5	0-20
424015	Copper	<1 ug/g	101	70-130	93	70-130	3	0-20
424015	Mercury	<0.1 ug/g	100	70-130	97	70-130	0	0-20
424015	Molybdenum	<1 ug/g	94	70-130	99	70-130	0	0-20
424015	Nickel	<1 ug/g	100	70-130	120	70-130	2	0-20
424015	Lead	<1 ug/g	95	70-130	91	70-130	1	0-20
424015	Antimony	<1 ug/g	100	70-130	107	70-130	0	0-20
424015	Selenium	<0.5 ug/g	103	70-130	105	70-130	0	0-20
424015	Thallium	<1 ug/g	95	70-130	94	70-130	0	0-20
424015	Uranium	<0.5 ug/g	104	70-130	109	70-130	0	0-20
424015	Vanadium	<2 ug/g	102	70-130	85	70-130	10	0-20
424015	Zinc	<2 ug/g	103	70-130	84	70-130	1	0-20
424017	Electrical Conductivity	<0.05	99	90-110			1	0-10
424028	pH - CaCl2	5.98	100	90-110			0	
424047	Cyanide (CN-)	<0.005 ug/g	89	75-125	96	70-130	0	0-20
424051	Sodium Adsorption Ratio	<0.01					5	
424154	Chromium VI	<0.20 ug/g	100	80-120	87	70-130	0	0-35

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Report Number: 1979152
 Date Submitted: 2022-06-13
 Date Reported: 2022-06-20
 Project: 18-2325GHE-2327
 COC #: 891805

Test Summary

Batch No	Analyte	Instrument	Preparation Date	Analysis Date	Analyst	Method
423852	Boron (Hot Water Soluble)	iCAP OES	2022-06-15	2022-06-15	Z_S	MOECC E3470
424015	Silver	ICAPQ-MS	2022-06-17	2022-06-17	SD	EPA 200.8/6020
424015	Arsenic	ICAPQ-MS	2022-06-17	2022-06-17	SD	EPA 200.8/6020
424015	Boron (total)	ICAPQ-MS	2022-06-17	2022-06-17	SD	EPA 200.8/6020
424015	Barium	ICAPQ-MS	2022-06-17	2022-06-17	SD	EPA 200.8/6020
424015	Beryllium	ICAPQ-MS	2022-06-17	2022-06-17	SD	EPA 200.8/6020
424015	Cadmium	ICAPQ-MS	2022-06-17	2022-06-17	SD	EPA 200.8/6020
424015	Cobalt	ICAPQ-MS	2022-06-17	2022-06-17	SD	EPA 200.8/6020
424015	Chromium Total	ICAPQ-MS	2022-06-17	2022-06-17	SD	EPA 200.8/6020
424015	Copper	ICAPQ-MS	2022-06-17	2022-06-17	SD	EPA 200.8/6020
424015	Mercury	ICAPQ-MS	2022-06-17	2022-06-17	SD	EPA 200.8/6020
424015	Molybdenum	ICAPQ-MS	2022-06-17	2022-06-17	SD	EPA 200.8/6020
424015	Nickel	ICAPQ-MS	2022-06-17	2022-06-17	SD	EPA 200.8/6020
424015	Lead	ICAPQ-MS	2022-06-17	2022-06-17	SD	EPA 200.8/6020
424015	Antimony	ICAPQ-MS	2022-06-17	2022-06-17	SD	EPA 200.8/6020
424015	Selenium	ICAPQ-MS	2022-06-17	2022-06-17	SD	EPA 200.8/6020
424015	Thallium	ICAPQ-MS	2022-06-17	2022-06-17	SD	EPA 200.8/6020
424015	Uranium	ICAPQ-MS	2022-06-17	2022-06-17	SD	EPA 200.8/6020
424015	Vanadium	ICAPQ-MS	2022-06-17	2022-06-17	SD	EPA 200.8/6020
424015	Zinc	ICAPQ-MS	2022-06-17	2022-06-17	SD	EPA 200.8/6020
424017	Electrical Conductivity	Electrical Conductivity Mete	2022-06-17	2022-06-17	Z_S	Cond-Soil
424028	pH - CaCl2	pH Meter	2022-06-17	2022-06-17	AsA	Ag Soil
424047	Cyanide (CN-)	Skalar CN Analyzer	2022-06-17	2022-06-17	Z_S	MOECC E3015
424051	Sodium Adsorption Ratio	iCAP OES	2022-06-17	2022-06-17	Z_S	Ag Soil
424154	Chromium VI	FAA	2022-06-20	2022-06-20	Z_S	M US EPA 3060A

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Date Submitted: 2022-06-13
Date Reported: 2022-06-20
Project: 18-2325GHE-2327
COC #: 891805

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.

Client: Geo Pro Consulting
40 Vogell Rd, Unit 57
Richmond Hill, Ontario
L4B 3K6
Attention: Dylan X
Invoice to: Geo Pro Consulting
PO#:

Report Number: 1980556
Date Submitted: 2022-06-30
Date Reported: 2022-07-11
Project: 18-2325GHE-2349
COC #: 892673
Temperature (C): 8
Custody Seal:

Page 1 of 15

Dear Dylan X:

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 <http://www.cala.ca/scopes/2602.pdf>

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: Geo Pro Consulting
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 L4B 3K6
 Attention: Dylan X
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Report Number: 1980556
 Date Submitted: 2022-06-30
 Date Reported: 2022-07-11
 Project: 18-2325GHE-2349
 COC #: 892673

O.Reg 153-T1-All Other Soils

Exceedence Summary

Sample I.D.	Analyte	Result	Units	Criteria
Inorganics				
BH241 AS2	Electrical Conductivity	1.15	mS/cm	STD 0.57
BH241 AS2	Sodium Adsorption Ratio	15.1		STD 2.4

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Report Number: 1980556
 Date Submitted: 2022-06-30
 Date Reported: 2022-07-11
 Project: 18-2325GHE-2349
 COC #: 892673

Guideline = O.Reg 153-T1-All Other Soils - Res/Par/Ins/Ind/Com/Prop

Hydrocarbons

Lab I.D. 1634850
 Sample Matrix Soil153
 Sample Type
 Sample Date 2022-06-23
 Sampling Time
 Sample I.D. BH241
 AS2

Analyte	Batch No	MRL	Units	Guideline	
PHC's F1	425200	10	ug/g	STD 25	<10
PHC's F1-BTEX	425206	10	ug/g		<10
PHC's F2	425172	2	ug/g	STD 10	<2
PHC's F3	425172	20	ug/g	STD 240	<20
PHC's F4	425172	20	ug/g	STD 120	<20

Metals

Lab I.D. 1634849
 Sample Matrix Soil153
 Sample Type
 Sample Date 2022-06-24
 Sampling Time
 Sample I.D. BH235
 AS2

1634850
 Soil153
 2022-06-23
 BH241
 AS2

Analyte	Batch No	MRL	Units	Guideline		
Antimony	425051	1	ug/g	STD 1.3	<1	<1
Arsenic	425051	1	ug/g	STD 18	4	4
Barium	425051	1	ug/g	STD 220	72	83
Beryllium	425051	1	ug/g	STD 2.5	<1	<1
Boron (Hot Water Soluble)	425034	0.5	ug/g		<0.5	<0.5
Boron (total)	425051	5	ug/g	STD 36	7	8
Cadmium	425051	0.4	ug/g	STD 1.2	<0.4	<0.4
Chromium Total	425051	1	ug/g	STD 70	28	36
Cobalt	425051	1	ug/g	STD 21	8	8
Copper	425051	1	ug/g	STD 92	25	21
Lead	425051	1	ug/g	STD 120	13	9
Mercury	425051	0.1	ug/g	STD 0.27	<0.1	<0.1
Molybdenum	425051	1	ug/g	STD 2	1	<1

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 40 Vogell Rd, Unit 57
 Richmond Hill, Ontario
 L4B 3K6
 Attention: Dylan X
 PO#:
 Invoice to: Geo Pro Consulting

Report Number: 1980556
 Date Submitted: 2022-06-30
 Date Reported: 2022-07-11
 Project: 18-2325GHE-2348
 COC #: 892673

Guideline = O.Reg 153-T1-All Other Soils - Res/Par/Ins/Ind/Com/Prop

Metals

Lab I.D.	1634849	1634850
Sample Matrix	Soil153	Soil153
Sample Type		
Sample Date	2022-06-24	2022-06-23
Sampling Time		
Sample I.D.	BH235	BH241
	AS2	AS2

Analyte	Batch No	MRL	Units	Guideline
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Analyte	Batch No	MRL	Units	Guideline	1634849	1634850
Nickel	425051	1	ug/g	STD 82	18	23
Selenium	425051	0.5	ug/g	STD 1.5	0.7	0.6
Silver	425051	0.2	ug/g	STD 0.5	<0.2	<0.2
Thallium	425051	1	ug/g	STD 1	<1	<1
Uranium	425051	0.5	ug/g	STD 2.5	0.5	<0.5
Vanadium	425051	2	ug/g	STD 86	31	38
Zinc	425051	2	ug/g	STD 290	98	52

Subcontract-Inorg

Lab I.D.	1634849	1634850
Sample Matrix	Soil153	Soil153
Sample Type		
Sample Date	2022-06-24	2022-06-23
Sampling Time		
Sample I.D.	BH235	BH241
	AS2	AS2

Analyte	Batch No	MRL	Units	Guideline
----------------	-----------------	------------	--------------	------------------

Analyte	Batch No	MRL	Units	Guideline	1634849	1634850
Chromium VI	425078	0.2	ug/g	STD 0.66	<0.2	<0.2

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 Date Reported: 2022-07-11
 Project: 18-2325GHE-2349
 COC #: 892673

Guideline = O.Reg 153-T1-All Other Soils - Res/Par/Ins/Ind/Com/Prop

Volatiles

Lab I.D. 1634850
 Sample Matrix Soil153
 Sample Type
 Sample Date 2022-06-23
 Sampling Time
 Sample I.D. BH241
 AS2

Analyte	Batch No	MRL	Units	Guideline	
Acetone	425190	0.50	ug/g	STD 0.5	<0.50
Benzene	425190	0.0068	ug/g	STD 0.02	<0.0068
Bromodichloromethane	425190	0.05	ug/g	STD 0.05	<0.05
Bromoform	425190	0.05	ug/g	STD 0.05	<0.05
Bromomethane	425190	0.05	ug/g	STD 0.05	<0.05
Carbon Tetrachloride	425190	0.05	ug/g	STD 0.05	<0.05
Chlorobenzene	425190	0.05	ug/g	STD 0.05	<0.05
Chloroform	425190	0.05	ug/g	STD 0.05	<0.05
Dibromochloromethane	425190	0.05	ug/g	STD 0.05	<0.05
Dichlorobenzene, 1,2-	425190	0.05	ug/g	STD 0.05	<0.05
Dichlorobenzene, 1,3-	425190	0.05	ug/g	STD 0.05	<0.05
Dichlorobenzene, 1,4-	425190	0.05	ug/g	STD 0.05	<0.05
Dichlorodifluoromethane	425190	0.05	ug/g	STD 0.05	<0.05
Dichloroethane, 1,1-	425190	0.05	ug/g	STD 0.05	<0.05
Dichloroethane, 1,2-	425190	0.05	ug/g	STD 0.05	<0.05
Dichloroethylene, 1,1-	425190	0.05	ug/g	STD 0.05	<0.05
Dichloroethylene, 1,2-cis-	425190	0.05	ug/g	STD 0.05	<0.05
Dichloroethylene, 1,2-trans-	425190	0.05	ug/g	STD 0.05	<0.05
Dichloropropane, 1,2-	425190	0.05	ug/g	STD 0.05	<0.05
Dichloropropene, 1,3-	425190	0.05	ug/g	STD 0.05	<0.05
Dichloropropene, 1,3-cis-	425190	0.05	ug/g		<0.05
Dichloropropene, 1,3-trans-	425190	0.05	ug/g		<0.05
Ethylbenzene	425190	0.018	ug/g	STD 0.05	<0.018

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 L4B 3K6
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Report Number: 1980556
 Date Submitted: 2022-06-30
 Date Reported: 2022-07-11
 Project: 18-2325GHE-2349
 COC #: 892673

Guideline = O.Reg 153-T1-All Other Soils - Res/Par/Ins/Ind/Com/Prop

Volatiles

Lab I.D. 1634850
 Sample Matrix Soil153
 Sample Type
 Sample Date 2022-06-23
 Sampling Time
 Sample I.D. BH241
 AS2

Analyte	Batch No	MRL	Units	Guideline	
Ethylene dibromide	425190	0.05	ug/g	STD 0.05	<0.05
Hexane (n)	425190	0.05	ug/g	STD 0.05	<0.05
Methyl Ethyl Ketone	425190	0.50	ug/g	STD 0.5	<0.50
Methyl Isobutyl Ketone	425190	0.50	ug/g	STD 0.5	<0.50
Methyl tert-Butyl Ether (MTBE)	425190	0.05	ug/g	STD 0.05	<0.05
Methylene Chloride	425190	0.05	ug/g	STD 0.05	<0.05
Styrene	425190	0.05	ug/g	STD 0.05	<0.05
Tetrachloroethane, 1,1,1,2-	425190	0.05	ug/g	STD 0.05	<0.05
Tetrachloroethane, 1,1,2,2-	425190	0.05	ug/g	STD 0.05	<0.05
Tetrachloroethylene	425190	0.05	ug/g	STD 0.05	<0.05
Toluene	425190	0.08	ug/g	STD 0.2	<0.08
Trichloroethane, 1,1,1-	425190	0.05	ug/g	STD 0.05	<0.05
Trichloroethane, 1,1,2-	425190	0.05	ug/g	STD 0.05	<0.05
Trichloroethylene	425190	0.01	ug/g	STD 0.05	<0.01
Trichlorofluoromethane	425190	0.05	ug/g	STD 0.25	<0.05
Vinyl Chloride	425190	0.02	ug/g	STD 0.02	<0.02
Xylene Mixture	425205	0.05	ug/g	STD 0.05	<0.05
Xylene, m/p-	425190	0.05	ug/g		<0.05
Xylene, o-	425190	0.05	ug/g		<0.05

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 Date Submitted: 2022-06-30
 Date Reported: 2022-07-11
 Project: 18-2325GHE-2348
 COC #: 892673

Guideline = O.Reg 153-T1-All Other Soils - Res/Par/Ins/Ind/Com/Prop

Inorganics

Lab I.D.	1634849	1634850
Sample Matrix	Soil153	Soil153
Sample Type		
Sample Date	2022-06-24	2022-06-23
Sampling Time		
Sample I.D.	BH235	BH241
	AS2	AS2

Analyte	Batch No	MRL	Units	Guideline		
Cyanide (CN-)	425143	0.005	ug/g	STD 0.051	<0.005	<0.005
Electrical Conductivity	425141	0.05	mS/cm	STD 0.57	0.54	1.15*
pH - CaCl2	425036	2.00			7.84	7.80
Sodium Adsorption Ratio	425145	0.01		STD 2.4	2.32	15.1*

Moisture

Lab I.D.	1634850
Sample Matrix	Soil153
Sample Type	
Sample Date	2022-06-23
Sampling Time	
Sample I.D.	BH241
	AS2

Analyte	Batch No	MRL	Units	Guideline	
Moisture-Humidite	425172	0.1	%		14.4

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Report Number: 1980556
 Date Submitted: 2022-06-30
 Date Reported: 2022-07-11
 Project: 18-2325GHE-2349
 COC #: 892673

Guideline = O.Reg 153-T1-All Other Soils - Res/Par/Ins/Ind/Com/Prop

PHC Surrogate

Lab I.D. 1634850
 Sample Matrix Soil153
 Sample Type
 Sample Date 2022-06-23
 Sampling Time
 Sample I.D. BH241
 AS2

Analyte	Batch No	MRL	Units	Guideline
Alpha-androstrane	425172	0	%	81

VOCs Surrogates

Lab I.D. 1634850
 Sample Matrix Soil153
 Sample Type
 Sample Date 2022-06-23
 Sampling Time
 Sample I.D. BH241
 AS2

Analyte	Batch No	MRL	Units	Guideline
1,2-dichloroethane-d4	425190	0	%	89
4-bromofluorobenzene	425190	0	%	98
Toluene-d8	425190	0	%	87

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 Date Reported: 2022-07-11
 Project: 18-2325GHE-2349
 COC #: 892673

Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
425034	Boron (Hot Water Soluble)	<0.5 ug/g	98	70-130	95	75-125	0	0-30
425036	pH - CaCl2	6.36	102	90-110			0	
425051	Silver	<0.2 ug/g	109	70-130	93	70-130	0	0-20
425051	Arsenic	<1 ug/g	97	70-130	105	70-130	0	0-20
425051	Boron (total)	<5 ug/g	100	70-130	109	70-130	0	0-20
425051	Barium	<1 ug/g	97	70-130	157	70-130	3	0-20
425051	Beryllium	<1 ug/g	99	70-130	88	70-130	0	0-20
425051	Cadmium	<0.4 ug/g	103	70-130	104	70-130	0	0-20
425051	Cobalt	<1 ug/g	98	70-130	100	70-130	5	0-20
425051	Chromium Total	<1 ug/g	106	70-130	134	70-130	4	0-20
425051	Copper	<1 ug/g	104	70-130	97	70-130	5	0-20
425051	Mercury	<0.1 ug/g	90	70-130	89	70-130	0	0-20
425051	Molybdenum	<1 ug/g	98	70-130	101	70-130	0	0-20
425051	Nickel	<1 ug/g	100	70-130	99	70-130	3	0-20
425051	Lead	<1 ug/g	93	70-130	88	70-130	0	0-20
425051	Antimony	<1 ug/g	96	70-130	94	70-130	0	0-20
425051	Selenium	<0.5 ug/g	107	70-130	102	70-130	0	0-20
425051	Thallium	<1 ug/g	93	70-130	85	70-130	0	0-20
425051	Uranium	<0.5 ug/g	86	70-130	85	70-130	0	0-20
425051	Vanadium	<2 ug/g	105	70-130	153	70-130	5	0-20
425051	Zinc	<2 ug/g	107	70-130	91	70-130	0	0-20
425078	Chromium VI	<0.2 ug/g	115	80-120	8		0	
425141	Electrical Conductivity	<0.05	96	90-110			0	0-10
425143	Cyanide (CN-)	<0.005 ug/g	96	75-125	92	70-130	0	0-20
425145	Sodium Adsorption Ratio	<0.01					2	
425172	PHC's F2	<2 ug/g	117	80-120	82	60-140	0	0-30
425172	PHC's F3	<20 ug/g	116	80-120	82	60-140	0	0-30
425172	PHC's F4	<20 ug/g	116	80-120	82	60-140	0	0-30
425172	Moisture-Humidite	<0.1 %	100	80-120			3	
425190	Tetrachloroethane, 1,1,1,2-	<0.05 ug/g	91	60-130	85	50-140	0	0-50
425190	Trichloroethane, 1,1,1-	<0.05 ug/g	106	60-130	103	50-140	0	0-50
425190	Tetrachloroethane, 1,1,2,2-	<0.05 ug/g	101	60-130	105	50-140	0	0-30

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: Geo Pro Consulting
 40 Vogell Rd, Unit 57
 Richmond Hill, Ontario
 L4B 3K6
 Attention: Dylan X
 PO#:
 Invoice to: Geo Pro Consulting

Report Number: 1980556
 Date Submitted: 2022-06-30
 Date Reported: 2022-07-11
 Project: 18-2325GHE-2349
 COC #: 892673

Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
425190	Trichloroethane, 1,1,2-	<0.05 ug/g	100	60-130	97	50-140	0	0-50
425190	Dichloroethane, 1,1-	<0.05 ug/g	91	60-130	95	50-140	0	0-50
425190	Dichloroethylene, 1,1-	<0.05 ug/g	93	60-130	85	50-140	0	0-50
425190	Dichlorobenzene, 1,2-	<0.05 ug/g	97	60-130	97	50-140	0	0-50
425190	Dichloroethane, 1,2-	<0.05 ug/g	112	60-130	118	50-140	0	0-50
425190	Dichloropropane, 1,2-	<0.05 ug/g	96	60-130	102	50-140	0	0-50
425190	Dichlorobenzene, 1,3-	<0.05 ug/g	86	60-130	85	50-140	0	0-50
425190	Dichloropropene,1,3-	<0.05 ug/g						
425190	Dichlorobenzene, 1,4-	<0.05 ug/g	86	60-130	85	50-140	0	0-50
425190	Acetone	<0.50 ug/g	106	60-130	117	50-140	0	0-50
425190	Benzene	<0.0068	102	60-130	104	50-140	0	0-50
425190	Bromodichloromethane	<0.05 ug/g	92	60-130	92	50-140	0	0-50
425190	Bromoform	<0.05 ug/g	77	60-130	73	50-140	0	0-50
425190	Bromomethane	<0.05 ug/g	93	60-130	105	50-140	0	0-50
425190	Dichloroethylene, 1,2-cis-	<0.05 ug/g	87	60-130	96	50-140	0	0-50
425190	Dichloropropene,1,3-cis-	<0.05 ug/g	104	60-130	85	50-140	0	0-50
425190	Carbon Tetrachloride	<0.05 ug/g	103	60-130	97	50-140	0	0-50
425190	Chloroform	<0.05 ug/g	104	60-130	106	50-140	0	0-50
425190	Dibromochloromethane	<0.05 ug/g	83	60-130	86	50-140	0	0-50
425190	Dichlorodifluoromethane	<0.05 ug/g	112	60-130	77	50-140	0	0-50
425190	Methylene Chloride	<0.05 ug/g	84	60-130	92	50-140	0	0-50
425190	Ethylbenzene	<0.018 ug/g	99	60-130	93	50-140	0	0-50
425190	Ethylene dibromide	<0.05 ug/g	90	60-130	89	50-140	0	0-50
425190	Hexane (n)	<0.05 ug/g	96	60-130	95	50-140	0	0-50
425190	Xylene, m/p-	<0.05 ug/g	102	60-130	95	50-140	0	0-50
425190	Methyl Ethyl Ketone	<0.50 ug/g	114	60-130	94	50-140	0	0-50
425190	Methyl Isobutyl Ketone	<0.50 ug/g	80	60-130	89	50-140	0	0-50
425190	Methyl tert-Butyl Ether (MTBE)	<0.05 ug/g	113	60-130	112	50-140	0	0-50
425190	Chlorobenzene	<0.05 ug/g	99	60-130	93	50-140	0	0-50
425190	Xylene, o-	<0.05 ug/g	90	60-130	86	50-140	0	0-50
425190	Styrene	<0.05 ug/g	92	60-130	87	50-140	0	0-50
425190	Dichloroethylene, 1,2-trans-	<0.05 ug/g	91	60-130	95	50-140	0	0-50
425190	Dichloropropene,1,3-trans-	<0.05 ug/g	112	60-130	83	50-140	0	0-50

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: Geo Pro Consulting
 40 Vogell Rd, Unit 57
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 L4B 3K6
 Attention: Dylan X
 PO#:
 Invoice to: Geo Pro Consulting

Report Number: 1980556
 Date Submitted: 2022-06-30
 Date Reported: 2022-07-11
 Project: 18-2325GHE-2349
 COC #: 892673

Quality Assurance Summary

Batch No	Analyte	Blank	QC % Rec	QC Limits	Spike % Rec	Spike Limits	Dup % RPD	Duplicate Limits
425190	Tetrachloroethylene	<0.05 ug/g	96	60-130	101	50-140	0	0-50
425190	Toluene	<0.08 ug/g	100	60-130	103	50-140	0	0-50
425190	Trichloroethylene	<0.01 ug/g	93	60-130	103	50-140	0	0-50
425190	Trichlorofluoromethane	<0.05 ug/g	100	60-130	84	50-140	0	0-50
425190	Vinyl Chloride	<0.02 ug/g	98	60-130	114	50-140	0	0-50
425200	PHC's F1	<10 ug/g	99	80-120	95	60-140	0	0-30
425205	Xylene Mixture							
425206	PHC's F1-BTEX							

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 COC #: 892673

Test Summary

Batch No	Analyte	Instrument	Preparation Date	Analysis Date	Analyst	Method
425034	Boron (Hot Water Soluble)	iCAP OES	2022-07-06	2022-07-06	Z_S	MOECC E3470
425036	pH - CaCl2	pH Meter	2022-07-05	2022-07-05	IP	Ag Soil
425051	Silver	ICAPQ-MS	2022-07-06	2022-07-06	SD	EPA 200.8/6020
425051	Arsenic	ICAPQ-MS	2022-07-06	2022-07-06	SD	EPA 200.8/6020
425051	Boron (total)	ICAPQ-MS	2022-07-06	2022-07-06	SD	EPA 200.8/6020
425051	Barium	ICAPQ-MS	2022-07-06	2022-07-06	SD	EPA 200.8/6020
425051	Beryllium	ICAPQ-MS	2022-07-06	2022-07-06	SD	EPA 200.8/6020
425051	Cadmium	ICAPQ-MS	2022-07-06	2022-07-06	SD	EPA 200.8/6020
425051	Cobalt	ICAPQ-MS	2022-07-06	2022-07-06	SD	EPA 200.8/6020
425051	Chromium Total	ICAPQ-MS	2022-07-06	2022-07-06	SD	EPA 200.8/6020
425051	Copper	ICAPQ-MS	2022-07-06	2022-07-06	SD	EPA 200.8/6020
425051	Mercury	ICAPQ-MS	2022-07-06	2022-07-06	SD	EPA 200.8/6020
425051	Molybdenum	ICAPQ-MS	2022-07-06	2022-07-06	SD	EPA 200.8/6020
425051	Nickel	ICAPQ-MS	2022-07-06	2022-07-06	SD	EPA 200.8/6020
425051	Lead	ICAPQ-MS	2022-07-06	2022-07-06	SD	EPA 200.8/6020
425051	Antimony	ICAPQ-MS	2022-07-06	2022-07-06	SD	EPA 200.8/6020
425051	Selenium	ICAPQ-MS	2022-07-06	2022-07-06	SD	EPA 200.8/6020
425051	Thallium	ICAPQ-MS	2022-07-06	2022-07-06	SD	EPA 200.8/6020
425051	Uranium	ICAPQ-MS	2022-07-06	2022-07-06	SD	EPA 200.8/6020
425051	Vanadium	ICAPQ-MS	2022-07-06	2022-07-06	SD	EPA 200.8/6020
425051	Zinc	ICAPQ-MS	2022-07-06	2022-07-06	SD	EPA 200.8/6020
425078	Chromium VI		2022-07-05	2022-07-06	AET	SUBCONTRACT P-INORG
425141	Electrical Conductivity	Electrical Conductivity Mete	2022-07-07	2022-07-07	Z_S	Cond-Soil
425143	Cyanide (CN-)	Skalar CN Analyzer	2022-07-07	2022-07-07	Z_S	MOECC E3015
425145	Sodium Adsorption Ratio	iCAP OES	2022-07-07	2022-07-07	Z_S	Ag Soil
425172	PHC's F2	GC/FID	2022-07-08	2022-07-08	SP	CCME
425172	PHC's F3	GC/FID	2022-07-08	2022-07-08	SP	CCME
425172	PHC's F4	GC/FID	2022-07-08	2022-07-08	SP	CCME
425172	Moisture-Humidite	Oven	2022-07-08	2022-07-08	SP	ASTM 2216
425190	Tetrachloroethane, 1,1,1,2-	GC-MS	2022-07-04	2022-07-08	NF	V 8260B
425190	Trichloroethane, 1,1,1-	GC-MS	2022-07-04	2022-07-08	NF	V 8260B
425190	Tetrachloroethane, 1,1,2,2-	GC-MS	2022-07-04	2022-07-08	NF	V 8260B

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 Date Submitted: 2022-06-30
 Date Reported: 2022-07-11
 Project: 18-2325GHE-2349
 COC #: 892673

Test Summary

Batch No	Analyte	Instrument	Preparation Date	Analysis Date	Analyst	Method
425190	Trichloroethane, 1,1,2-	GC-MS	2022-07-04	2022-07-08	NF	V 8260B
425190	Dichloroethane, 1,1-	GC-MS	2022-07-04	2022-07-08	NF	V 8260B
425190	Dichloroethylene, 1,1-	GC-MS	2022-07-04	2022-07-08	NF	V 8260B
425190	Dichlorobenzene, 1,2-	GC-MS	2022-07-04	2022-07-08	NF	V 8260B
425190	Dichloroethane, 1,2-	GC-MS	2022-07-04	2022-07-08	NF	V 8260B
425190	Dichloropropane, 1,2-	GC-MS	2022-07-04	2022-07-08	NF	V 8260B
425190	Dichlorobenzene, 1,3-	GC-MS	2022-07-04	2022-07-08	NF	V 8260B
425190	Dichloropropene, 1,3-	GC-MS	2022-07-08	2022-07-08	NF	V 8260B
425190	Dichlorobenzene, 1,4-	GC-MS	2022-07-04	2022-07-08	NF	V 8260B
425190	Acetone	GC-MS	2022-07-04	2022-07-08	NF	V 8260B
425190	Benzene	GC-MS	2022-07-04	2022-07-08	NF	V 8260B
425190	Bromodichloromethane	GC-MS	2022-07-04	2022-07-08	NF	V 8260B
425190	Bromoform	GC-MS	2022-07-04	2022-07-08	NF	V 8260B
425190	Bromomethane	GC-MS	2022-07-04	2022-07-08	NF	V 8260B
425190	Dichloroethylene, 1,2-cis-	GC-MS	2022-07-04	2022-07-08	NF	V 8260B
425190	Dichloropropene, 1,3-cis-	GC-MS	2022-07-04	2022-07-08	NF	V 8260B
425190	Carbon Tetrachloride	GC-MS	2022-07-04	2022-07-08	NF	V 8260B
425190	Chloroform	GC-MS	2022-07-04	2022-07-08	NF	V 8260B
425190	Dibromochloromethane	GC-MS	2022-07-04	2022-07-08	NF	V 8260B
425190	Dichlorodifluoromethane	GC-MS	2022-07-04	2022-07-08	NF	V 8260B
425190	Methylene Chloride	GC-MS	2022-07-04	2022-07-08	NF	V 8260B
425190	Ethylbenzene	GC-MS	2022-07-04	2022-07-08	NF	V 8260B
425190	Ethylene dibromide	GC-MS	2022-07-04	2022-07-08	NF	V 8260B
425190	Hexane (n)	GC-MS	2022-07-04	2022-07-08	NF	V 8260B
425190	Xylene, m/p-	GC-MS	2022-07-04	2022-07-08	NF	V 8260B
425190	Methyl Ethyl Ketone	GC-MS	2022-07-04	2022-07-08	NF	V 8260B
425190	Methyl Isobutyl Ketone	GC-MS	2022-07-04	2022-07-08	NF	V 8260B
425190	Methyl tert-Butyl Ether (MTBE)	GC-MS	2022-07-04	2022-07-08	NF	V 8260B
425190	Chlorobenzene	GC-MS	2022-07-04	2022-07-08	NF	V 8260B
425190	Xylene, o-	GC-MS	2022-07-04	2022-07-08	NF	V 8260B
425190	Styrene	GC-MS	2022-07-04	2022-07-08	NF	V 8260B
425190	Dichloroethylene, 1,2-trans-	GC-MS	2022-07-04	2022-07-08	NF	V 8260B
425190	Dichloropropene, 1,3-trans-	GC-MS	2022-07-04	2022-07-08	NF	V 8260B

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 40 Vogell Rd, Unit 57
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 L4B 3K6
 Attention: Dylan X
 PO#:
 Invoice to: Geo Pro Consulting

Report Number: 1980556
 Date Submitted: 2022-06-30
 Date Reported: 2022-07-11
 Project: 18-2325GHE-2349
 COC #: 892673

Test Summary

Batch No	Analyte	Instrument	Preparation Date	Analysis Date	Analyst	Method
425190	Tetrachloroethylene	GC-MS	2022-07-04	2022-07-08	NF	V 8260B
425190	Toluene	GC-MS	2022-07-04	2022-07-08	NF	V 8260B
425190	Trichloroethylene	GC-MS	2022-07-04	2022-07-08	NF	V 8260B
425190	Trichlorofluoromethane	GC-MS	2022-07-04	2022-07-08	NF	V 8260B
425190	Vinyl Chloride	GC-MS	2022-07-04	2022-07-08	NF	V 8260B
425200	PHC's F1	GC/FID	2022-07-08	2022-07-08	NF	CCME
425205	Xylene Mixture	GC-MS	2022-07-08	2022-07-08	NF	V 8260B
425206	PHC's F1-BTEX	GC/FID	2022-07-08	2022-07-08	NF	CCME

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Date Submitted: 2022-06-30
Date Reported: 2022-07-11
Project: 18-2325GHE-2349
COC #: 892673

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.



GeoPro Consulting Limited

Geotechnical-Hydrogeology-Environmental-Materials-Inspection

APPENDIX F

Client: Geo Pro Consulting
40 Vogell Rd, Unit 57
Richmond Hill, Ontario
L4B 3K6

Attention: Dylan X

PO#:

Invoice to: Geo Pro Consulting

Report Number: 1973533
Date Submitted: 2022-03-17
Date Reported: 2022-03-25
Project: 18-2325GHE-2250
COC #: 887486

Page 1 of 4

Dear Dylan X:

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:

APPROVAL: _____

Addrine Thomas, Inorganics Supervisor

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

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) 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: <http://www.cala.ca/scopes/2602.pdf>.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is licensed by the Ontario Ministry of the Environment, Conservation, and Parks (MECP) for specific tests in drinking water (license #2318). A copy of the license is available upon request.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is accredited by the Ontario Ministry of Agriculture, Food, and Rural Affairs for specific tests in agricultural soils.

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

Certificate of Analysis

Client: Geo Pro Consulting
 40 Vogell Rd, Unit 57
 Richmond Hill, Ontario
 L4B 3K6
 Attention: Dylan X
 PO#:
 Invoice to: Geo Pro Consulting

Report Number: 1973533
 Date Submitted: 2022-03-17
 Date Reported: 2022-03-25
 Project: 18-2325GHE-2250
 COC #: 887486

Group	Analyte	MRL	Units	Guideline	1615025 Soil	1615026 Soil
Anions	SO4	0.01	%		0.02	0.02
Cl in Concrete	Cl	0.002	%		0.121	0.050
General Chemistry	Electrical Conductivity	0.05	mS/cm		2.24	0.82
	pH	2.00			9.00	8.12
	Resistivity	1	ohm-cm		446	1220
Redox Potential	REDOX Potential		mV		234	250
Subcontract	Moisture-Humidite	0.25	%		9.58	20.5
	S2-	0.2	ug/g		<0.20	<0.20

Guideline = * = **Guideline Exceedence**

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Report Number: 1973533
 Date Submitted: 2022-03-17
 Date Reported: 2022-03-25
 Project: 18-2325GHE-2250
 COC #: 887486

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 418944 Analysis/Extraction Date 2022-03-23 Analyst MW Method C SM2580B			
REDOX Potential	267 mV	99	
Run No 418986 Analysis/Extraction Date 2022-03-23 Analyst AsA Method Ag Soil			
pH	7.55	101	90-110
Run No 418987 Analysis/Extraction Date 2022-03-23 Analyst AsA Method Cond-Soil			
Electrical Conductivity	<0.05 mS/cm	95	90-110
Run No 418988 Analysis/Extraction Date 2022-03-23 Analyst AsA Method Resistivity - soil			
Resistivity			
Run No 418992 Analysis/Extraction Date 2022-03-24 Analyst AsA Method C CSA A23.2-4B			
Chloride	<0.002 %		80-120
Run No 419026 Analysis/Extraction Date 2022-03-24 Analyst IP Method AG SOIL			
SO4	<0.01 %	98	70-130

Guideline =

*** = Guideline Exceedence**

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: Geo Pro Consulting
 40 Vogell Rd, Unit 57
 Richmond Hill, Ontario
 L4B 3K6
 Attention: Dylan X
 PO#:
 Invoice to: Geo Pro Consulting

Report Number: 1973533
 Date Submitted: 2022-03-17
 Date Reported: 2022-03-25
 Project: 18-2325GHE-2250
 COC #: 887486

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 419084 Analysis/Extraction Date 2022-03-24 Analyst AET Method SUBCONTRACT-A			
Moisture-Humidite	<0.25 %	100	
S2-	<0.20 ug/g	89	

Guideline =

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Client: Geo Pro Consulting
40 Vogell Rd, Unit 57
Richmond Hill, Ontario
L4B 3K6

Attention: Dylan X

PO#:

Invoice to: Geo Pro Consulting

Report Number: 1972776
Date Submitted: 2022-03-04
Date Reported: 2022-03-23
Project: 18-2325GHE-2228
COC #: 886852

Page 1 of 3

Dear Dylan X:

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:

APPROVAL: _____

Addrine Thomas, Inorganics Supervisor

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

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) 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: <http://www.cala.ca/scopes/2602.pdf>.

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Certificate of Analysis

Client: Geo Pro Consulting
 40 Vogell Rd, Unit 57
 Richmond Hill, Ontario
 L4B 3K6
 Attention: Dylan X
 PO#:
 Invoice to: Geo Pro Consulting

Report Number: 1972776
 Date Submitted: 2022-03-04
 Date Reported: 2022-03-23
 Project: 18-2325GHE-2228
 COC #: 886852

Lab I.D. 1613111
 Sample Matrix Soil
 Sample Type
 Sampling Date 2022-03-02
 Sample I.D. BH401 SS4

Group	Analyte	MRL	Units	Guideline	
Anions	SO4	0.01	%		0.02
Cl in Concrete	Cl	0.002	%		0.050
General Chemistry	Electrical Conductivity	0.05	mS/cm		0.94
	pH	2.00			8.24
	Resistivity	1	ohm-cm		1060
Redox Potential	REDOX Potential		mV		337
Subcontract	Moisture-Humidite	0.25	%		11.1
	S2-	0.2	ug/g		1.2

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Client: Geo Pro Consulting
 40 Vogell Rd, Unit 57
 Richmond Hill, Ontario
 L4B 3K6
 Attention: Dylan X
 PO#:
 Invoice to: Geo Pro Consulting

Report Number: 1972776
 Date Submitted: 2022-03-04
 Date Reported: 2022-03-23
 Project: 18-2325GHE-2228
 COC #: 886852

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 418323 Analysis/Extraction Date 2022-03-10 Analyst MW Method Cond-Soil			
Electrical Conductivity	<0.05 mS/cm	101	90-110
pH	7.56	101	90-110
Resistivity	<1 ohm-cm		
Run No 418326 Analysis/Extraction Date 2022-03-10 Analyst AsA Method C CSA A23.2-4B			
Chloride	<0.002 %		80-120
Run No 418354 Analysis/Extraction Date 2022-03-10 Analyst IP Method AG SOIL			
SO4	<0.01 %	102	70-130
Run No 418938 Analysis/Extraction Date 2022-03-23 Analyst AET Method SUBCONTRACT-A			
Moisture-Humidite	<0.25 %	101	
S2-	<0.20 ug/g	86	
Run No 418944 Analysis/Extraction Date 2022-03-23 Analyst MW Method C SM2580B			
REDOX Potential	267 mV	99	

Guideline =

*** = Guideline Exceedence**

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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



GeoPro Consulting Limited (Richmond Hill)
ATTN: Sarena Medina
40 Vogell Road
Unit 57
Richmond Hill ON L4B 3N6

Date Received: 18-JAN-22
Report Date: 26-JAN-22 09:51 (MT)
Version: FINAL

Client Phone: 905-237-8336

Certificate of Analysis

Lab Work Order #: L2679649
Project P.O. #: NOT SUBMITTED
Job Reference: 18-2325GHE-2169
C of C Numbers:
Legal Site Desc:

Costas Farassoglou
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 5730 Coopers Avenue, Unit #26, Mississauga, ON L4Z 2E9 Canada | Phone: +1 905 507 6910 | Fax: +1 905 507 6927
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2679649-1 BH403 SS4 Sampled By: RR on 23-DEC-21 Matrix: SOIL							
Physical Tests							
Conductivity	0.697		0.0040	mS/cm		25-JAN-22	R5706356
% Moisture	7.55		0.25	%	20-JAN-22	21-JAN-22	R5702897
pH	8.13		0.10	pH units		20-JAN-22	R5701936
Redox Potential	265		-1000	mV		21-JAN-22	R5704206
Resistivity	1430		1.0	ohm*cm		25-JAN-22	
Leachable Anions & Nutrients							
Chloride	279		5.0	ug/g	24-JAN-22	25-JAN-22	R5707957
Anions and Nutrients							
Sulphate	54		20	ug/g	24-JAN-22	25-JAN-22	R5707957
Inorganic Parameters							
Acid Volatile Sulphides	<0.20	PEHR	0.20	mg/kg	24-JAN-22	24-JAN-22	R5706077

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier key listed:

Qualifier	Description
PEHR	Parameter Exceeded Recommended Holding Time On Receipt: Proceed With Analysis As Requested.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
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CL-R511-WT	Soil	Chloride-O.Reg 153/04 (July 2011)	EPA 300.0
------------	------	-----------------------------------	-----------

5 grams of dried soil is mixed with 10 grams of distilled water for a minimum of 30 minutes. The extract is filtered and analyzed by ion chromatography.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011 and as of November 30, 2020), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

EC-WT	Soil	Conductivity (EC)	MOEE E3138
-------	------	-------------------	------------

A representative subsample is tumbled with de-ionized (DI) water. The ratio of water to soil is 2:1 v/w. After tumbling the sample is then analyzed by a conductivity meter.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

MOISTURE-WT	Soil	% Moisture	CCME PHC in Soil - Tier 1 (mod)
-------------	------	------------	---------------------------------

PH-WT	Soil	pH	MOEE E3137A
-------	------	----	-------------

A minimum 10g portion of the sample is extracted with 20mL of 0.01M calcium chloride solution by shaking for at least 30 minutes. The aqueous layer is separated from the soil and then analyzed using a pH meter and electrode.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

REDOX-POTENTIAL-WT	Soil	Redox Potential	APHA 2580
--------------------	------	-----------------	-----------

This analysis is carried out in accordance with the procedure described in the "APHA" method 2580 "Oxidation-Reduction Potential" 2012. Samples are extracted at a fixed ratio with DI water. Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

RESISTIVITY-CALC-WT	Soil	Resistivity Calculation	APHA 2510 B
---------------------	------	-------------------------	-------------

"Soil Resistivity (calculated)" is determined as the inverse of the conductivity of a 2:1 water:soil leachate (dry weight). This method is intended as a rapid approximation for Soil Resistivity. Where high accuracy results are required, direct measurement of Soil Resistivity by the Wenner Four-Electrode Method (ASTM G57) is recommended.

SO4-WT	Soil	Sulphate	EPA 300.0
--------	------	----------	-----------

5 grams of soil is mixed with 50 mL of distilled water for a minimum of 30 minutes. The extract is filtered and analyzed by ion chromatography.

SULPHIDE-WT	Soil	Sulphide, Acid Volatile	APHA 4500S2J
-------------	------	-------------------------	--------------

This analysis is carried out in accordance with the method described in APHA 4500 S2-J. Hydrochloric acid is added to sediment samples within a purge and trap system. The evolved hydrogen sulphide (H₂S) is carried into a basic solution by inert gas. The acid volatile sulfide is then determined colourimetrically.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

Chain of Custody Numbers:

Reference Information

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid weight of sample

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Quality Control Report

Workorder: L2679649

Report Date: 26-JAN-22

Page 1 of 4

Client: GeoPro Consulting Limited (Richmond Hill)
 40 Vogell Road Unit 57
 Richmond Hill ON L4B 3N6

Contact: Sarena Medina

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CL-R511-WT								
	Soil							
Batch	R5707957							
WG3688198-7	CRM	AN-CRM-WT						
Chloride			91.2		%		70-130	25-JAN-22
WG3688198-8	DUP	WG3688198-9						
Chloride		<5.0	<5.0	RPD-NA	ug/g	N/A	30	25-JAN-22
WG3688198-6	LCS							
Chloride			100.7		%		80-120	25-JAN-22
WG3688198-5	MB							
Chloride			<5.0		ug/g		5	25-JAN-22
EC-WT								
	Soil							
Batch	R5706356							
WG3688257-4	DUP	WG3688257-3						
Conductivity		0.430	0.395		mS/cm	8.5	20	25-JAN-22
WG3688257-2	IRM	WT SAR4						
Conductivity			99.5		%		70-130	25-JAN-22
WG3688439-1	LCS							
Conductivity			102.6		%		90-110	25-JAN-22
WG3688257-1	MB							
Conductivity			<0.0040		mS/cm		0.004	25-JAN-22
MOISTURE-WT								
	Soil							
Batch	R5702897							
WG3687220-3	DUP	L2679635-13						
% Moisture		10.4	10.6		%	2.1	20	21-JAN-22
WG3687220-2	LCS							
% Moisture			99.7		%		90-110	21-JAN-22
WG3687220-1	MB							
% Moisture			<0.25		%		0.25	21-JAN-22
PH-WT								
	Soil							
Batch	R5701936							
WG3686804-1	DUP	L2679801-5						
pH		7.78	7.78	J	pH units	0.00	0.3	20-JAN-22
WG3686008-2	LCS							
pH			7.04		pH units		6.9-7.1	20-JAN-22
REDOX-POTENTIAL-WT								
	Soil							
Batch	R5704206							
WG3687675-1	CRM	WT-REDOX						
Redox Potential			102.5		%		90-110	21-JAN-22
WG3687250-1	DUP	L2680198-1						



Quality Control Report

Workorder: L2679649

Report Date: 26-JAN-22

Page 2 of 4

Client: GeoPro Consulting Limited (Richmond Hill)
 40 Vogell Road Unit 57
 Richmond Hill ON L4B 3N6

Contact: Sarena Medina

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
REDOX-POTENTIAL-WT								
	Soil							
Batch	R5704206							
WG3687250-1	DUP	L2680198-1						
Redox Potential		290	286		mV	1.4	25	21-JAN-22
SO4-WT								
	Soil							
Batch	R5707957							
WG3688198-7	CRM	AN-CRM-WT						
Sulphate			104.3		%		60-140	25-JAN-22
WG3688198-8	DUP	WG3688198-9						
Sulphate		<20	<20	RPD-NA	ug/g	N/A	25	25-JAN-22
WG3688198-6	LCS							
Sulphate			100.3		%		70-130	25-JAN-22
WG3688198-5	MB							
Sulphate			<20		ug/g		20	25-JAN-22
SULPHIDE-WT								
	Soil							
Batch	R5706077							
WG3688209-3	DUP	L2680198-1						
Acid Volatile Sulphides		0.38	<0.20	RPD-NA	mg/kg	N/A	45	24-JAN-22
WG3688209-2	LCS							
Acid Volatile Sulphides			90.8		%		70-130	24-JAN-22
WG3688209-1	MB							
Acid Volatile Sulphides			<0.20		mg/kg		0.2	24-JAN-22

Quality Control Report

Workorder: L2679649

Report Date: 26-JAN-22

Client: GeoPro Consulting Limited (Richmond Hill)
40 Vogell Road Unit 57
Richmond Hill ON L4B 3N6

Page 3 of 4

Contact: Sarena Medina

Legend:

Limit ALS Control Limit (Data Quality Objectives)
DUP Duplicate
RPD Relative Percent Difference
N/A Not Available
LCS Laboratory Control Sample
SRM Standard Reference Material
MS Matrix Spike
MSD Matrix Spike Duplicate
ADE Average Desorption Efficiency
MB Method Blank
IRM Internal Reference Material
CRM Certified Reference Material
CCV Continuing Calibration Verification
CVS Calibration Verification Standard
LCSD Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2679649

Report Date: 26-JAN-22

Client: GeoPro Consulting Limited (Richmond Hill)
40 Vogell Road Unit 57
Richmond Hill ON L4B 3N6

Page 4 of 4

Contact: Sarena Medina

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Conductivity (EC)	1	23-DEC-21	24-JAN-22 17:00	30	32	days	EHT
Leachable Anions & Nutrients							
Sulphide, Acid Volatile	1	23-DEC-21	24-JAN-22 00:00	14	32	days	EHTR

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR: Exceeded ALS recommended hold time prior to sample receipt.
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT: Exceeded ALS recommended hold time prior to analysis.
Rec. HT: ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2679649 were received on 18-JAN-22 11:30.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Client: Geo Pro Consulting
40 Vogell Rd, Unit 57
Richmond Hill, Ontario
L4B 3K6

Attention: Dylan X

PO#:

Invoice to: Geo Pro Consulting

Report Number: 1974407
Date Submitted: 2022-04-01
Date Reported: 2022-04-08
Project: 18-2325GHE-2266
COC #: 888967

Page 1 of 3

Dear Dylan X:

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:

APPROVAL:

Emma-Dawn Ferguson, Chemist

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Certificate of Analysis

Client: Geo Pro Consulting
 40 Vogell Rd, Unit 57
 Richmond Hill, Ontario
 L4B 3K6
 Attention: Dylan X
 PO#:
 Invoice to: Geo Pro Consulting

Report Number: 1974407
 Date Submitted: 2022-04-01
 Date Reported: 2022-04-08
 Project: 18-2325GHE-2266
 COC #: 888967

Lab I.D. 1617370
 Sample Matrix Soil
 Sample Type
 Sampling Date 2022-03-29
 Sample I.D. BH404 SS3

Group	Analyte	MRL	Units	Guideline	
Anions	Cl	0.002	%		0.094
	SO4	0.01	%		0.02
General Chemistry	Electrical Conductivity	0.05	mS/cm		1.83
	pH	2.00			8.02
	Resistivity	1	ohm-cm		549
Redox Potential	REDOX Potential		mV		141
Subcontract	Moisture-Humidite	0.25	%		7.57
	S2	0.2	ug/g		0.5

Guideline = * = **Guideline Exceedence**

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Certificate of Analysis

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 40 Vogell Rd, Unit 57
 Richmond Hill, Ontario
 L4B 3K6
 Attention: Dylan X
 PO#:
 Invoice to: Geo Pro Consulting

Report Number: 1974407
 Date Submitted: 2022-04-01
 Date Reported: 2022-04-08
 Project: 18-2325GHE-2266
 COC #: 888967

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 419599 Analysis/Extraction Date 2022-04-05 Analyst Z S Method Cond-Soil			
Electrical Conductivity	<0.05 mS/cm	100	90-110
pH		101	90-110
Resistivity			
Run No 419661 Analysis/Extraction Date 2022-04-06 Analyst AET Method C CSA A23.2-4B			
Chloride		97	90-110
Run No 419675 Analysis/Extraction Date 2022-04-06 Analyst IP Method AG SOIL			
SO4	<0.01 %	103	70-130
Run No 419721 Analysis/Extraction Date 2022-04-06 Analyst MW Method C SM2580B			
REDOX Potential	231 mV	98	
Run No 419832 Analysis/Extraction Date 2022-04-06 Analyst AET Method SUBCONTRACT-A			
Moisture-Humidite	<0.25 %	100	
S2-	<0.20 ug/g	77	

Guideline =

*** = Guideline Exceedence**

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



Certificate of Analysis

Client: Geo Pro Consulting
40 Vogell Rd, Unit 57
Richmond Hill, Ontario
L4B 3K6

Attention: Dylan X

PO#:

Invoice to: Geo Pro Consulting

Report Number: 1976532
Date Submitted: 2022-05-03
Date Reported: 2022-05-12
Project: 18-2325GHE-2307
COC #: 890167

Dear Dylan X:

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:

APPROVAL:

Emma-Dawn Ferguson, Chemist

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Certificate of Analysis

Client: Geo Pro Consulting
 40 Vogell Rd, Unit 57
 Richmond Hill, Ontario
 L4B 3K6
 Attention: Dylan X
 PO#:
 Invoice to: Geo Pro Consulting

Report Number: 1976532
 Date Submitted: 2022-05-03
 Date Reported: 2022-05-12
 Project: 18-2325GHE-2307
 COC #: 890167

Lab I.D. 1623623
 Sample Matrix Soil
 Sample Type
 Sampling Date 2022-04-28
 Sample I.D. BH405 SS4B

Group	Analyte	MRL	Units	Guideline	
Anions	SO4	0.01	%		<0.01
Cl in Concrete	Cl	0.002	%		0.073
General Chemistry	Electrical Conductivity	0.05	mS/cm		1.04
	pH	2.00			7.95
	Resistivity	1	ohm-cm		962
Redox Potential	REDOX Potential		mV		206
Subcontract	Moisture-Humidite	0.25	%		12.0
	S2	0.2	ug/g		0.7

Guideline = * = **Guideline Exceedence**

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Certificate of Analysis

Client: Geo Pro Consulting
 40 Vogell Rd, Unit 57
 Richmond Hill, Ontario
 L4B 3K6
 Attention: Dylan X
 PO#:
 Invoice to: Geo Pro Consulting

Report Number: 1976532
 Date Submitted: 2022-05-03
 Date Reported: 2022-05-12
 Project: 18-2325GHE-2307
 COC #: 890167

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 421657 Analysis/Extraction Date 2022-05-10 Analyst AsA Method C CSA A23.2-4B			
Chloride	<0.002 %		80-120
Run No 421660 Analysis/Extraction Date 2022-05-09 Analyst MW Method C SM2580B			
REDOX Potential	160 mV	97	
Run No 421672 Analysis/Extraction Date 2022-05-10 Analyst IP Method AG SOIL			
SO4	<0.01 %	102	70-130
Run No 421676 Analysis/Extraction Date 2022-05-10 Analyst IP Method Cond-Soil			
Electrical Conductivity	<0.05 mS/cm		90-110
pH	6.95	100	90-110
Resistivity	20000 ohm-cm		
Run No 421813 Analysis/Extraction Date 2022-05-11 Analyst AET Method SUBCONTRACT-A			
Moisture-Humidite	<0.25 %	100	
S2-	<0.20 ug/g	71	

Guideline =

*** = Guideline Exceedence**

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Certificate of Analysis

Client: Geo Pro Consulting
40 Vogell Rd, Unit 57
Richmond Hill, Ontario
L4B 3K6

Attention: Dylan X

PO#:

Invoice to: Geo Pro Consulting

Report Number: 1980555
Date Submitted: 2022-06-30
Date Reported: 2022-07-11
Project: 18-2325GHE-2349
COC #: 892672

Dear Dylan X:

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:

APPROVAL: _____

Emma-Dawn Ferguson, Chemist

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

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Certificate of Analysis

Client: Geo Pro Consulting
 40 Vogell Rd, Unit 57
 Richmond Hill, Ontario
 L4B 3K6
 Attention: Dylan X
 PO#:
 Invoice to: Geo Pro Consulting

Report Number: 1980555
 Date Submitted: 2022-06-30
 Date Reported: 2022-07-11
 Project: 18-2325GHE-2349
 COC #: 892672

Lab I.D. 1634848
 Sample Matrix Soil
 Sample Type
 Sampling Date 2022-06-24
 Sample I.D. BH406 SS4

Group	Analyte	MRL	Units	Guideline	
Anions	Cl	0.002	%		0.019
	SO4	0.01	%		0.02
General Chemistry	Electrical Conductivity	0.05	mS/cm		0.38
	pH	2.00			8.35
	Resistivity	1	ohm-cm		2630
Redox Potential	REDOX Potential		mV		200
Subcontract	Moisture-Humidite	0.25	%		9.57
	S2	0.2	ug/g		0.3

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Certificate of Analysis

Client: Geo Pro Consulting
 40 Vogell Rd, Unit 57
 Richmond Hill, Ontario
 L4B 3K6
 Attention: Dylan X
 PO#:
 Invoice to: Geo Pro Consulting

Report Number: 1980555
 Date Submitted: 2022-06-30
 Date Reported: 2022-07-11
 Project: 18-2325GHE-2349
 COC #: 892672

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 424817 Analysis/Extraction Date 2022-06-30 Analyst MW			
Method C SM2580B			
REDOX Potential		102	97-103
Run No 425020 Analysis/Extraction Date 2022-07-06 Analyst MW			
Method Cond-Soil			
Electrical Conductivity	<0.05 mS/cm	90	90-110
pH	7.34	102	90-110
Resistivity			
Run No 425186 Analysis/Extraction Date 2022-07-08 Analyst IP			
Method AG SOIL			
SO4	<0.01 %	107	70-130
Run No 425210 Analysis/Extraction Date 2022-07-08 Analyst AsA			
Method C CSA A23.2-4B			
Chloride	<0.002 %		90-110
Run No 425302 Analysis/Extraction Date 2022-07-10 Analyst AET			
Method SUBCONTRACT-A			
Moisture-Humidite	<0.25 %	102	
S2-	<0.20 ug/g	79	

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CLIENT INFORMATION				INVOICE INFORMATION (SAME AS CLIENT INFORMATION: YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>)														
Company: GeoPro Consulting Limited				Company:				Fax:										
Contact: ELab elab@geoproconsulting.ca				Contact:				Email: #1:										
Address: 40 Vogell Road, unit 23, Richmond Hill, ON L4B 3N6				Address:				Email: #2:										
Telephone: 905-237-8336		Cell:		Telephone:				PO #:										
Email: #1: dylanx@geoproconsulting.ca; kriska@geoproconsulting.ca				REGULATION/GUIDELINE REQUIRED														
Email: #2: elab@geoproconsulting.ca; irisg@geoproconsulting.ca				<input type="checkbox"/> Sanitary Sewer, City: _____ <input type="checkbox"/> Storm Sewer, City: _____ <input type="checkbox"/> ODWSOG <input type="checkbox"/> PWQO <input type="checkbox"/> O. Reg 347/558 <input checked="" type="checkbox"/> Other: CORROSIVITY (Full Parameters) <input type="checkbox"/> None				<input type="checkbox"/> O. Reg 153 Table # _____, Course / Fine, Surface / subsurface. Type: Com-Ind / Res-Park / Agri / GW / All Other / Sediment <input type="checkbox"/> Excess Soil, Table: _____ Type: _____ The sample results from this submission will form part of a formal Record of Site Condition (RSC) under O.Reg. 153/04 <input type="checkbox"/> Yes <input type="checkbox"/> No										
Project: 18-2325GHE-2349				Quote #: 191248														
TURN-AROUND TIME (Business Days)																		
<input type="checkbox"/> 1 Day* (100%)		<input type="checkbox"/> 2 Day** (50%)		<input type="checkbox"/> 3-5 Days (25%)		<input checked="" type="checkbox"/> 5-7 Days (Standard)												
Please contact Lab in advance to determine rush availability.																		
*For results reported after rush due date, surcharges will apply: before 12:00 - 100%, after 12:00 - 50%.																		
**For results reported after rush due date, surcharges will apply: before 12:00 - 50%, after 12:00 - 25%.																		
The optimal temperature conditions during transport should be less than 10°C. Sample(s) cannot be frozen, unless otherwise indicated or agreed upon with the Laboratory. Note that this COC is not to be used for drinking water samples. The COC must be complete upon submission of the samples, there will be a \$25 surcharge if required information is missing (required fields are shaded in grey).				Sample Details				Sample Analysis Required								RN# (Lab Use Only)		
				Field Filtered -->	Sample Matrix	# of Containers	O.Reg.153 parameters								CORROSIVITY			
Sample ID	Date/Time Collected			PHC F1 - F4	BTEX	VOCs	PAHs	PCBs	Metals + Inorganics	Metals only								
BH406 SS4	Jun. 24, 2022	soil	1															1634848
PRINT		SIGN				DATE/TIME		TEMP (°C)		COMMENTS:								
Sampled By:		Kriska Javier				JUN 29, 2022		4:26pm, 7.8°C										
Relinquished By:		Victor Gallant				06/29/22		4:26pm, 7.8°C										
Received By:										CUSTODY SEAL: <input type="checkbox"/> YES <input type="checkbox"/> NO ice packs submitted: <input type="checkbox"/> Yes <input type="checkbox"/> No								



Certificate of Analysis

Client: Geo Pro Consulting
40 Vogell Rd, Unit 57
Richmond Hill, Ontario
L4B 3K6

Attention: Dylan X

PO#:

Invoice to: Geo Pro Consulting

Report Number: 1982547
Date Submitted: 2022-07-26
Date Reported: 2022-08-05
Project: 18-2325GHE-2362
COC #: 894058

Dear Dylan X:

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:

APPROVAL:

Emma-Dawn Ferguson, Chemist

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

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Certificate of Analysis

Client: Geo Pro Consulting
 40 Vogell Rd, Unit 57
 Richmond Hill, Ontario
 L4B 3K6
 Attention: Dylan X
 PO#:
 Invoice to: Geo Pro Consulting

Report Number: 1982547
 Date Submitted: 2022-07-26
 Date Reported: 2022-08-05
 Project: 18-2325GHE-2362
 COC #: 894058

Lab I.D. 1640454
 Sample Matrix Soil
 Sample Type
 Sampling Date 2022-07-19
 Sample I.D. BH407 SS4

Group	Analyte	MRL	Units	Guideline	
Anions	Cl	0.002	%		0.029
	SO4	0.01	%		0.05
General Chemistry	Electrical Conductivity	0.05	mS/cm		0.68
	pH	2.00			8.01
Redox Potential	Resistivity	1	ohm-cm		1470
	REDOX Potential				239
Subcontract	Moisture-Humidite	0.25	%		12.6
	S2-	0.2	ug/g		0.2

Guideline = * = **Guideline Exceedence**

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Client: Geo Pro Consulting
 40 Vogell Rd, Unit 57
 Richmond Hill, Ontario
 L4B 3K6
 Attention: Dylan X
 PO#:
 Invoice to: Geo Pro Consulting

Report Number: 1982547
 Date Submitted: 2022-07-26
 Date Reported: 2022-08-05
 Project: 18-2325GHE-2362
 COC #: 894058

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 426698 Analysis/Extraction Date 2022-08-03 Analyst IP Method AG SOIL			
SO4	<0.01 %	109	70-130
Run No 426727 Analysis/Extraction Date 2022-08-03 Analyst IP Method Cond-Soil			
Electrical Conductivity	<0.05 mS/cm	81	90-110
pH	6.22	100	90-110
Resistivity	20000 ohm-cm		
Run No 426730 Analysis/Extraction Date 2022-08-03 Analyst IP Method C SM2580B			
REDOX Potential	137 mV	98	97-103
Run No 426738 Analysis/Extraction Date 2022-08-03 Analyst AsA Method C CSA A23.2-4B			
Chloride	<0.002 %		90-110
Run No 426900 Analysis/Extraction Date 2022-07-29 Analyst AET Method SUBCONTRACT-A			
Moisture-Humidite	<0.25 %	100	
S2-	<0.20 ug/g	79	

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Client: Geo Pro Consulting
40 Vogell Rd, Unit 57
Richmond Hill, Ontario
L4B 3K6

Attention: Dylan X

PO#:

Invoice to: Geo Pro Consulting

Report Number: 1976135
Date Submitted: 2022-04-27
Date Reported: 2022-05-05
Project: 18-2325GHE-2297
COC #: 889966

Page 1 of 3

Dear Dylan X:

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:

APPROVAL:

Emma-Dawn Ferguson, Chemist

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Certificate of Analysis

Client: Geo Pro Consulting
 40 Vogell Rd, Unit 57
 Richmond Hill, Ontario
 L4B 3K6
 Attention: Dylan X
 PO#:
 Invoice to: Geo Pro Consulting

Report Number: 1976135
 Date Submitted: 2022-04-27
 Date Reported: 2022-05-05
 Project: 18-2325GHE-2297
 COC #: 889966

Lab I.D. 1622522
 Sample Matrix Soil
 Sample Type
 Sampling Date 2022-04-26
 Sample I.D. BH408 SS4

Group	Analyte	MRL	Units	Guideline	
Anions	Cl	0.002	%		0.104
	SO4	0.01	%		0.05
General Chemistry	Electrical Conductivity	0.05	mS/cm		1.74
	pH	2.00			6.78
Redox Potential	Resistivity	1	ohm-cm		578
	REDOX Potential				210
Subcontract	Moisture-Humidite	0.25	%		11.2
	S2-	0.2	ug/g		2.2

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Certificate of Analysis

Client: Geo Pro Consulting
 40 Vogell Rd, Unit 57
 Richmond Hill, Ontario
 L4B 3K6
 Attention: Dylan X
 PO#:
 Invoice to: Geo Pro Consulting

Report Number: 1976135
 Date Submitted: 2022-04-27
 Date Reported: 2022-05-05
 Project: 18-2325GHE-2297
 COC #: 889966

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 421226 Analysis/Extraction Date 2022-05-03 Analyst AsA Method C CSA A23.2-4B			
Chloride	<0.002 %		90-110
Run No 421234 Analysis/Extraction Date 2022-05-03 Analyst MW Method C SM2580B			
REDOX Potential	160 mV	99	
Run No 421239 Analysis/Extraction Date 2022-05-03 Analyst MW Method Cond-Soil			
Electrical Conductivity	<0.05 mS/cm	99	90-110
pH	7.07	100	90-110
Resistivity			
Run No 421257 Analysis/Extraction Date 2022-05-03 Analyst IP Method AG SOIL			
SO4	<0.01 %	101	70-130
Run No 421418 Analysis/Extraction Date 2022-05-01 Analyst AET Method SUBCONTRACT-A			
Moisture-Humidite	<0.25 %	100	
S2-	<0.20 ug/g	78	

Guideline =

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LIMITATIONS TO THE REPORT

This report is intended solely for the Client named. The report is prepared based on the work has been undertaken in accordance with normally accepted geotechnical engineering practices in Ontario.

The comments and recommendations given in this report are based on information determined at the limited number of the test hole and test pit locations. The boundaries between the various strata as shown on the borehole logs are based on non-continuous sampling and represent an inferred transition between the various strata and their lateral continuation rather than a precise plane of geological change. Subsurface and groundwater conditions between and beyond the test holes and test pits may differ significantly from those encountered at the test hole and test pit locations. The benchmark and elevations used in this report are primarily to establish relative elevation differences between the test hole and test pit locations and should not be used for other purposes, such as grading, excavating, planning, development, etc.

It should be noted that the results of the designated substance and chemical analysis refer only to the sample analyzed which was obtained from specific sampling location and sampling depth, and the presence of designated substance and soil chemistry may vary between and beyond the location and depth of the sample taken. Please note that the level of chemical testing outlined herein is meant to provide a broad indication of soil quality based on the limited soil samples tested. The analytical results contained in this report should not be considered a warranty with respect to the soil quality or the use of the soil for any specific purpose or the acceptability of the soils for any excess soil receiving sites.

The report reflects our best judgment based on the information available to GeoPro Consulting Limited at the time of preparation. Unless otherwise agreed in writing by GeoPro Consulting Limited, it shall not be used to express or imply warranty as to any other purposes. No portion of this report shall be used as a separate entity, it is written to be read in its entirety. The information contained herein in no way reflects on the environment aspects of the project, unless otherwise stated.

The design recommendations given in this report are applicable only to the project designed and constructed completely in accordance with the details stated in this report. Otherwise, our responsibility is limited to interpreting the subsurface information at the borehole or test pit locations.

Should any comments and recommendations provided in this report be made on any construction related issues, they are intended only for the guidance of the designers. The number of test holes and test pits may not be sufficient to determine all the factors that may affect construction activities, methods and costs. Such as, the thickness of surficial topsoil or fill layers may vary significantly and unpredictably; the amount of the cobbles and boulders may vary significantly than what described in the report; unexpected water bearing zones/layers with various thickness and extent may be encountered in the fill and native soils. The contractors bidding on this project or undertaking the construction should, therefore, make their own interpretation of the factual information presented and make their own conclusions as to how the subsurface conditions may affect their work and determine the proper construction methods.

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

We accept no responsibility for any decisions made or actions taken as a result of this report unless we are specifically advised of and participate in such action, in which case our responsibility will be as agreed to at that time.